



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

DAVID J. BURNEY, FAIA
Commissioner

CAROL DIAGOSTINO
Agency Chief
Contracting Officer

August 10, 2011

ADDENDUM NO. 1

**PROJECT: P-5FRESHU, Preliminary Design Services for Improvements to the West Shore Expressway Service Roads and Fresh Kills Park Road, in the Borough of Staten Island
PIN: 8502011HW0056P**

THE ADDENDUM IS ISSUED FOR THE PURPOSE OF AMENDING THE REQUIREMENTS OF THE REQUEST FOR PROPOSALS AND IS HEREBY MADE A PART OF SAID REQUEST FOR PROPOSALS TO THE SAME EXTENT AS THOUGH IT WERE ORIGINALLY THEREIN.

CONTRACT DOCUMENT

EXHIBIT H (GENERAL REQUIREMENTS):

Delete in its entirety and replace with revised Exhibit H attached to this addendum.

**Contract: Kareem Alibocas, alibocaka@ddc.nyc.gov
Phone no.: 718-391-3038**

By signing in the space provided below, the Proposer acknowledges receipt of this Addendum.

THIS ADDENDUM MUST BE SIGNED BY THE PROPOSER FOR THE CONTRACT AND ATTACHED TO THE TECHNICAL PROPOSAL.

Carol DiAgostino
Agency Chief Contracting Officer

Name of Proposer

By _____

Title _____



EXHIBIT H

**GENERAL REQUIREMENTS FOR
ENGINEERING DESIGN AND RELATED SERVICES**

REVISION TO THE GENERAL REQUIREMENTS

Throughout the General Requirements, there are numerous references to “Preliminary Design” and/or “Preliminary Design Services”.

Delete any and all references to “Preliminary Design” and/or “Preliminary Design Services” and replace all such references with “Pre-Scoping Services”.

EXHIBIT H

**CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF INFRASTRUCTURE**

GENERAL REQUIREMENTS

FOR

ENGINEERING DESIGN AND RELATED SERVICES

IN CONNECTION WITH

**HIGHWAY, SEWER, WATER MAIN, STREET LIGHTING AND TRAFFIC
SIGNAL WORK**

AND OTHER WORK INCIDENTAL THERETO

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GENERAL REQUIREMENTS FOR DESIGN SERVICES

The General Requirements set forth the basic requirements to be met in the performance of various design services.

1. DEFINITIONS

(i) The words "Preliminary Design" where used herein are understood to mean the collection of data; identification, study and resolution of design issues; and the development of approved Conceptual-Schematic Geometric Designs.

(ii) The words "Preliminary Design Services" where used herein include the specific Preliminary Design Services identified in Section 2.3.A of these General Requirements and other design services that are needed to fully develop the Preliminary Design for a project including the preparation of a fully coordinated set of technical supplements, results and recommendations of studies, and schematic geometric designs.

(iii) The words "Final Design" where used herein are understood to mean development of detailed designs for street, sewer and water main work; the detailed design of all appropriate street elements and appurtenances; and the preparation of fully coordinated construction Contract Documents that are ready for bidding.

(iv) The words "Final Design Services" where used herein include the specific Final Design Services identified in Section 2.3.A of these General Requirements and other design services that are needed to fully develop the Final Design for a project including fully coordinated final contract documents.

(v) The Words "Extra Work" where used herein are understood to mean additional engineering design services not included in the contract.

2. GENERAL DESCRIPTION OF SERVICES

2.1. (a) SERVICES FOR A SPECIFIC PROJECT: The Consultant shall be required to provide engineering design and related services set forth in Article 6 of the Contract.

(b) SERVICES ON A TASK ORDER BASIS: When Requirements Contract is used, the Consultant shall be required to provide engineering design and related services for various infrastructure projects for the Department of Design and Construction on an as needed basis. In that event, the Commissioner shall issue a Task Order to the Consultant. The Consultant shall provide services in accordance with the Task Order for the Project specified therein. The Consultant shall not perform services pursuant to the Requirements Contract until the Commissioner has issued a Task Order. The engineering design and related services the Consultant may be required to provide for the Project specified in the Task Order shall include without limitation the services set forth in Article 6 of the Contract

2.2. PAYMENT FOR SERVICES: The terms and conditions regarding payment to the Consultant are set forth in Article 7 of the Contract.

2.3. TYPES OF SERVICES: The types of engineering design and related services that the Consultant is required to provide include preliminary and final design services, extra work and reimbursable services.

A. Preliminary and Final Design Services: The scope for preliminary and final design services for a specific project may include any of the tasks listed below:

- (1) PROJECT DEVELOPMENT/IDENTIFICATION
- (2) TOPOGRAPHIC SURVEY
- (3) TRAFFIC STUDY PROGRAM
- (4) HARDWARE AND BASIN CONDITION INVENTORY
- (5) SUBSURFACE EXPLORATION PROGRAM
- (6) VAULT PROGRAMS
- (7) RAILROAD AND ABANDONED TROLLEY FACILITIES RESEARCH
- (8) ROADWAY PAVEMENT DESIGN
- (9) EMBANKMENT PROTECTION STUDY
- (10) SCHEMATIC GEOMETRIC DESIGN
- (11) ACQUISITION STUDY AND MAPPING
- (12) QUANTITY AND COST ESTIMATING
- (13) SEWER DATA SURVEY, AREA DRAINAGE AND GRADE STUDY, DRAINAGE PLAN

- (14) HAZARDOUS WASTE AND SITE CONTAMINATION
- (15) STREET DESIGN INCLUDING STUDY AND DESIGN OF STREET GRADES,
STUDY AND DESIGN OF STREET DRAINAGE, AND PERMANENT STREET SIGNS
- (16) TREE INVENTORY
- (17) TREE IMPACT MITIGATION AND TREE PLANTING PROGRAM
- (18) SEEPAGE BASIN AND/OR HIGHWAY DRAIN DESIGN
- (19) SEWER DESIGN
- (20) WATER MAIN DESIGN
- (21) STREET LIGHTING SYSTEM DESIGN
- (22) TRAFFIC SIGNALS SYSTEM DESIGN
- (23) FINAL DESIGN OF RETAINING WALLS AND BULKHEADS
- (24) CONSTRUCTION STAGING AND MAINTENANCE AND PROTECTION OF TRAFFIC
- (25) PREPARATION OF SPECIFICATIONS
- (26) REVIEW AND ANALYSIS OF BIDS
- (27) ELECTRONIC ARCHIVING AND INDEXING
- (28) SIDEWALK CELLAR DOORS CONDITION INVENTORY
- (29) BUILDINGS RESEARCH
- (30) CONSTRUCTION CONTRACT DURATION/SCHEDULING STUDY
- (31) SCHEMATIC LANDSCAPE/URBAN DESIGN
- (32) FINAL LANDSCAPE/URBAN DESIGN
- (33) LANDSCAPE/URBAN DESIGN CONSTRUCTION SUPPORT SERVICES
- (34) DESIGN OF MODIFICATIONS TO SUBWAY VENTILATORS
- (35) ENVIRONMENTAL ASSESSMENT STATEMENT (EAS)
- (36) UNIFORM LAND USE REVIEW PROCEDURE (ULURP)
- (37) CLEANING, TELEVISION INSPECTION AND VIDEO TAPE RECORDING OF SEWERS
- (38) DRAINAGE PLAN GRADE IMPACTS AND GRADE IMPACTS MITIGATION STUDIES
- (39) FINAL DESIGN OF STEP STREET
- (40) SCHEDULING AND PROGRESS REPORTING

The above tasks are described in detail in Section 4 of the General Requirements.

When the Consultant and/or DDC identify that the Project has a potential for use of the sustainable designs for any of the tasks provided in the scope of design Services, the Consultant shall incorporate these designs during development of such tasks as the Schematic Geometric Design alternatives, Schematic Landscape and/or Urban Design, Roadway Pavement Design and any other street elements. The Consultant shall follow High Performance Infrastructure-Best Management Practices (BMP) based on the core principles of sustainable design, as described in the DDC High Performance Infrastructure Guidelines, during the performance of the Design services. The Consultant shall analyze the environmental, social and economic benefits of each alternative and include the results of its studies and its recommendations in a report. In addition, the Consultant shall include the approved design alternative in the PDI report.

B. Extra Work: During the term of the contract due to unforeseen occurrences, additional engineering design services may be required in order to complete the project. Upon commissioner's written approval such a task shall be considered as Extra Work. Changes in the Contract due to such extra work shall be processed in accordance with the contract agreement.

C. Reimbursable Services: The Consultant may be directed by the Commissioner to provide Reimbursable Services for the Project, as set forth below. The Consultant shall provide such Reimbursable Services, if so directed in writing by the Commissioner. The Consultant shall provide such Reimbursable Services through entities approved by the Commissioner, and shall utilize the method of procurement and form of payment directed by the Commissioner. The Consultant is not entitled to payment for professional services to procure, manage and supervise Reimbursable Services required in connection with Preliminary Design Services and Final Design Services.

Reimbursable Services shall be such services determined by the Commissioner to be necessary for the Project, and may include, without limitation, the services set forth below:

- (a) Subcontractor services for borings, excavation of test pits, cleaning and television inspection and video tape recording of sewers, and phase I testing and specifications for hazardous waste.
- (b) Laboratory services for soil classification or other necessary testing or analysis.
- (c) Printing of design documents, except for printing performed in the Consultant's office.
- (d) Long distance travel. In the event the Consultant is directed in advance in writing by the Commissioner to provide services which require long distance travel, the Consultant shall be reimbursed for expenses incurred in connection with such long distance travel. Long distance travel shall mean travel which is in excess of 75 miles from whichever of the following is closer to the destination: (1) Columbus Circle, or (2) the Consultant's home office. Consultants and/or Subconsultants that are not located in New York City or its vicinity shall not be entitled to reimbursement for transportation expenses.

- (e) Filing fees and related application fees for New York City agencies.
- (f) Fees for street opening permits.
- (g) Arboricultural services. Arboricultural services shall be in accordance with standards and requirements of the New York City Department of Parks and Recreation ("DPR") for tree planting, protection and preservation. The Commissioner reserves the right to direct that method of payment for Arboricultural Services shall be on a Time Card basis in accordance with the All Inclusive Hourly Rates set forth in the Contract.
- (h) Bulk postage for Mass Mailings No.1 and No.2, Encroachment Notices, Cut and Fill Consent Notices, and requests for permission to enter private property, including certified mail with return receipts.
- (i) Any other services, determined by the Commissioner to be necessary for the Project

2.4. CRITERIA FOR SERVICES: The Consultant shall perform all required engineering design and related services in accordance with the following: (a) the Specific Requirements for the Project issued by the Commissioner, (b) all applicable local, state and federal laws, rules and regulations, including without limitation, the New York City Building Code and the Americans with Disabilities Act and (c) the criteria set forth below:

- A. New York City Department of Transportation Standard Details of Construction for Highway Work
- B. New York City Department of Design and Construction, Infrastructure Division, Design Guidelines and Directives
- C. New York City Department of Transportation Street Design Manual - 2009
- D. New York City Department of Design and Construction, High Performance Infrastructure Guidelines- Oct. 2005
- E. New York City Department of Transportation World Class Streets
- F. New York City Department of Environmental Protection Sewer Design Standards
- G. New York City Department of Environmental Protection Water Main Design Standards

DDC will provide the design standards to the Consultant or will advise the Consultant where such standards may be obtained.

- Additional Provisions Applicable to Design:

(a) Separate Drawings: The Consultant shall prepare separate contract drawings for demolition, excavation, foundation, sewer lines and water mains (when warranted), structural work, street lighting work, and traffic signal work.

(b) Coordination and Development: All contract drawings and specifications shall be properly coordinated so as to preclude the necessity for changes, adjustments or extra work orders during construction. All contract drawings and specifications shall be developed with construction details sufficiently shown and with figure dimensions given and specifications adequately stated so as to enable prospective bidders and contractors to make accurate and reliable estimates of the quantities, quality and character of the several kinds of labor and materials required to construct and complete the Project in a first class workmanlike manner and to accomplish adequately the purposes and uses intended for the Project.

(c) Equipment or Materials: Any equipment or materials included in the contract drawings and specifications shall become a fixed part of the Project and shall be essential to render the Project fit for its intended use.

2.5. FINAL CONTRACT DOCUMENTS: Upon completion of the services required for the Project, the Consultant shall hand-deliver to the Commissioner the following as applicable:

- (a) All material originally transmitted to the Consultant at the inception of the project;
- (b) The complete set(s) of original signed Contract Documents;
- (c) The complete set(s) of original contract specifications;
- (d) The complete set(s) of Addenda;
- (e) The original work sheets for the Consultant's quantity take-offs and cost estimates- both preliminary and final;
- (f) The original Scope packet;
- (g) Any permits that were needed;
- (h) The original project files complete with all documentation;
- (i) A complete computerized files index and one hard copy thereof, cross indexed by subject, activity, Agency and/or jurisdiction and/or persons name;
- (j) All computer files including CAD files and scanned documents;
- (k) All records, logs, computations, photographs, etc, compiled in connection with Borings, Soils Testing, Test Pits, etc;
- (l) All contract records material shall be packaged and delivered to the City in temporary, uniform sized, matching, heavy duty flat file/roll file/letter file type cardboard shipping/transfer carton(s). Typed labels shall provide information on contents and number of cartons in the set.

3. DESIGN STANDARDS AND PROCEDURES

A. All information and data, which are part of the Commissioner's records, are available to the Consultant for the proper prosecution of this contract. This may be supplemented by information obtained from other agencies and sources. Before beginning the work to be done for each project, the Consultant shall make an examination of the site designated for the project, note all conditions and implications of same and make all necessary surveys pertaining to the project.

B. The Consultant shall perform design services and prepare the Contract Documents with reference to, and in conformity with, such information and data as to existing and legal lines, legal grades, approved drainage plans, sewers, subsurface structures, conditions and facilities, etc., as may be furnished to him by the Commissioner and other agencies, supplemented by information obtained from utility companies and others, and a personal examination, inspection and survey of the site by the Consultant. The Consultant shall obtain any such necessary additional information and data not furnished to him as aforesaid and shall design and plan the work with reference thereto and in complete conformity therewith.

C. The Consultant shall conform to the procedural standards as described hereinafter, and all design standards as identified in the latest edition of New York City Department of Design and Construction, Infrastructure Design Guidelines and Directives. The Consultant shall conform to instructions and/or directions promulgated at project strategy meetings, and/or conform to general and customary Agency practices, or as otherwise directed by the Commissioner.

The reporting, design and specifications of the project shall be in accordance with such standards of reporting, design and construction as the Commissioner may furnish. In the event that the Consultant recommends a patented article, he shall notify the Commissioner in writing of such designated article.

D. The Consultant shall be accountable to initiate actions deemed normal and customary by a prudent and responsible consultant; including incremental submissions and/or review(s) of the proposed designs to client agencies and interested parties, and coordination meetings that are needed to expeditiously resolve questions and concerns necessary to obtain required acceptance, concurrence and/or approvals, and to meet the project milestones on schedule.

E. The Consultant shall perform all appurtenant designs/analyses/ surveys/investigations that are necessary to develop completely integrated/coordinated designs.

F. The Consultant shall make all required submissions formally, timely and in writing, with a copy of all transmittals being sent to the Department of Design and Construction. Submissions shall be either hand delivered, delivered by messenger, overnight mail and/or other express delivery, facsimile transmittal, or electronic mail.

G. The Consultant shall perform the tasks that are included in the General Requirements and the Specific Requirements for each project in accordance with an incremental approach.

H. The Consultant shall complete the tasks that are included in the General Requirements and the Specific Requirements for each project for acceptance, concurrence, and/or approval, in accordance with the standards of the agencies/parties having jurisdictional responsibilities for said tasks and, further, conditioned upon acceptance by the Department.

I. All tasks shall be fully coordinated and fully integrated into the contract documents.

J. The Consultant shall develop/produce the Contract Documents, or portions thereof, for mass mailing(s) and/or incremental submissions to affected public, private and City agencies - as required, evaluate review comments and incorporate them into the contract documents - where appropriate. The Consultant shall provide sufficient numbers of bound, collated copies of documents, including reports, estimates, design packets, plans, as required, for the normal and reasonable progression of the Contract work.

K. The Consultant shall make all submissions in accordance with the approved work plan and schedule.

L. The Consultant shall thoroughly check all submissions for accuracy, completeness, and appropriateness prior to submission.

M. PERFORMANCE EVALUATION

The Consultant, including all sub-consultants, is hereby placed on notice that the City shall be preparing and filing performance evaluation reports - which will include an assessment of the Consultant's and each sub consultant's performance and will be specifically based on the quality and accuracy of submissions; completeness and thoroughness of submissions; promptness and timeliness of project submissions; and promptness and timeliness of meeting scheduled milestones.

N. DRAFTING REQUIREMENTS

1. All drafting, contract drawings and non contract drawings, including but not limited to sketches, design study drawings, working drawings, cross sections, profiles, and supplementary profiles, shall be prepared on a computer aided drafting and design (CAD) system.

2. The Consultant shall submit a sample(s) of drawing file(s) to the Commissioner at the initial drawings preparation stage and request that a translation test be run to determine compatibility with the Department's CAD system. The computerized drawing files shall be 100% compatible with the Department's CAD system and shall be 100% translatable. It shall be the Consultant's/Surveyor's responsibility to provide and insure compatibility with the Departments CAD system.

3. The Consultant shall, as directed by the Commissioner or as stipulated in the Specific Requirements for each project, prepare surveys, plans, specifications and estimates in either the British System of Measurement or the Metric System of Measurement.

4. The Consultant shall conform to currently applicable Departmental Standards in the plotting and drafting of all work, required under this contract. In general, this shall include, but not be limited to the following:

- (a) All plotting shall be in ink, monochrome or color as directed.
- (b) Drawing sheets will generally be F Size (28" x 40"). However the size of drawing sheets shall be customized to suit the needs of the specific project, and the size to be used for the project shall be determined by the Commissioner in consultation with Consultant.
- (c) Plans and profiles shall generally be drawn to the following scales:

For English Measurements:

- (i) Plans are to be drawn to a scale of 1" = 30' horizontally
- (ii) Roadway profiles are to be drawn to a scale of 1" = 2' vertically and 1" = 30' horizontally
- (iii) Sewer profiles are to be drawn to a scale of 1" = 5' vertically and 1" = 30' horizontally

For Metric Measurements:

- (i) Plans are to be drawn to a scale of 1:300 horizontally
- (ii) Roadway profiles are to be drawn to a scale of 1:30 vertically and 1:300 horizontally.

However, the scales shall be customized to meet the specific needs of each project, and shall be determined by the Commissioner in consultation with the Consultant.

- (d) Final Contract Drawings shall be printed on double matte 4 mil mylar.
- (e) All drawings shall utilize standard Departmental format(s), symbols, line styles, text fonts, font size, and layering conventions, or shall be customized as required by and subject to approval by the Commissioner.
- (f) All printing and line work shall conform to current Departmental standards.
- (g) All final contract drawings shall be in ink, on Herculene or Mylar, or approved equal.

O. DESIGN COORDINATION

1. OTHER AGENCIES AND JURISDICTIONS

(a) The Consultant shall provide full coordination with all relevant individuals, agencies, utilities, and jurisdictions that have an interest in the project or are impacted by the project or its design, and shall execute the studies and designs required under the tasks included in the Specific Requirements in full coordination with all such entities.

(b) The Consultant shall provide such surveys, plots, prints, copies of the preliminary design documents, technical supplements, final design plans and contract documents, etc., as may be needed at conferences with the Commissioner and the representatives of other agencies relative to the project, and shall attend such conferences as required by the Commissioner.

The said surveys, profiles, reports, contract documents, etc., shall be approved or rejected by the Commissioner or modified by the Consultant as directed by the Commissioner.

(c) The Consultant shall take cognizance of other agencies' projects under design or construction within the vicinity of any project for which it is providing services, and shall coordinate the design proposals with the design(s) for such other project(s), in accordance with information obtained during coordination of the Design Program.

2. MEETINGS

(a) The Consultant shall expeditiously meet with the parties involved in issue(s) arising from or impacting on a project, to precisely and specifically identify the issue(s), to document prior actions, to obtain data and information, to identify alternatives, to record findings, and shall function as Chairperson in arranging for and conducting meetings and conferences as required.

(b) The Consultant shall generally perform all coordination with the various affected jurisdictions through personal contact. Coordination limited solely to telephone contact shall be considered inadequate for the purposes of this Contract.

(c) It shall also be understood that for the purposes of this contract, written communication alone shall be deemed an incomplete and inadequate strategy for "proper" coordination and problem resolution.

(d) The Consultant shall be responsible for the initiation of all actions regarding responses to requests to the Department and to other agencies/jurisdictions/individuals, for the initiation of incremental reviews, approvals and comments relative to the proposed design(s) or issue(s), including follow-up strategies, as required, and for the expeditious resolution of design questions, issues and concerns, with a view toward meeting the contractual and/or project milestone schedule.

(e) The Consultant shall be accountable to prepare specific and accurate draft and final minutes for meetings and conferences required in the timely performance of contractual work. The draft minutes shall be prepared and circulated among the interested parties within two (2) business days of the meeting. Upon receiving comments on the draft minutes by the interested parties, the Consultant shall revise the minutes, where appropriate, and shall coordinate the approval and distribution of final minutes.

3. CORRESPONDENCE

a) The Consultant shall be accountable to initiate, prepare, and distribute any correspondence necessary in connection with the timely performance of contractual work, respond to inquiries and/or answer questions.

b) The Consultant shall prepare and mail either directly or under signature of the Commissioner, all correspondence required for a successful and timely completion of contractual work. Each letter shall be "customized" to reflect the specifics of the correspondence's purpose and function, and shall be "specific" to the inquiry and/or request being made. Responses shall also be customized with specificity regarding the incoming question and/or inquiry, shall be logically organized, professionally written, and shall be complete and thorough.

4. INCREMENTAL AND FINAL REVIEWS

- a) The Consultant shall be responsible for the initiation of all actions, including the reiteration of submissions needed to expedite and advance the development, approval and acceptance of the designs and contract documents in conformity with the project objectives.
- b) As requested by the Department, the Consultant shall provide copies of appropriate correspondence and prints of drawings as may be required to keep various Agency(s) informed regarding the details/progress/status of the project.
- c) The Consultant shall, in accordance with the Mass Mailings No. 1 and No. 2 required in the Street Design Task, and as otherwise deemed appropriate by the Commissioner, submit copies of Schematic Design Drawings, the Preliminary Contract Drawings and Pre-Final Contract Documents to the Department and to other City, public and private agencies, utilities and other parties which, based on project components and site conditions in the judgment of the Consultant jointly with the Commissioner, may have an interest in the project area.
- d) The Consultant shall review, evaluate and incorporate comments received, as follows:
 - i) Where comments pertain to design being performed under the jurisdictional responsibility of other agencies, the Consultant shall make requested changes to the satisfaction of said agencies as long as those requests remain technically and policy wide reasonable.
 - ii) Where comments pertain to requested changes in street design or additional appurtenant work, the Consultant shall evaluate requested changes and additional appurtenant work and, upon receipt of approval by the Commissioner, shall incorporate and integrate all appropriate changes into the composite Pre-Final Contract Documents.
 - iii) Wherever, in his/her judgment, compliance with an agency requirement is not being recommended or pursued the Consultant shall advise the Commissioner. Where comments are deemed to be not feasible or practical, or where they are deemed to be incompatible with the design, the Consultant shall, as directed by the Commissioner meet with the affected agencies to discuss/develop alternate solutions.
 - iv) Where comments pertain to requests by various interested agencies to have their completed, furnished designs incorporated into the composite Contract Documents, the Consultant shall evaluate such requests and review submitted design documents (including plans, specifications and Consultant's estimates). Upon concurrence by the Commissioner, the Consultant shall coordinate the incorporation and integration of appropriate design documents into the composite Pre-Final Contract Documents, and shall make appropriate street design changes and/or adjustments as required.
 - v) Where certain design issues or comments remain unresolved, the Consultant shall arrange a meeting with the Commissioner and with the affected agencies to discuss acceptable solutions/alternatives.
 - vi) The Consultant, where directed by the Commissioner, shall present his designs to the Community Planning Boards.

5. SUBMISSION OF FINAL RECORDS

The Consultant shall file all required records and documents, not previously submitted, with the Commissioner within sixty (60) days of acceptance of the Preliminary Design and Investigation (PDI) Report by the Commissioner, or within sixty (60) days of the opening of bids for the construction contract or within sixty (60) days of the issue of notice by the Commissioner to the Consultant to cease work under this agreement.

6. PAYMENT

Cost of complying with the Design Standards and Procedures that are required herein shall be included in the Consultant's "Design Fee" unless otherwise stipulated in the Contract.

4. DESIGN TASKS

4.1 PROJECT DEVELOPMENT/IDENTIFICATION

Under this task, the Consultant shall assemble and review all record data for the project; conduct formal interviews with all governmental and non-governmental personnel, as directed by the Commissioner and as required for the efficient and thorough completion of the project, in order to ascertain all existing concerns, issues problems and programs directly related to the project area; fully coordinate all activities under this project with all Federal/State/City Agencies, public and private utilities, and organized groups which, in the opinion of the Commissioner and/or the Consultant, are necessary for the development of a fully coordinated design; and fully coordinate the work with various interested agencies as directed by the Commissioner. This shall include, but not be limited to, the following services:

A. The Consultant shall inspect the Project site and become familiar with the general and specific nature of the Project and surrounding area. The Consultant shall make a complete photographic record of the project area in order to illustrate the general nature/character of the neighborhood, as well as to illustrate the typical conditions and specific problems/issues/impacts of the proposed program and facilities. The photographs shall be either color or black and white, shall be presented in a four inch (4") by six inch (6") format, and shall be suitably indexed, bound and annotated in accordance with the directions of the Commissioner. The photographs shall be made part of the Technical Supplement Documentation required herein.

B. The Consultant shall assemble and review all available reports, designs, surveys, geological and boring data, maps, plans, documents, maintenance records, alignment maps, as-built drawings and construction photographs relative to the project, from, but not limited to the New York State Department of Transportation, Department of Environmental Protection, New York City Transit Authority, New York City Public Design Commission, New York City Department of City Planning, New York City Department of Parks and Recreation, Borough President's Office, New York City Police Department, Libraries, Historical Societies, and from other Federal/State/City/organized groups as may be directed by the Commissioner, or otherwise required for the purposes of fully coordinating the proposed street improvement program.

C. The Consultant shall obtain, and become familiar with, all applicable Departmental Design Directives, Standard Details of Construction, Administrative Procedural Bulletins and guidelines for the prosecution of the work/services under the various elements of the project, including all applicable New York State Department of Transportation guidelines where the project is State or Federally funded.

D. The Consultant shall interview all Department of Transportation maintenance and engineering personnel, as appropriate, to determine the location and extent of all problems and issues in the project area and immediate vicinity, where they affect the project.

E. The Consultant shall interview Department of Environmental Protection personnel, as appropriate, to determine the extent and location of all drainage, sewer and water supply problems/issues and proposed improvement programs by the City and/or Consultant, including catch basin rehabilitation, related to the project area and immediate vicinity, where they affect the project. The Consultant shall also coordinate with the Department of Environmental Protection relative to sewer cleaning and television inspection reports for any existing project sewers.

The Consultant shall review the results of sewer cleaning, sewer television inspection and manual sewer inspection programs performed under other contracts or by the Department of Environmental Protection personnel as they relate to this Project; coordinate the results and recommendations from said programs with this Project, and integrate and incorporate any required sewer work into the contract documents.

F. The Consultant shall interview Department of City Planning personnel, as appropriate, to determine the extent and location of all proposed development/improvement projects in the vicinity of the project area to ascertain the impact that these improvements will have on the project.

G. The Consultant shall interview the District Manager(s), Planning Board(s) personnel and additional interested parties, as deemed appropriate by the Commissioner, to determine their concerns regarding the project street(s).

H. The Consultant shall research and study the following in order to ascertain their impact on the proposed project: zoning, existing land use, traffic generators, traffic operations, legal grades, right-of-way ownership, horizontal alignment, vertical alignment, accident records, maintenance of traffic, revitalization/ construction, and the functional relationship of the site to the Borough/City.

I. The Consultant shall analyze the expressed needs and concerns of the parties contacted, and shall address those needs/concerns that are pertinent to the project. The Consultant shall be accountable to develop and pursue a recommended course of action and/or strategy to resolve those issues which are pertinent to the project in a timely manner and in accordance with the Contract time of completion stipulations.

J. The Consultant shall fully coordinate the identification of all current and future planning, design, and construction projects by the City such as Water Main projects, Park projects, Street Lighting projects, Fire and Police Communications projects, Traffic Signalization projects, etc. The Consultant shall recommend programming alternatives and staging, as required.

K. The Consultant shall fully coordinate the identification of all current and future planning, design, and construction projects of a significant nature by parties other than the City (private utilities, authorities, government and non-government agencies, abutting property owners, etc.), and shall recommend programming alternatives and staging, as required.

L. The Consultant shall coordinate the proposed program with the Local Community Board(s), the Borough President's Office, the Department of City Planning, the Department of Parks and Recreation, the Department of Environmental Protection, the New York City Public Design Commission, the New York State Department of Transportation, and other parties as may be designated by the Commissioner or as required for the efficient completion of the specific project, and shall identify and resolve all requirements, conditions and issues as presented by said parties. In addition, the Consultant shall hold a public meeting, to discuss/present the impacts/elements of the proposed reconstruction program.

M. The Consultant shall coordinate the proposed program with all public and private utilities and prepare a Preliminary Utility Impact Assessment report concerning the impact that the proposed improvement program will have on existing/proposed utility facilities.

N. The Consultant shall prepare and submit a Preliminary Design Report concerning the Project. The report shall document all issues and concerns identified; existing substandard features and the measures proposed to address the issues and substandard features identified; alternative schematic designs considered and design recommendations that have been accepted by the Commissioner, including Sustainable Design alternatives, if any, as described in Section 2.3 and 4.10.2.e of these General Requirements.

O. The Consultant shall prepare a Technical Supplement to the Design Report. The Technical Supplement shall contain all applicable records/deliverables of the Preliminary Design Program. The sections of the Technical Supplement shall include, but not be limited to, the following: pavement design(s); tree inventory; topographic survey documentation; utility survey documentation; traffic study; subsurface exploration data; alternative schematic design treatment(s); correspondence and other documentation, as required.

4.1A DESIGN REPORT

For Federally Funded projects, the Consultant shall prepare a Project Scoping and Final Design Reports for the project based on the results of its investigations. Based on the complexity of the project and the type of funding sources, the Project Scoping and Final Design Reports shall be in accordance with the NYSDOT Project Development Manual and/or the NYSDOT Procedures for Locally Administered Federal Aid Projects. The Design Report will serve as the engineering report used to convey information on the project conditions, needs, objectives, transportation conditions, environmental concerns, feasible alternatives, and cost basis for the selection of the preferred alternative.

The Consultant shall follow the latest version of NYSDOT Project Development Manual and/or the NYSDOT Procedures for Locally Administered Federal Aid Projects for preparation of the Project Scoping Report/Final Design Report (PSR/FDR) to obtain design approval. The actual format and sections of the Design Report must follow the PSR/FDR Shell available on the NYSDOT website.

The website for the NYSDOT Project Development Manual is:

<https://www.nysdot.gov/divisions/engineering/design/dgab/pdm>

The website for the NYSDOT Procedures for Locally Administered Federal Aid Projects is:

<https://www.nysdot.gov/divisions/operating/opdm/local-programs-bureau/locally-administered-federal-aid-projects>

In conjunction with the Design Report, the Consultant shall prepare the National Environmental Policy Act (NEPA) and the State Environmental Quality Review Act (SEQRA) checklists and the City Environmental Quality Review (CEQR) Process for inclusion in the Final Design Report. The determination and the checklist shall be included in the report as an appendix.

The Design Report shall be submitted to the NYCDDC and other Agencies designated by the Commissioner for review and comments. Upon approval from the NYCDDC, the Design Report will be sent to NYSDOT for Final Design Report Approval.

4.2 TOPOGRAPHIC SURVEY

Under this task the Consultant shall execute a Topographic survey and produce a Composite Utility Plan in conjunction with the Project.

A. LIMITS

1. The location and limits of the Topographic Survey are described in the Specific Requirements for each project.
2. The limits of the Topographic Survey(s) shall extend into intermediate intersections a distance of 50 feet, measured along the center line of the respective street from the building line projection, and 50 feet beyond the perimeter of all islands and gores. Additionally, the topographic survey shall include terminal intersections and extend 50 feet beyond into each intersection leg.
3. The surveyor shall locate property possession lines within the limits of the Topographic Survey.

B. GENERAL

1. The Consultant shall submit, for approval, the names and experience portfolios of all persons and Sub Consultants proposed for use concerning Topographic and Utility Survey(s) before start of work.
2. The Survey work shall include the field and office work, including drafting, required to make topographical and base line surveys, prepare Plan and Profile drawings and base line maps.
3. In preparing the Plan and Profile drawings, the Consultant shall take cognizance of the basic minimum requirements set forth herein, together with such other requirements as may be necessary for the complete fulfillment of this contract for the purpose for which it is intended.
4. All survey work shall be in the English System (U.S. Survey Foot).
5. All right-of-way (ROW) data, including baseline (centerline of ROW), baseline ties to survey control traverse, location of possession lines and location of property lines shall be prepared by a New York State licensed Land Surveyor. All topographic and utility data shall be prepared by or under the direct supervision of a licensed Land Surveyor. The Composite Utility Plan shall be prepared by a New York State licensed professional engineer.
6. The Datum Plane shall be "as in use" by the respective Borough President's Office unless otherwise directed by the Commissioner.
7. Aerial Photogrammetry may be utilized for the preparation of survey plans as outlined in Section E. However, the Consultant will be required to conduct a detailed Topographical and Utility Survey by using standard electronic/manual methods to produce utility/composite plans as per the contract specifications.
8. All elements of the Topographic Survey(s) shall be referenced by station and offset to a Center Line Baseline for the Mapped Street which shall be established/coordinated/tied into the coordinated survey traverse, in accordance with the current Departmental Standards
9. A stationed R.O.W. centerline baseline shall be provided and tied to the possession and/or R.O.W. lines.
10. All survey work procedures, minimum accuracy, and error of closure standards for traverses and/or Bench Runs shall conform to specifications required herein.

C. INFORMATION TO BE OBTAINED AND SHOWN

The complete topographical surveys are to be referenced by station offsets to the borough monument lines, or to base lines established from said borough monument lines or to established building lines in mapped streets, with all elevations referenced to established borough bench marks or to bench marks set from said borough bench marks. Where no physical monument system exists the Consultant shall research the survey record diagrams of local properties to identify fixed points on ground that have known dimensional ties to the legal Block and Lot lines that abut the project limits. Where no City coordinate system exists, the Consultant must perform the work in the required NY State Plane Coordinate system. Upon written authorization from the Commissioner, the Consultant may use an independent coordinate system.

The Topographic Survey(s) shall identify and locate all legal dimensions, property boundaries, and physical features within the contract limits that are needed to produce a comprehensive design, including, but not limited to, the following information:

1. Streets, Pavements and Curbs

- a. Established R.O.W. width and legal grade of streets and easements. The established R.O.W. width shall be based on the lines as shown on the Final Maps for each respective borough's Topographical Bureau Final Map, or if the street has been revised, shall be based on the lines as shown on the Alteration Map for the same section of roadway.
- b. Location and widths of existing streets, roadways, sidewalks and grass areas; and edge of pavements.
- c. Block dimensions. If dimension can not be obtained from the Final City Map, block dimensions can be obtained from other sources such as Tax maps, private surveys etc.
- d. Block interior corner angles.
- e. Location and type of material of curbs, drop curbs, driveways, sidewalks, headers, edges of pavement and changes in types of pavements.
- f. Elevations of the street surface (to nearest hundredth of a foot) at fifty (50) foot intervals including P.C.'s, P.T.'s, midpoint of corner curbs, and changes in grade that are six (6) inches or greater, taken at the center line of road, top and bottom of curbs or edge of pavement, back of walk, and right of way line.

2. Properties, Buildings, Walls, Overhead Structures

- a. Location and frontage size of the existing buildings abutting the street, identified by house number, type of building (frame, brick, etc. as well as use such as school, gas station, commercial, residential etc.), and number of stories, entranceways, together with elevation of first floor, garage entrance and elevation of basement and/or cellar doors.
- b. Lot and block numbers for each building.
- c. Location and identification of all abutting tax lots by Lot and Block Numbers (including those encroaching into the mapped right-of-way).
- d. Location of all street encroachments including but not limited to hedges, fences (including height, type of material), steps, stoops, cellar doors, gratings, and connecting manhole located outside of project limits.
- e. Locations, height, width, and type of material of retaining walls.
- f. Location and elevations giving clearance of the undersides of overpasses, ramps and bridges and all columns and abutments for all grade separating structures.

3. Surface drainage structures and sewers

- a. Location of all surface drainage elements including, but not limited to swales/ditches, brooks/creeks, streams/channels, watercourses, retention area, headwalls, swamp areas, and other drainage structures or appurtenances.
- b. Location of all types of sewers, manholes, catch basins, inlets and their connections to the sewers. Also, location of the nearest connected sewer manhole (which may fall outside of the project limits).
- c. Rim (center of the cover) and invert elevations of the manholes and inverts of existing sewers and their direction of flow. Size and type of sewers, size of manhole covers, location of forced mains, and pumping stations.

4. Utilities and Subsurface Facilities

- a. Location, identification and size of all utility manholes, vaults, transformer chambers, valve boxes and gratings.
- b. Location of water mains, electrical conduits, gas mains, telephone conduits, traffic signal conduit systems, street lighting conduit and feed systems, fire alarm systems, steam lines, and fuel oil lines.
- c. Location and size of subways and tunnels, subway entrances, emergency exits, stairs, ventilation gratings, fan chambers, any other Transit Authority structure, and visible railroad and/or trolley tracks.
- d. The Consultant shall research all available records of public and private utilities to obtain information regarding the type size and location of existing utility facilities that exist within the project limits defined herein.
- e. The Consultant shall reconcile discrepancies in the location and identification of subsurface elements between the topographic survey and utility records.

5. Surface Features and Overhead Utilities

Location of all physical topographical features, including but not limited to, hydrants, bollards, lampposts, telephone and electric poles, including guys, identification as may be shown on pole, fire alarm boxes, mail boxes, traffic stanchions location, and clearance of wire crossing over roadways.

6. Trees and other Surface Conditions

- a. Location and caliper of trees. The caliper shall be measured in 2" increments at a location of two feet above the base of the tree.
- b. Location of rock outcrops, ditches, brooks creeks, streams, swamp areas, wooded areas, etc.

7. Shore Lines and Soundings

- a. Location, limits and description of existing shorelines and bulkhead lines, pierhead lines, designated wetlands, easements, Land grants and Land grant easements.
- b. Soundings shall be shown for a minimum distance of 100 feet beyond the existing shoreline or bulkhead for a width of 75 feet on each side of the centerline of the street. The soundings shall be shown on a grid system at 25-foot intervals.

8. Intersections

- a. Elevations of the street surface (to nearest hundredth of a foot) at P.C.'s, Midpoint, P.T.'s and/or change in grade, six (6) inches or greater, taken at the centerline of road, top and bottom of curbs and at house lines.
- b. Topographic information as described in this section above shall be obtained at intersections into the lateral streets for a distance of 50 feet from the R.O.W. lines on each side of the route of the limits of the project, unless otherwise directed.

9. Additional Requirements for Highway Projects

- a. The precise location of property and "possession" lines, where different from property lines – which shall be tied to the roadway centerline baseline and the survey traverse. Possession lines and/or property line shall be identified by a deed search for each property listed.
- b. Identification of all types of right-of-way and mapped streets, including "paper" streets, tax map streets, utility easements and private streets by name/location.
- c. Identification of plazas, malls and public areas.
- d. Location of corner curb, pedestrian ramps, distinctive/special sidewalk areas, bus pads, traffic islands and traffic channelization and vaults.
- e. Location of sidewalk hardware such as coal chutes, oil fills, cellar doors, under sidewalk drains, sidewalk elevators, building sidewalk ventilation gratings, traffic signals, traffic signal poles, parking signs, parking meters, traffic control boxes, traffic controllers, traffic loop detectors, police call boxes, traffic stanchions, structural columns, artwork (all types), newsstand kiosks, sidewalk retail areas, areaways, railroad gates, trackage and cellar windows at grade.
- f. Direction of traffic (flow line of traffic), and the location and type of lane and crosswalk markings, including school cross markings.
- g. Horizontal locations shall be taken to the nearest tenth (1/10) of a foot.
- h. Vertical locations (elevations) shall be taken to the nearest hundredth (1/100) of a foot (or as specified by the Commissioner) longitudinally at fifty foot (50) stations.
- i. Full right-of-way, cross-sections stationed along the centerline baseline shall be taken at 50 feet stationing, centerline of intersecting streets, building lines at each intersection, property lines at each intersection, curbline(s) at each intersection, all breaks in grade. Stationing elevations shall be taken at the building line(s), fence lines, encroachment lines, top and bottom of curbs (including malls), 1/4 points of all roadway widths, center line of street, front and back edges of ribbon sidewalks, possession lines, and widening lines(s) where applicable.
- j. Spot elevations shall be taken at all street/sidewalk surface hardware locations. If utility is other than a manhole or small valve, elevation on all corners shall be taken. In addition, steps (top & bottom of first riser), platforms, all building entrances, all lot lines (at property line/fence line), first floors, garage floors, back of sidewalk at all pedestrian and vehicular entranceways, ground elevations at all pedestrian and vehicular building entrances and/or building line, traffic islands, top of curb at both ends of drop curbs, top and bottom of curb at centerline of all drop curbs, driveways at all garage entrances, parking aprons, intersections (as required), corners [within crosswalk sidewalk quadrant(s)], all sewer rims (center of the cover) and inverts, Transit Authority (TA) ventilator structures (all corners), TA emergency exits (all corners), and as otherwise required for design.
- k. The Consultant shall obtain additional spot elevations as follows: the curbside of tree base at the centerline of all existing trees and significant shrubs within the sidewalk areas, roadway areas and/or within right-of-

way, top and bottom of curb in front of all trees, average root zone elevations nearest curb, top of sidewalk at front edge and at back edge, fence line and/or building line.

- I. Clearance on all overhead structures that are less than 16 feet from the roadway, including the underside of each bridge/overpass stringer at each lane - including entrance and exit portal locations.

D. MINIMUM REQUIREMENTS FOR SURVEYS

For all survey work procedures, minimum accuracy, and error of closure standards for traverses and/or Bench Runs shall conform to specifications required herein.

1. Vertical Control

Benchmarks – One permanent benchmark must be set at each extremity of the job in places where they will not be disturbed by construction. For projects over 1000 feet long, permanent benchmarks shall be set at the extremities and a minimum of 700 feet apart and a maximum of 800 feet apart. Typical benchmarks on permanent objects include: steps, settlement cuts on brick buildings etc. or by setting copper plugs in concrete posts if other appropriate fixed points are not available. Benchmarks shall be referenced to the appropriate datum for the borough in which the work is being done. The required method of obtaining elevations is differential leveling. The accumulative error in benchmark elevations shall not exceed 0.002 feet per set-up. A minimum of two (2) Borough President Bench marks must be tied to and verified for each project. When Benchmarks exceed maximum accumulative error, other benchmarks must be reconnoitered and measured until found benchmarks meet accumulative error specifications. All benchmarks must be accompanied by a sketch and accurate description so as to be easily recoverable. All turning points shall be accurately described. If electronic differential leveling is to be used, the Consultant shall provide a sample printout for approval before proceeding with work. Using other methods to obtain elevations such as Trigonometric, Reciprocal leveling and or methods using GPS equipment is allowable, but must be pre-approved in writing by the Commissioner before work commences.

2. Horizontal Control

The complete surveys are to be referenced from established baselines/traverse, or tied to borough monument lines. Where no physical monument system exists, the Consultant shall research the survey record diagrams of local properties to identify fixed points on ground that have known dimensional ties to the legal Block and Lot lines that abut the project limits. Where no City coordinate system exists, the Consultant must perform the work in the required NY State Plane Coordinate system. Upon written authorization from the Commissioner, the Consultant may use an independent coordinate system.

The baseline shall include a minimum of one permanent mark at the beginning, ending and angle base line points including one point at each street intersection. All marks shall be permanent such as; cuts in concrete, Monuments as required in undeveloped areas (Section F), pre-existing borough monuments, masonry nails, re-bar or pipes with survey cap in grass area etc. All permanent marks (baseline/traverse control) shall be witnessed to three permanent structures in three separate quadrants, and measured to the nearest one hundredth of a foot (0.01'). The allowable minimum error (precision of closure) in the base line/traverse closure after angular adjustment shall be 1 in 20,000. Measurement methods, other than electronic Total Station, such as using GPS equipment is allowable, but must be pre-approved in writing by the Commissioner before work commences.

E. MINIMUM REQUIREMENTS FOR SURVEYS USING PHOTOGRAMMETRY:

1. If aerial survey methods are to be used, they must meet or exceed ASPRS Class 1 map accuracy standards for 1"=30' mapping (American Society for Photogrammetry and Remote Sensing).
2. When using aerial photography for the survey, consultant must supply the Commissioner with the electronic photo used for the project in either color and/or black and white photo. If digital photo, it can be delivered in a translatable file JPEG, BMP etc. In addition the Consultant deliver the electronic file of the planimetric information which was based on the photo (translatable to AutoCAD format).
3. **Vertical Control** (*No vertical control may be set using aerial GPS methods*)

Benchmarks – One permanent benchmark must be set at each extremity of the job in places where they will not be disturbed by construction. For projects over 1000 feet long, permanent benchmarks shall be set at the extremities and a minimum of 700 feet apart and a maximum of 800 feet apart. Typical Benchmarks on permanent objects includes: steps, settlement cuts on brick buildings etc. or by setting copper plugs in concrete posts if other appropriate fixed points are not available. Benchmarks shall be referenced to the appropriate datum for the borough in which the work is being done. The required method of obtaining elevations is differential

leveling. The accumulative error in benchmark elevations shall not exceed 0.002 feet per set-up. A minimum of two (2) Borough President Bench marks must be tied to and verified for each project. When benchmarks exceed maximum accumulative error, other benchmarks must be reconnoitered and measured until found benchmarks meet accumulative error specifications. All set benchmarks must be accompanied by a sketch and accurate description so as to be easily recoverable. All turning points shall be accurately described. If electronic differential leveling is to be used, the Consultant shall provide a sample printout for approval before proceeding with work. Using other methods to obtain elevations such as Trigonometric, Reciprocal leveling and or methods using GPS equipment is allowable, but must be pre- approved in writing by the Commissioner before work commences.

4. **Horizontal Control**

A traverse shall be established to tie in all aerial controls. All traverse points shall be permanent marks such as; cuts in concrete, Monuments as required in undeveloped areas, pre-existing borough monuments, masonry nails, re-bar or pipes with survey cap in grass area etc. All permanent marks (baseline/traverse control) shall be witnessed to three permanent structures in three separate quadrants, and measured to the nearest one hundredth of a foot (0.01'). The allowable minimum error (precision of closure) in the traverse after angular adjustment shall be 1 in 50,000. Measurement methods, other than electronic Total Station, such as using GPS equipment is allowable, but must be pre-approved in writing by the Commissioner before work commences.

F. REQUIREMENTS FOR UNDEVELOPED AREAS

1. In undeveloped areas such as park areas, all topographic information shall be obtained within the width of the Right of Way as shown on the Final City Map of the proposed project or where no map exists, information shall be shown within a width of 50 feet on each side of the Centerline of the proposed project.

2. Where the work is in an undeveloped area, the survey work shall include the establishment of a baseline and benchmarks according to the following requirements:

- a. The baseline shall be established with concrete monuments at beginning, ending and angle base line points and shall not be spaced more than 780 feet apart. Monuments are to be established by making cut marks on fixed object (curbs, sidewalks, etc.) where possible. Where fixed objects are unavailable, concrete monuments are to be set as described in (B) below. The allowable minimum error (precision of closure) in the baseline/traverse after angular adjustment shall be 1 in 20,000.
- b. Concrete Monuments - Monuments shall be of concrete, 4"x4", 4 feet in depth, flush with natural ground.
- c. Monuments shall be located so that they will not be disturbed during construction of the Capital Project. A copper plug shall be set in the top of the concrete cylinder portion of the monument or may be substituted for another type of marking as pre-approved by the Commissioner.
- d. Horizontal and Vertical Control specifications must be met as described in section D and E.
- e. Sufficient fixed witness points shall be set for each base line monument far enough away so that construction operations will not disturb them.
- f. Cross-sections stationed along the centerline baseline shall be taken at 50 feet stationing, centerline of intersecting streets, R.O.W. lines at each intersection, curb line(s) at each intersection, all breaks in grade. Stationing elevations shall be taken at the building line(s), fence lines, encroachment lines, top and bottom of curbs or edge of pavement (including malls), 1/4 points of all roadways widths, center line of street, front and back edges of ribbon sidewalks, possession lines, and widening lines(s) where applicable.

G. BASELINE MAP FOR UNDEVELOPED AREAS:

1. Where the work is in an underdeveloped area, a map showing the base line shall be prepared. The map shall show the base line with all cuts and witnesses for each base line monument. If necessary, enlarged details shall be drawn to show the witnesses. Borough President monuments shall be shown with their coordinate. Distances between cuts, base line angle and coordination of angle points on the base line shall be included. The map shall give descriptions of the benchmarks and their elevations with respect to the borough datum plane.

2. The map shall be at 1"=30' scale, on 28"x40" size drawing, properly titled with a reference to the proper datum plane, scale and date included

H. RECORD MAINTENANCE

1. The Consultant shall keep all field notes and office computations in a neat and orderly manner, and clearly indexed. These field notes and computations shall be open for inspection and checking during the course of the work and shall be available for review thereafter. The Consultant shall, at all times, cooperate with the Commissioner for such checking of field work as may be necessary.
2. The Consultant is required to keep copies of all submitted documentation for a minimum of six years after contract is fulfilled for the Department to access upon request. During the contract period, upon request, the Consultant shall provide the Commissioner/representative with legible copies of all field notes on standard loose leaf field book that contain standard survey formats. Notes on the drawings shall refer to field book number and respective pages.

I. PREPARATION AND SUBMISSION OF DRAWING

1. The Consultant shall prepare drawings for the specified locations of the proposed Capital Project by means of Computer Aided Design and Drafting System (CADD).
2. All surveys in this contract shall be plotted on a CADD system and the computerized drawings shall be submitted in AutoCAD 2010 or latest edition "DWG" format. Data files shall be submitted in ASCII format. Drawings shall be layered in accordance with current Department requirements. Use of x-refs are prohibited.
3. All drawings shall conform to the Department standards, which include object naming conventions and integrity, special line style, symbology, character styles, layering conventions, file names and drawings codes.
4. All electronic media shall be sent on CD-ROM.
5. All media shall be clearly labeled and a listing shall be provided along with the media to verify contents of media.
6. The Commissioner will provide samples of line styles, character styles, symbology, object names and allowable layers.
7. The Consultant shall also supply the following information:
 - a. A key plan on the cover sheet with areas delineated and numbered corresponding to the areas and sheet number of the Survey with the legend, shall be shown. For projects of 4,000 linear feet or more, the key plan shall be prepared by the Consultant. The layout and sheet numbering of the project area will be reviewed by the Commissioner for sufficiency of design purposes before submission of preliminary survey drawings. Layout must be approved in writing by the Commissioner before submittal of preliminary survey drawings.
 - b. All maps, records and documents used in the preparation of the completed survey, including all available records of public and private utilities within the project limits.
 - c. The Consultant shall submit to the Commissioner all original survey field notes.
8. The Utility Profile shall be plotted under the corresponding Plan view.
9. Where the work requires only one sheet, the sheet shall be arranged so that sufficient space is available for notes legend, and key plan.
10. The Plan and Profile drawings shall show a match line to tie together areas depicted on different sheets.
11. Where more than one sheet is required, the sheets shall be numbered consecutively.
12. All individual locations shall show the North Meridian oriented to top of drawing or to right margin of the drawing.

J. CLEAN BASE PLANS

1. The Consultant shall prepare Clean Base Plans - which shall be graphic representation of the project that is suitable for use as a base plan set for the development of Schematic, Preliminary, and/or Final Contract Documents. Graphic elements that shall be shown include mapped right-of-way lines (including lengths, block

interior angles and ROW widths, Legal Grades), property lines, possession lines, lot lines, Block and Lot numbers, house number, buildings (including number of stories, type and usage), ancillary development, street/sidewalk hardware (manhole covers, poles, etc), existing curblines and edges of pavement, bulkhead and pier head lines, limits of wetlands, easements, trees, theoretical centerline baseline with stationing, and north arrow.

2. Text elements shall be limited to street names, stationing, and other "NECESSARY" items. Generally, elements to be excluded include, but are not limited to: elevations, lane lines, redundant text, "condition" text. There shall be no labeling of walks, grass, etc. The Consultant shall submit a "one-sheeter" sample for approval prior to the development of the Topographic Program. No elevations will be shown on this plan. The base map shall be plotted on a separate 28"x40" (F) size with a horizontal scale of 1"=30'.

K. TOPOGRAPHICAL PLAN

1. The Topographical Plan(s) shall be plotted by superimposing the Topographic Survey data on to the Clean Base Plan.
2. Inverts and Rim (center of the cover) elevation shall be shown for sewers and catch basins. All street surface elevations as described in section C.1 "f" shall be shown. Elevations shall be shown on City owned "irons" only (not on private utilities). Legal grades shall be shown. Separate spot elevation drawings shall be produced where a full data plotting would produce a "crowded" presentation - as directed by the City.
3. Topographical Plan(s) limits shall be coincident with the topographic survey limits and as herein defined - including the nearest connected manhole outside the project limits.
4. The Topographical Plan(s) shall be of 28"x40" (F) size, and the scale of the drawings shall be 1"=30'. The scale shall be shown below the Plan view.

L. UTILITY PLAN AND PROFILE

1. The Utility Plan(s) shall be plotted by superimposing the Utility data on the Base Plans excluding all shown elevations in the Plan view (except for Legal Grades, which must be shown both in Plan and Profile view).
2. The Utility Profile(s) generally shall include cross sections of all sewer manholes, and all sewer pipes which are shown on the utility plan (excluding those on side streets). In addition, rim and invert elevations for all shown manholes, and invert elevations, sewer type, size, and pipe material for all shown sewer pipes must be indicated. Legal grade and roadway center line profiles must also be shown on the utility profile. .
3. Sewer and Water utilities shall be identified by approved line type with the following information identified: type of utility, size, configuration, etc.
4. Existing and/or "From Record" Sewer and Water utility lines shall be indicated and plotted to scale with approved line types.
5. Inverts and Rim elevation shall be shown for sewers in Profile view only.
6. Profile(s) limits shall be coincident with the topographic survey limits and as herein defined.
7. The Profile shall be plotted under the corresponding Plan view on a sheet of 28"x40" (F) size, and the scale of the drawings shall be 1"=30' Horizontal and 1"=5' Vertical. The scale shall be shown below the Profile view on the drawing.
8. The drawings shall contain a statement of the datum planes for elevations.
9. R.O.W. centerline baseline stationing shall be shown in the Plan view.
10. Labeling of physical features is required on this plan.
11. Legal Grades shall be shown on both Plan and Profile view.
12. Water Main profile shall be shown when existing water mains are greater or equal to 24" in size.

M. HIGHWAY PROFILE DRAWINGS

The Consultant shall prepare separate profile drawings satisfying the following parameters:

1. The plotting of highway profiles shall include drawing to scales to be determined by the Commissioner, which shall generally include:
 - a. A horizontal scale, which is to be consistent with the horizontal scale selected for the Topographic Survey. (Current generally adopted scale is 1"=30')
 - b. A vertical scale which shall be customized to reflect the specific site and which shall require pre approval by the Commissioner. Datum planes shall be customized for each profile. (Current generally adopted scale is 1"=2')
2. Match lines shall coincide with those utilized for the plotted topographic survey(s). In addition, profiles shall be extended beyond match lines in either direction, as required, to include the adjacent intersection.
3. Legends and labels shall be drafted on each sheet along the length of the profile to ensure its clarity.
4. Two or more sets of profiles will be required for each street: either the Northerly and Southerly or Easterly and Westerly.
5. The following profile lines shall be plotted for each profile set: Center Line of existing roadway, Top of Curb, Bottom of Curb, Encroachment Line/Back of Sidewalk Line, Building Line, Property Line, Possession Line/Widening Line, and Legal Grade, unless otherwise approved by the Commissioner.
6. Each profile set shall contain numerical elevation values plotted and drafted for each profile line for all captured cross-sections, points, spot elevation and, shall include the location and size of fronts of buildings, abutting the street, identified by house number together with full length plotting of first floor elevations, doorways, entranceways, garage floors, loading docks and bays, and overhead structures.
7. All profiles shall be plotted on screened grid, clearly labeled and stationed with numerical axis values shown. Legend of line types shall be shown on each profile sheet.

N. SURVEY CONTROL MAP

1. A 1"=50' scale plot (or scale suitable to DDC) of the traverse showing angles and/or bearings, elevations of points, point number and coordinates of points, distances of the traverse lines, and nearest street names, along with the designation and type of points, shall be shown.
2. Witness ties to Horizontal Control shall be plotted separately at a smaller scale.
3. The above plan shall be submitted along with the field notes when submitting the preliminary drawings.

O. 3-D FORMAT

In order to ensure that the electronic CADD files submitted are deemed usable by DDC's design group and/or DDC's consultant, the CADD files must contain 3-D intelligence for all major drawing elements so that a 3-D surface model can be created.

Following is a list of some of the major drawing features which may be encountered during plan preparation that must contain 3-D intelligence and how they are to be depicted in the electronic CADD file submittals:

1. All curb lines (top & bottom), edge of pavement lines (concrete, asphalt, stone, etc.), edge of sidewalk lines and roadway centerlines shall be created as a 3-D polyline/breakline.
2. All Utility and Highway profiles must be in 3-D intelligence and submitted in a format which is usable with any 3-D design package delivered in Autodesk DWG format.
3. All major grade changes depicted in within the drawing file shall be created using 3-D polylines/breaklines. Examples of major break changes may include sloping embankments, driveways, building steps and entrances, constructed walls, on-site drainage swales, overhead railway structures, bridge abutments, etc.
4. All standard DDC symbols utilized in the creation of the working drawing shall be inserted at the field located elevation and remain as an intelligent block (do not explode the inserted blocks into separate entities).

5. All 3-D polylines/breaklines created within the electronic CADD file must be one continuous line segment.
6. When requested, all contour information depicted within the supplied CADD file must retain its original 3-D intelligence and be usable with any 3-D design package delivered in Autodesk DWG format.
7. All electronic design files submitted to the NYCDDC during the Preliminary and Final submissions ***MUST*** be in the Carlson File Format to ensure a seamless transition of data between Consultant and Client Agency. The files required to be submitted are; Field Coordination Data (.crd), Existing Surface Data (.tin), Profile Data (.pro), and Alignment Data (.aln).

P. DOCUMENTS TO BE DELIVERED

The following survey materials shall be delivered to the Commissioner on completion of survey:

1. All computations (Raw data files and all electronic files supporting the survey including 3-D files) and all original field notes - shall be permanently bound, sharp, clear, crisp, clean and "fixed", dated, suitably indexed and in a format as approved by the Commissioner, signed and sealed with original seal and signature by a New York State Licensed Land Surveyor.
2. All computations (Raw data files and all electronic files supporting the survey) shall be submitted on CD ROM.
3. All original notes and all utility drawings, plans and plates, including but not limited to the following:
 - a. All As-Built Sewer Information, including As-Built structural details of chambers.
 - b. All utility plates (electric, telephone, gas and fire, cable, etc. from affected utility).
 - c. All NYC Transit Authority Information (including Conrail, Amtrak, Metro-North and LIRR), including electric ducts and structures as available from Transit Authority within 25' beyond the project limits.
 - d. All Water Main Information, including schematic distribution plans [DDM(s)], tap cards, and Field cards from DEP.
 - e. Section and Final Maps obtained from Borough President's Topographical Section.
 - f. All relative information from NY State DOT Highways (as-built drawings etc).
 - g. Tax maps, Alteration maps, monument worksheets, Final Sections etc.
4. Where the Consultant employs electronic surveying methods he/she shall provide a description of computer programs employed, the equipment used in connection with the survey, the CADD drawing and survey data files, and the survey computations - all in a format and medium to be pre-approved by the Commissioner.
5. The Consultant shall identify and provide the Commissioner with original working copies of all survey data source/reference material.
6. When using aerial photography for the survey, consultant must supply DDC with the actual photo of the color and/or black and white photo. If digital photo, it can be delivered in a translatable file JPEG, BMP etc. In addition the Consultant shall deliver the electronic file of the planimetric information which was based on the photo (translatable to AutoCAD format).

Q. PRELIMINARY SUBMITTAL

Four (4) sets of preliminary black and white prints of the legend sheet, Clean Base Map, Topographical Plan, Utility Plan and Profile, Highway Profiles, and Survey Control drawings including all traverse/baseline (and undeveloped area baseline, if applicable) drawings (Stamped Preliminary in RED), shall be submitted to the Commissioner for approval. Included with the preliminary drawings all deliverables, as described in section "P", shall be submitted along with dated transmittal letter. The transmittal shall be referenced to all job naming conventions such as: Project Capis ID. number, Project name, Contract Capis ID. number, and Contract Borough.

A sample color print of a drawing, selected by The Commissioner, in 3-D format shall be included in the Preliminary submittal.

R. FINAL SUBMITTAL

Upon acceptance of the preliminary Clean Base Map, Topographical Plan, Utility Plan and Profile, Highway Profiles, and Survey Control drawings, the Consultant shall hand deliver to Commissioner, the following:

1. A complete set of the plotted legend sheet, Clean Base Map, Topographical Plan, Utility Plan and Profile, Highway Profiles, and Survey Control drawings including all traverse/baseline (and undeveloped area baseline, if applicable) drawings, in ink, on reproducible drafting film (mylar, 4 mil) with original signature and seal of approved New York State Licensed Land Surveyor.
2. Two (2) sets of paper prints of the plotted Clean Base Map, Topographical Plan, Utility Plan and Profile, Highway Profiles, and Survey Control drawings including all traverse/baseline (and undeveloped area baseline, if applicable) drawings with original signature and seal of approved New York State Licensed Land Surveyor.
3. All electronic data and drawing files for the Final drawings and the survey Control Traverse, Topographic Survey in the required formats (AutoCAD 2010 or latest edition, ASCII and 3-D).

4.3 TRAFFIC STUDY PROGRAM

1. Under this task the Consultant shall develop a Traffic Study Program to incorporate the traffic data and analyses requirements of all other tasks included in the Specific Requirements of this Contract, and to supplement any available traffic data and analyses as necessary. Traffic data collection and analysis shall follow the guidelines provided in Exhibit 1 of Appendix III of NYCDDC Design Guidelines and Directives. The Consultant shall:

- a) Review available traffic/transit data and/or analyses conducted within the last three years (including Automatic Traffic Recorder (ATR) counts, manual turning movement (TM)/vehicle classification (VC) counts, pedestrian/bicycle counts, transit information, travel time and delay runs, physical inventory of study location(s) and corridor(s), official and field verified signal timing, vehicular and pedestrian Levels of Service (LOS) analyses, accident data and analyses, etc.) and determine the adequacy of and need to update such data and analyses to meet the requirements of this Design program.
- b) Identify, utilizing the project limits as the traffic study area, the locations and types of data to be collected including the number of additional Automatic Traffic Recorder (ATR) counts, TM/VC counts, pedestrian/bicycle counts, etc. ATR counts shall be taken at all major street approaches for nine consecutive days (including two weekends) and summarized in 15-minute increments. ATR counts shall be collected and summarized in approved state (NYSDOT) and city (NYCDOT) formats.
- c) Conduct TMC and pedestrian/bicycle counts at all signalized and unsignalized intersections, and locations that exhibit operational and safety concerns for the AM, midday, PM peak periods during typical midweek days (Tuesday, Wednesday, and/or Thursday) as well as on weekends (Saturday/Sunday), if deemed necessary. TMC counts shall be collected concurrently with the ATR counts and should be summarized in 15-minute increments.
- d) Perform vehicle classification counts, concurrently with the TMC, and summarized in 15-minute increments for each peak period to estimate heavy vehicle percentages for intersection levels of service (LOS) analyses, and to identify number of axles needed for pavement design.
- e) Indicate all existing lane delineations and dimensions. Review and identify any inconsistencies in the official marking drawings and the field conditions within the project limits, including all terminal intersections. A scaled CAD drawing of the existing conditions must be submitted that should include existing lane configuration/assignments, curb regulations, bus stop locations, turn prohibitions, driveways, fire hydrants, sidewalk widths, street furniture, crosswalk widths and type (school, regular and hi-visibility), type of traffic controls (i.e., signal, stop, etc.) and any other features that would impact traffic flow, and affect curb use as well as design considerations.
- f) Conduct a field observation to identify instances of double or illegal parking, queue length and number of queued vehicles (if possible), and any other observations that are relevant to reflect existing condition LOS.
- g) Identify the additional research and analysis of accident data that is needed to provide for the proper completion of the other Tasks included in the specific requirements of this contract.

The Traffic Study Program should include a graphic presentation of all intersections to be included in the traffic study as well as the CAD file as described above.

2. The Consultant shall submit the proposed Traffic Study Program to the Commissioner for review and approval.
3. The Consultant shall submit for approval, the names and experience portfolios of all persons and subcontractors proposed for use in connection with the Traffic Study Program including traffic counts prior to start of work.
4. Upon approval of the proposed Traffic Study Program, by the Commissioner, the Consultant shall perform the required ATR and TMC, vehicle classification counts, pedestrian/bicycle counts, etc. to identify peak hours for traffic, transit and pedestrian analyses; determine traffic volumes to be used for levels of service analyses, signal warrant studies, pavement design(s), etc.; and to estimate the percentage of truck volumes and number of axles as necessary. Vehicle classification counts shall identify heavy vehicles including trucks and buses by number of axles.

5. The Consultant shall research the crash records of the New York City Police Department and the New York State Department of Transportation to obtain the latest available (three-year period) crash data (for vehicular, pedestrian and bicycle accidents) at intersections and mid-block locations within the project limits (including all terminal intersections and contiguous to the project limits, where needed). The consultant shall identify high-crash locations and make recommendations to improve pedestrian, bicycle and vehicular safety. A high crash location is one where there were 48 or more total crashes (reportable and non-reportable) or five or more pedestrian/bicycles injury crashes in any consecutive 12 months of the most recent 3-year period for which data is available.

6. The Consultant shall visit the site and become familiarized with the site conditions, analyze the latest available three-year accident data to determine accident patterns and probable contributing factors, and shall identify all substandard conditions contributing to the accidents, and propose appropriate mitigation measures.

7. The Consultant shall contact the respective NYCDOT's Borough Commissioner's Office for records of all outstanding traffic-related (i.e., pedestrian, bicycle, and vehicular) operational and safety complaints submitted by the Community Board(s) having jurisdiction over the project area, for consideration and improvements.

8. The Consultant shall contact the Department of City Planning (DCP) and NYC Economic Development Corporation (EDC) for information about any planned and/or approved future developments/actions (to occur within the project's design year) located within or at the close proximity of the project limits that can have potential impact on traffic throughout the project area.

9. The Consultant shall consider the traffic generators, land use, zoning, bus and bicycle routes, etc. that can impact the present and future traffic operations, and incorporate information with appropriate maps in the report.

10. In accordance with the NYCDOT procedures, the Consultant shall prepare signal warrant studies for unsignalized intersections that exhibit operational and safety problems in accordance with the approved Traffic Study Program. The Consultant shall prepare a left-turn signal warrant study if a left-turn phase is proposed. The signal warrant forms may be obtained from NYCDOT's Signals Division. The completed forms shall be submitted to Signals Division for review and approval.

11. The Consultant shall prepare a balanced traffic flow map and perform levels of service (LOS) analyses using the latest version of the Highway Capacity Software (HCS) or other software (i.e., CORSIM, AIMSUN, VISSIM, SYNCHRO, etc.) to be approved by NYCDOT for each analysis peak hour for the existing and future (design year with and without the project) conditions. In addition, a balanced traffic flow map and LOS analyses for estimated time of construction completion (ETC) shall also be prepared for each analysis peak hour. All signalized and unsignalized intersections that are identified for operational and safety concerns shall be included in LOS analyses. Accordingly, the Consultant shall recommend appropriate improvement measures as required.

12. The Consultant shall determine the future level of service based on the projection of traffic volumes that are expected to occur within the estimated time of construction completion plus the expected service life of the project (Design Year). The consultant shall use ETC+20 for design year traffic forecast, unless otherwise directed by the Commissioner. The New York State Department of Transportation's (NYSDOT) guidelines shall be followed if the project receives state or federal funds.

Pavement preventive and corrective maintenance as well as safety-related work do not usually require the design year traffic forecast. Year ETC+5 peak hour turning movement volumes should be determined for proposed signal installations that will meet the signal warrants in the design year, but do not meet the warrants for ETC+0.

Future LOS analysis shall be performed for both the no-action (future without the project) and action (future with project) conditions. The growth rate, presented in Exhibit 1 of Appendix III of NYCDOT Design Guidelines and Directives, used in determining the projected traffic volumes shall be subject to approval by the Commissioner.

13. The consultant shall use Mid-LOS "D" design criteria for project improvements that apply to intersection lane group(s) rather than the intersection approach or overall intersection. If future operation of a lane group exceeds mid-LOS "D", reasonable and feasible traffic improvement measures must be recommended so that the lane group is returned to mid-LOS D in the design year without adversely affecting another lane group. Identification of feasible and practical improvement measures should also be guided by NYCDOT's 2009 Street Design Manual, the detailed guide to the City's transportation policies.

14. The Consultant shall submit its draft findings and recommendations from the various studies performed under this task in a Traffic Study report to the Commissioner and shall revise the report in accordance with comments provided by the Commissioner.

15. Upon acceptance of the Traffic Study report by the Commissioner, the Consultant shall incorporate the results and recommendations of the traffic study into the other tasks included in the Specific Requirements for the Project.

4.4 HARDWARE AND BASIN CONDITION INVENTORY

1. Under this task the Consultant shall prepare hardware condition inventory of all existing City-owned (includes public authorities) manholes, catch basins/inlets, valve boxes, seepage basins, etc., and all related hardware including frames, adjustment rings, and covers within the project limits.

2. The Consultant shall visit the site and verify the existence of all City owned hardware (including public authorities) shown on the topographic survey within the project limits, reconcile any City- owned hardware discrepancies and correct the topographic survey. In addition, the consultant shall perform a visual inspection of the interior/exterior of all existing City-owned hardware and shall:

- i) Identify the Size of manhole covers (not including the frame), condition of manhole covers and frames, material (brick/concrete/other) and condition of manhole structures;
- ii) Identify the size and type of basins/inlets, with or without curb piece, condition of frame, grating & curb piece, material and condition of basin structures, determine if catch basin has a hood over the connecting pipe;
- iii) Identify the Owner/Agency responsible for a particular piece of hardware;
- iv) Make reasonable attempts to sufficiently clean catch basins/inlets, manholes and seepage basins within the project limits where debris interfere with the inspection, and if not feasible, determine the need for cleaning of the structure;
- v) Identify each manhole, catch basin/inlet, valve box, seepage basin. inspected, by station and offset. If the plans with baseline stations are not available, all existing City-owned hardware as indicated above shall be located and referenced to the existing permanent objects/structures, and be identified on the plans;

3. The Consultant shall use the following criteria, when evaluating the condition of the hardware:

<u>ABBREVIATION</u>	<u>CONDITION</u>	<u>DEFINITION</u>
G	Good	Hardware is complete, all markings are clearly visible, sharp and appear new/fresh.
F	Fair	Hardware may have been chipped, etc. but this does not interfere with its functioning, markings are clearly visible/readable, no rocking, parts fit tightly together.
P	Poor	Rocking covers, misfitting covers, markings have substantially disappeared, worn frames.
B	Broken	Frame or cover broken, any visible parts are cracked, etc. which affect functioning.

4. The Consultant shall prepare and submit the hardware inventory incorporating all information indicated above, in tabular format. The Consultant shall also submit with the inventory table, an appropriately reduced scaled drawings of the project area that clearly indicate all identified manholes, catch basins/inlets, valve boxes, seepage basins, etc. reflected on the inventory table.

5. The Consultant shall perform the visual inspection of the existing manholes, catch basins/inlets, valve boxes, seepage basins, as an independent task. If the Consultant for his/her own convenience elects to perform the said inspection in conjunction with another assigned task in the project, he/she shall be required to obtain approval from the Commissioner for doing so, prior to performing the inspection.

4.5 SUBSURFACE EXPLORATION PROGRAM

A. Under this task the Consultant shall provide for the preparation of a Subsurface Exploration Program in conjunction with the Project. The Consultant shall perform soil borings, test pits and test strips, retrieve soil samples, analyze and classify soils, make subsurface investigations and perform geological research to provide soils data that is needed to complete the work required under all tasks that are included in the Specific Requirements for the Project.

B. The Consultant shall develop and prepare a subsurface exploration program indicating boring, test pit and test strip locations proposed. This subsurface exploration program shall be coordinated with any subsurface data provided by the City, and with any sub-surface data available from various public/private utilities, and shall incorporate all the boring, test pit and test strip locations developed for all tasks included in the Specific Requirements of the Design program. The proposed Subsurface Exploration Program shall be submitted to the Commissioner for review and approval.

C. The Consultant, complying with applicable City/State/Federal regulations, shall retain the services of a qualified boring contractor to obtain the required borings and two (2) inch split spoon soil samples, and shall provide supervision of said boring work. The Consultant shall provide for payment of required street opening permits. The boring subcontractor shall be required to provide a plumber's bond in accordance with current Department of Transportation requirements.

D. The Consultant, complying with applicable City/State/Federal regulations, shall retain the services of a sub-contractor to excavate required test pits, and shall provide supervision of said test pit work. The Consultant shall provide for payment of required street opening permits. The test pit sub-contractor shall be required to provide a plumber's bond in accordance with current Departmental requirements. The Consultant shall note and record the conditions of structures and facilities exposed by the test pits by taking measurements, making sketches and taking photographs.

E. The Consultant, complying with applicable City/State/Federal regulations, shall retain the services of a qualified soils laboratory to classify the soil by sieve analysis in accordance with the Unified Soil Classification System, to perform permeability tests as needed along the thirty (30) foot deep borings, and to ascertain the elevation of the existing groundwater table.

F. The Consultant shall make a visual and olfactory examination of the soil samples retrieved from the borings to determine the existence of noxious odors or other indicators of the presence of material that may be classified as hazardous.

G. Data obtained from the boring program shall be recorded in a format approved by the City and shall indicate soils information obtained and layer thicknesses encountered.

H. A photographic record of the soil samples retrieved shall be made for each boring.

I. Soil samples shall become the property of the Consultant and shall be stored in a secure location until all construction work has been completed and all related claims settled. The Consultant shall be responsible for the disposal of the soil samples. Storage and disposal of soil samples shall be in accordance with all applicable laws, rules and regulations.

J. Subsequent to review and acceptance by the Commissioner of the data obtained, the Consultant shall coordinate/incorporate the results of the subsurface exploration program into the relevant tasks that are included in the Specific Requirements for the Project.

4.6 VAULT PROGRAMS

- A. The Consultant shall execute Level I thru Level V Vault Programs in conjunction with the project. These program levels are identified as follows:

(Levels I and II - applicable to Preliminary Design Phase, if needed)

Level I Program	- Research and Inspection
Level II Program	- Survey and Presentation

(Levels III THRU V - applicable to Final Design Phase, if needed)

Level III Program -	- In-Depth Vault Exploration
Level IV Program	- Recommendations and Identification of Vault Treatment Alternatives
Level V Program	- Preliminary and Final Vault Design

- B. A vault, whether active, inactive or abandoned shall be defined, for the purposes of this task, as any space or enclosure below the sidewalk and/or roadway areas that is either directly or indirectly connected, at any time in the building's history, to the contiguous building structure. Areaways shall not be considered as Vaults.
1. Each "store vault" which may have been generated, at any time in the building's history, from the sub-division of a building vault shall be considered as one vault.
 2. Sub-cellar/sub-basement vaults shall be considered as separate individual vaults.
 3. Underground vaults, chambers or enclosures owned and operated by private utilities shall NOT be considered a vault except as herein stipulated.
- C. To determine precisely the existence and nature of building vaults the Consultant shall develop a program to research, inspect and reinspect, as necessary, all properties and/or buildings along the project streets that have or may have vaults constructed within the limits of the adjacent right of way. The Consultant shall identify all properties on which buildings are constructed up to and abutting the right of way line by Lot and Block Numbers, and by street addresses, and shall prepare a list of all such properties for inclusion in the proposed Levels I and II Vault Program. Subject to approval by the Commissioner, buildings that are set back from the right of way line may be omitted from the program.
- D. To assist the Consultant in completing the full requirements of the Level I Program, the Department will provide the Consultant with any available preliminary vault study information prepared in conjunction with this project, including all available notes, reports, information, measurements, etc., compiled in conjunction with said studies. The Consultant shall review the data contained in preliminary vault studies to ascertain the type and level of work required, and shall proceed with the verification and completion of any additional Level I and Level II requirements of this task, as stipulated herein. Any such preliminary vault study information provided to the Consultant is not intended to substitute for the requirements of the vault program.
- E. The scope of work for the Level I thru Level V Vault Program shall include the performance of the following services:
1. Level I Program - Research and Inspection. The Consultant shall ascertain the existence of active, inactive or abandoned below-surface vault spaces for all properties listed in the program and shall make inspections and/or take measurements as herein stipulated.
 - a) The Consultant shall make every reasonable effort to research all available sources for existing vault records. Particular attention shall be given to, but not be limited to, the following sources: The New York City Buildings Department; The New York City Department of Transportation's Division of Legal Affairs - Office of Litigation Services and Records Management, [55 Water St. new York, Phone (212) 839-9847]; The New York City Department of Transportation's Bureau of Highway

Operations (Permit Management Office/Plan Examination Unit), building owners and/or management agents, tenants, and the New York City Department of Finance.

- b) The Consultant shall perform visual field inspection of the sidewalk condition(s) and sidewalk features fronting each building face and/or vacant parcel for the purpose of making an "engineering judgment" regarding the existence of below-surface vault spaces.
- c) The Consultant shall enter and/or inspect the interior of all buildings/structures that are listed for the vault program, as required, for the purpose of determining the existence of cellar/basement entrances thereto.
- d) The Consultant shall enter and visually inspect all accessible basements, cellar and subcellar spaces within all contiguous buildings/properties/structures for the purpose of ascertaining the existence of active, inactive and suspected and/or abandoned building vault spaces, including Transit Authority facilities where applicable.
- e) The Consultant shall be solely responsible for obtaining permission from owners and/or tenants for entry into building cellar/basement areas or other areas of the site, as required, to perform the necessary inspections and/or measurements required in this and subsequent phases.
- f) Since access to cellar/basement areas will require multiple attempts, the Consultant shall be solely responsible for developing optimum schedules for access in performing the inspections and/or measurements required in this and/or subsequent phases.
- g) Based on the judgment of the Consultant, where an introductory letter could assist him/her in the performance of the vault program, the Consultant shall prepare, duplicate, mail and/or hand-deliver the introductory letters in accordance with a plan developed by the Consultant and approved by the Department.
- h) The name(s) and address(es) of the current owner of record of each vault shall be obtained by the Consultant.
- i) It shall be the responsibility of the Consultant to make translations of letters/notices where the Consultant deems it appropriate or where otherwise directed by the Department.
- j) The Consultant shall develop, subject to the approval of the Department, a vault numbering index/identification system suitable for the requirements of the Level I Program and all subsequent levels of the vault program. Consideration will be given to the use of house numbers.
- k) The Consultant shall prepare letters to the Department of Finance to ascertain if vault license fees have been paid for vaulted private properties.
- l) The Consultant shall present the data collected to the Department in an approved format.

2. Level II Program - Survey and Presentation

- a) The Consultant shall identify and measure all geometric features within and contiguous to the vault space in sufficient detail and accuracy to define the space and satisfy the requirements for providing all analyses, recommendations, and designs in all subsequent levels of the Vault Program. This shall include, but not be limited to, interior space dimensions (length, width, height), floor area dimensions, alcove dimensions, entrance/exit opening dimensions, access opening dimensions, stairways, foundations, building foundation wall (estimated), and location of cellar door/areaway access opening. The Consultant shall also provide the offset distances from face of the vault to the face of the curb line in front of the vault.

- b) The consultant shall provide a general description of the vault's structural system (i.e. the make up of the roof system and the walls) and it's condition.
- c) The Consultant shall study and determine the depth of the cover over the vault's roof, measured from surface of the sidewalk to top of the roof structure. The consultant shall determine the depth of the cover using non-destructive methods (i.e. surveying, etc.), and if utilizing such methods shall not be possible, the consultant shall then use other methods (i.e. probing, etc.) as approved by the Commissioner, to determine the depth of the cover. If any portions of the roof cover and/or the roof structure are disturbed due to Consultant's operations, the Consultant shall be required to restore the disturbed sections to their original conditions, as necessary. If the initial measurements indicate that the depth of the roof cover is more than two (2) feet, the consultant shall only be required to provide the approximate depth of the cover, and if the initial measurements indicate that the depth of the roof cover is less than two (2) feet, the consultant shall be required to provide the exact depth of the cover.
- d) The Consultant shall identify all features, and possible sealed off and inaccessible areas or vaults that require additional in-depth exploration.
- e) The Consultant shall reconcile or refute data obtained from records research and shall notify the Commissioner of all records research data which cannot reasonably be reconciled.
- f) The Consultant shall prepare all vault program notes on heavy-duty 8 1/2" x 11 1/2" waterproof paper stock, compiled in a loose-leaf format or as otherwise approved. All lines, text, sketches and symbols shall be clear, crisp, and suitable for reproduction and electronic storage. All sheets shall be numbered, cross-referenced to the approved index system, dated and signed. Original survey notes, sketches, data, etc., filed in loose-leaf format, shall become the property of the Department. The Consultant shall provide working copies, review copies and analysis presentation copies as requested by the Department.
- g) Inspections and notes shall be consecutive and complete: that is, where no vault space is pre-existing, a certification shall be provided as part of the survey notes which shall include a visual description of the cellar/basement external foundation wall, with the statement "No Vault".
- h) The Consultant shall coordinate with the property owner to assist the property owner in taking actions to expose possibly sealed-off vaults, including debris removal, for reasonable access by the Consultant.
- i) The Consultant shall maintain a meeting and coordination log for each property in a format approved by the Department, which shall include minutes of meetings, etc.
- j) The Consultant shall provide a suitable number of good quality color photographs to adequately describe each vault space, including any special features, utilities and/or services.
 - (i) The photographs shall be in color, 4" x 6", mounted in an 8 1/2" x 11 1/2" loose-leaf format.
 - (ii) The photographs shall be referenced in accordance with the index system established for the Vault Program and shall be shown in plan with photo angles and directions.
 - (iii) The original photographs in loose-leaf format shall be provided to, and shall become the property of, the Department (each house number shall be on a separate page or set of pages).
- k) The Consultant shall present the data to the Department in an approved format, which shall include the plotting of the vaults and incorporating all vault data herein obtained into the contract drawings for the project.

3. Level III Program - In-Depth Vault Exploration

- a) The Consultant shall develop, request proposals for, execute and supervise an In-Depth Vault Exploration Program, which may consist of, but not be limited to, test pits, core borings, concrete testing, line and grade survey in the sidewalk areas, and soil bearing capacity tests inside the vaults that are to be reconstructed. This work shall include complete restoration in conjunction with test pits, drilled holes, removed walls, etc.
- b) The exploration program shall generally:
 - (i) Verify the existence and extent of inaccessible spaces.
 - (ii) Provide soil bearing capacities for Buildings Department filings, where required.
 - (iii) Locate vault envelopes relative to the survey baselines(s) and elevation datum.
- c) The Consultant may be required to include one or more of the following items in the program for in-depth vault exploration:
 - (i) Metal Detection;
 - (ii) Sidewalk Test Pits (Vaults) - 2' x 3' x 3' deep.
 - (iii) 1/2" diameter Drilled Pilot Holes for Vaults, variable depth.
 - (iv) Soil Bearing Capacity Tests Inside Vaults (for foundation design).
 - (v) Interior Vault Closure Wall Removal - miscellaneous materials (non-structural).
- d) The Consultant shall submit a proposed exploration program, including the approximate location of each proposed item of work to the Department for review and approval.
- e) Upon receiving approval, the Consultant shall prepare a location plan for all proposed exploration work and also prepare estimates of quantities, specifications and descriptions of work in sufficient detail to fully describe the work.
- f) The Consultant shall identify and measure all visible structural elements of the vault space, including, but not limited to, bearing walls (material/thickness), columns (size), footings, beams (size/material), girders, roof slab material and structural system (visual inspection only).
- g) The Consultant shall identify, locate and measure all services and utilities within and contiguous to the vault space including, but not limited to, electric service panels (size of panel box, number of circuits, service ampere ratings, house distribution panel boxes), natural gas service (entry, meter, shutoff), water service (entry, meter, shutoff, electric ground, pipe size), house trap location, house trap vent location and size, ventilation system, air conditioning system, heating system elements, telephone lines, sprinkler systems, alarm systems, lighting systems.
- h) The Consultant shall provide a Certified Asbestos Investigator (CAI) to perform inspections and make an assessment of the possibility that asbestos installation(s) exist within the vault(s). All such installations identified shall be photographed and measured, and the results incorporated into a Preliminary Asbestos Inspection Report that shall be prepared by the CAI. The report shall identify and describe the location(s) and extent of possible asbestos installation(s). The photographs and measurements taken shall be included in a technical supplement to the Preliminary Asbestos Inspection Report.

Sampling and testing for asbestos, shall be performed, if needed.

- i) The exploration program shall also include sampling and testing for asbestos by a Certified Asbestos Investigator (CAI) in vaults. The Consultant shall provide a CAI for asbestos identification, sampling and testing; and for preparing/filing Buildings Department and New York City Department of Environmental Protection asbestos forms.
- j) The Consultant shall identify all decorative and miscellaneous elements of the vault space and contiguous areas including, but not limited to, floor coverings, ceiling and wall treatments/materials, built-in furniture, closure doors (type/material).
- k) The Consultant shall prepare complete architectural plans, sections, and elevations, for each vault identified, complete with framing plans, plumbing and wiring location diagrams, and dimensions to adequately present the survey data. Drawings shall be in contract document format and contract document drafting quality to a scale and sheet size as approved by the Department, and shall be fully referenced to the approved index system. Each house number shall be formatted on a separate sheet. Architectural plans shall be used for submission to the Buildings Department, for preparation of vault rehabilitation contract documents and/or other purposes as deemed appropriate by the Consultant, and shall incorporate all data obtained during the Level I Program for research and inspection.
- l) The Consultant shall fully develop and coordinate special conditions, provisions and requirements, including but not limited to maintenance of pedestrian and vehicular traffic, maintenance of frontage access, working hours and work schedules for the proposed in-depth vault exploration work.
- m) The Consultant shall prepare an estimate of cost for the proposed work with unit prices based on information available from the City, other sources, and/or labor material analyses, as required.
- n) The Consultant shall submit the original of all non-standard specifications, all special provisions and itemized cost estimate in a format as directed by the City. The originals shall be suitable for reproduction and binding as required.
- o) The Consultant shall provide the services of a survey party to adequately check contractor's work on the in-depth exploration.
- p) Consultant shall provide resident services to observe and set-up test procedures, record data and perform other specialized services as required to adequately complete the in-depth exploration program.
- q) The Consultant shall present all data, results and information in a report format.
- r) The Consultant may combine the in-depth vault exploration work with any Subsurface Exploration Program required under separate tasks that are included in the Specific Requirements of this Contract, upon written approval by the City.
- s) The Consultant shall evaluate the results of the in-depth exploration program to verify the appropriateness/adequacy of the data obtained for the purposes of successfully completing the vault program.
- t) All required Department of Transportation street opening permits in conjunction with the exploration program shall be paid by the Consultant, with reimbursement as an out-of-pocket expense. All insurance requirements shall be maintained in full force.

4. Level IV Program - Recommendations and Identification of Vault Treatment Alternatives.

- a) The Consultant shall review and analyze all available vault data obtained in connection with the vault program, and shall synthesize the data with a view to developing recommendations and/or alternatives in connection with the disposition of each vault. The Consultant shall become familiar with the proposed sidewalk surfacing treatment of the street improvement project, and shall integrate the treatment with the vault program.
- b) The Consultant shall evaluate the following vault disposition alternatives:
 - (i) Maintaining the vault space and roof/sidewalk slab as is.
 - (ii) Providing a new roof slab/sidewalk over the vault space to the required design elevation, while maintaining all services and utilities in place.
 - (iii) Abandonment of the vault space, which shall include the relocation of services and utilities within the vault, the bulkheading of all vault openings/entrances, and the partial demolition and filling in of the vault space.
 - (iv) Abandonment of the vault space, which shall include the bulkheading of all vault openings/entrances, the partial demolition and filling in of the vault space, and the relocation of services and utilities within the vault space by the owner.

Full consideration and study shall be given to, but not be limited to, the requirements of the adopted surface treatment and the setting and selection of sidewalk design grades.

- c) The Consultant shall submit all recommendations and findings in a "separate report" format for each house number. Suitable summary tables and graphics shall be provided as directed by the Department. These recommendations shall be presented at design meetings.
- d) The Consultant shall prepare a unit price estimate, based on assumptions relative to the design of each recommended vault disposition, and for one alternative.
- e) The Consultant shall meet with each New York City-located property owner to discuss/explain the findings and to coordinate the work by the owners, with particular attention to utility service relocations and opening/door entrance closures by the owner, and other special circumstances regarding the vault usage and/or disposition. Property owners located outside the City shall be contacted by certified mail, with return receipts.

5. Level V Program - Preliminary/Final Vault Design

Upon being directed by the Department, the Consultant shall prepare fully developed and fully coordinated contract documents for disposition of selected vault(s), which shall be incorporated into the street reconstruction project. The work shall include, but not be limited to:

- a) Preparation and development of Preliminary Plans for each selected vault in accordance with the respective vault disposition alternative report as approved by the Commissioner, with a sufficient level of detail to precisely describe the proposed vault work.
- b) The Consultant shall develop a preliminary Consultant's Estimate, for all vault disposition work, based on a quantity take-off of unit items, in accordance with the general practice of the Department. Where Departmental unit prices are not available, the Consultant shall develop unit prices based on time and material analysis and/or comparable prices, as approved by the Department.

- c) The Consultant shall provide the services of design consultants for the Vault Program for the following specialties: architectural/structural, HVAC, mechanical, electrical, and asbestos abatement.
- d) Preparation of Final Plans, Specifications and Consultant's Estimate for the Vault Program, subject to the approval of the Commissioner.
- e) Incorporation and integration of the Vault Program work into the composite street reconstruction contract documents.
- f) Filing with, and obtaining approval from, the New York City Buildings Department for proposed work in connection with the building vaults, including payment of all filing fees, as required.
- g) Coordinating with property owners and/or their authorized agents in the obtaining of property owner approvals and the execution of vault entry construction agreements, including all required preparation and registered mailings, with return receipts. An agreement shall be required for alteration of each vault.
- h) All vault data, survey notes, photographs, minutes of meetings with owners/tenants, estimates, treatment alternatives, Buildings Department documents shall be indexed by house number and cross-referenced to Lot and Block number, and shall be formatted/maintained in a Technical Supplement format for each house number.
- i) The Consultant shall be solely accountable to initiate all actions relative to owner coordination, the obtaining of data and information, owner/tenant consultations, incremental reviews of proposed designs by the Department, including all coordination meetings, as required to complete the vault program.

4.7 RAILROAD AND ABANDONED TROLLEY FACILITIES RESEARCH

1. The Consultant shall research available records regarding abandoned railroad facilities and trolley trackage within the project limits. The Consultant shall search the following record sources: The New York City Public Library Reference Desk, N.Y.C. Transit Authority, Private Utilities, Historical Societies, Trolley Museums.
2. The Consultant shall prepare an inspection/research form for each source, listing documents searched, date, time and results; individual forms shall be packaged into a technical supplement format.
3. The Consultant shall select and coordinate the location for test pits to ascertain the existence, nature, extent and location of abandoned railroad facilities and trolley trackage.
4. The Consultant shall combine the test pit program with any additional Subsurface Exploration Program required under separate tasks included in the Specific Requirements for the Project.
5. The Consultant shall provide field verification and field observation during test pit operations to ensure that all relevant available data is recorded at each test pit location.
6. The Consultant shall document each test pit in a format to be approved by the City.
7. The Consultant shall incorporate any abandoned railroad/trolley system data into the contract documents.
8. The Consultant shall design and incorporate any necessary abandoned railroad/trolley track work into the contract documents and fully coordinate the plans, specifications and estimates.

4.8 ROADWAY PAVEMENT DESIGN

1. Under this task the Consultant shall prepare roadway pavement design(s) to be performed in conjunction with the project.
2. The Consultant shall group the street locations and perform separate pavement designs for each group based on soil conditions and traffic volumes. As many as three (3) separate pavement designs may be required.
3. The Consultant, utilizing the traffic count data obtained under the Traffic Study Task included in the Specific Requirements for the Project, shall determine the appropriate traffic parameters to be used in conjunction with the AASHTO Pavement Design Guide. The Consultant shall integrate/evaluate the results of the mechanical traffic counts and/or manual turning counts provided, and any additional counts obtained under any other design/study element of this Total Design program with data obtained from the Department's Bureau of Traffic, where applicable, as well as from other sources.
4. The Consultant, utilizing any soils data provided by the City, soils data obtained under the Soils Investigation Program provided for in this Contract and taking into consideration the fill requirements for reconstructing the roadways to the proposed grades, shall determine the appropriate soil parameters to be used in conjunction with the AASHTO Pavement Design Guide, as specified herein. The Consultant shall review the soils data provided and any additional soils information obtained under any other task in this Design program as well as from other sources, as available.
5. The Consultant shall develop alternative pavement designs in accordance with the "AASHTO Interim Guide for Design of Pavement Structures, 1972" as currently amended by applicable Departmental Design Directives.
6. The Consultant, using the selected "best fit" soils and traffic count parameters as developed above, shall develop alternative designs for a rigid pavement, a flexible pavement, and a composite pavement for the listed streets and street segments. The design recommendations shall include, but not be limited to, pavement composition, pavement thickness and subgrade treatment.
7. The Consultant shall prepare a Pavement Design Letter Report containing a summary of all tests, classifications and analyses performed in conjunction with the pavement design. This report shall include, but not be limited to, such information as: existing pavement thickness, blow counts, boring logs, soil strata, soil classification, geological research data, traffic volumes, truck percentages, soil parameters, traffic parameters, design assumptions, alternate pavement designs for representative street groups/segments (based upon traffic and soil characteristics), and the design recommendations.
8. The letter report shall be submitted to the Commissioner for review and approval, the Consultant shall incorporate the approved pavement(s) into the Final Design Contract Documents.

4.9 EMBANKMENT PROTECTION STUDY

1. Under this task, the Consultant shall develop schematic designs for roadway protection along areas of fill and cut, to be incorporated into the proposed street improvement project. The scope of this task shall include review of the topographic and utility surveys, obtaining soil borings and analysis of soils, analysis of drainage facilities, development of schematic design(s) for roadway embankment protection and preparation of an Embankment Protection Letter Report.
2. The Consultant shall review the topographic and utility surveys with respect to existing elevations and drainage facilities, and shall reconcile these conditions with the proposed elevations and drainage facilities as developed under other tasks in the Specific Requirements for the Project.
3. The Consultant shall develop provisions to retain and protect existing or proposed roadway embankment in areas of fill and cut along various sections of roadway. The Consultant shall study various alternatives including, but not limited to, provision of sloped embankments and/or retaining structures at fill and cut locations, and shall identify and study the impact of each alternative on adjacent property and the measures needed to mitigate such impacts.
4. The Consultant shall present the proposed alternative treatments to the Commissioner in a strategy session and shall modify his proposals as directed by the Commissioner.
5. The Consultant shall prepare preliminary cost estimates for the construction of each alternative and shall identify, justify and recommend a specific alternative for each location based on an assessment of the impacts of various alternatives on adjacent property and the estimated cost of each alternative including the cost of impact mitigation measures.
6. The Consultant shall determine the soil data needed to design the embankment retaining structures and shall conduct classification, permeability and triaxial shear tests on the soil samples. These borings and tests shall be obtained and conducted under the Soils Investigation Program included in the Specific Requirements for the Project.
7. The Consultant, upon review of all existing and proposed conditions, including an analysis of soil samples, shall develop schematic designs for proposed embankment protection. These schematic designs shall indicate the limits of side slopes; the length, height and location of proposed retaining structures, including footings; drainage and access/egress provisions for private properties; and shall include proposed cross-sections showing new guardrails, fences, slope protection, etc., and indicating the relationships between existing and proposed conditions, including the locations of side slopes and the proposed retaining structures with respect to adjacent private property.
8. The Consultant shall prepare and submit to the Commissioner an Embankment Protection Letter Report, containing the schematic design recommendations, together with all supplemental sketches, maps, analyses, etc., that may be needed in the presentation of the Embankment Protection Study, including estimated construction costs.
9. The report shall also discuss any adverse problems that construction of embankment protection may have upon the project or upon adjacent property owners.
10. Upon review and acceptance of the Embankment Protection Letter Report by the Commissioner, all recommendations thus approved shall be incorporated into the schematic design for the project.
11. The Consultant shall prepare a technical supplement containing all recommendations of the Embankment Protection Letter Report, including copies of all sketches, maps, analyses, minutes of meetings, correspondence, etc., generated in conjunction with the Embankment Protection Study. This supplement shall be incorporated as an Appendix to the Design Report.

4.10 SCHEMATIC GEOMETRIC DESIGN

1. Under this task the Consultant shall prepare Schematic Geometric Design alternatives for the project street(s). The Schematic Geometric Designs shall indicate the proposed geometry of the roadway(s) including roadway widths, traffic lane(s), bike lane(s), bus lane(s), parking lane(s) and sidewalk width(s), pedestrian mall areas, mathematized alignment data that is sufficient to define alignment and layout in field, and pedestrian crosswalk locations. The Schematic Geometric Designs shall include the preliminary design of street grades and street drainage. The Schematic Geometric Designs shall indicate all necessary provisions for the channelization of traffic including all necessary pavement markings for vehicular lanes delineation and lane widths, pedestrian crossings and channelization and shall be developed within the limits of the mapped right-of-way. The Schematic Geometric Design Alternatives shall include alternate roadway and sidewalk widths, to accommodate traffic in the project street(s), and shall indicate any distinctive roadway and sidewalk treatments proposed including, but not limited to special pavements, lighting, bollards, benches and landscaping.

The consultant shall make a complete photographic record of the project area in order to illustrate the general nature/character of the neighborhood, as well as to illustrate the typical conditions and specific problems/issues/impacts of the proposed program and facilities. The photographs shall be either color or black and white, shall be presented in a four inch (4") by six inch (6") format, and shall be suitably indexed, bound and annotated in accordance with the directions of DDC. Photo log is not required if it is prepared under "Project Development/Identification" TASK 4.1-SECTION 4.

Prior to commencement of schematic geometric design, in order to illustrate the impact of the proposed geometrics on surrounding properties, street elements, encroachments, etc., the consultant shall visit the site and photograph project streets in a manner approved by DDC. The consultant shall prepare and submit to DDC a copy of the photo-log prior to start of schematic design.

2. In preparing the Schematic Geometric Design alternatives the Consultant shall:
- a) Study the traffic data that is available and/or collected under this Design program, including traffic counts, accident data and level of service analyses for vehicles and pedestrians, and shall develop the design alternatives to mitigate and or eliminate any adverse safety, operational or substandard conditions which can be identified from the data analysis.
 - b) Coordinate the proposed schematic geometric design alternatives to meet the geometry and proposed geometric configuration of intersecting streets.
 - c) Design preliminary grades and street drainage; including preliminary top of curb elevations, preliminary roadway and sidewalk cross slopes, preliminary catch basin locations, and basin connections. Assess the impact of proposed preliminary design grades on private property, street drainage, subway structures; and modify and adjust the preliminary design grades to minimize adverse impacts identified.
 - d) Analyze the proposed schematic geometric designs and any other schematic geometric designs proposed by the City for the project streets with respect to their impact on existing trees, existing property, landscaping, access/egress of existing development, aesthetic treatments, acquisition needs, other City Agency's facilities and private utility facilities. The Consultant shall give special attention to the impact of proposed grades on adjacent property including, but not limited to, the drainage of such properties.
 - e) When a Consultant and/or DDC identify that the Project has a potential for use of the sustainable designs, as described in Section 2.3 of these General Requirements, the Consultant shall incorporate sustainable designs during development of the Schematic Geometric Design alternatives. The Consultant shall analyze the environmental, social and economic benefits of each alternative. The Consultant shall include the results of its studies, recommendations and the approved Sustainable Design alternative in the PDI report.
 - f) Prepare, graphically, an impact assessment plan (using a color-coded approved format) showing Right-of-Way and Possession Lines, and items requiring removal for each alternative under consideration.

- g) Prepare an impact assessment report summarizing and quantifying the above impacts using a combination text and graphic format (full size continuous plan sheets employing multi-color display of impact types superimposed over screened clean Base Plan), and including cross sections, proposed and Legal Grades, and other details as needed to clarify design impacts/issues/concerns that have been identified.
- h) Identify any requirement to perform an Environmental Assessment in accordance with applicable New York City and or New York State Environmental laws and regulations (CEQR, SEQRA) that may result from the proposed design.
- i) Make every reasonable effort to mitigate all negative impacts, and make recommendations to the Commissioner on the selection of a specific schematic geometric design alternative.
- j) Submit hard copy of the Schematic Geometric Design alternatives for review and present the alternative schemes to the Commissioner, including the impact assessment for each abutting property.
- k) Present the schematic geometric design, selected by the Commissioner, to the Bureau of Traffic for review and approval, and incorporate review comments received from the Bureau of Traffic as directed by the Commissioner. Submit the approved schematic geometric plans to the office of School Safety Program, incorporate their comments as directed by The Commissioner; and obtain their concurrence.
- l) Submit the schematic geometric design, selected by the Commissioner, to the private utility companies that own and operate facilities within the project and request their preliminary assessment of the impact that the proposed schematic geometric design will have on their utilities and the measures that they proposed to mitigate the identified impacts.
- m) Upon acceptance of the final Schematic Geometric Design and mitigation package by the Commissioner and upon receipt of written notice to proceed from the Commissioner, the Consultant shall present jointly with the Commissioner, the recommended schematic geometric design and impact mitigation proposals to the affected Community Planning Board(s) at a formal public meeting/hearing. The presentation shall include display boards and or projections that are sufficiently detailed to clarify the work and design proposals.
- n) Modify the Schematic Design and impact mitigation proposals, based on comments received from the Community Board and private utility companies as directed by the Commissioner.
- o) Upon receipt of written notice to proceed from the Commissioner, commence other work in conjunction with the Final Design program.

4.11 ACQUISITION STUDY AND MAPPING

A. Under this task the Consultant shall provide for the preparation of an Acquisition Study and for the preparation of Acquisition and Damage Maps in connection with the acquisition of property, to be performed in conjunction with the Project.

B. The scope of work for the Acquisition Study shall include review of all design recommendations indicated in the modified Preliminary Design Report; collection of all pertinent tax payment and ownership data; (identification of properties that must be acquired by the City), investigation of the possibility of acquiring properties through Corporation Counsel Opinions (CCOs), obviating the need for formal acquisition procedures; preparation of an Acquisition Study Report; obtaining CCOs, where practicable; and attending all conferences, meetings and hearings, as required, to provide necessary engineering expertise to secure approvals.

C. The scope of work for Mapping shall include obtaining additional topographic survey data, and preparation of Acquisition and Damage Maps. No work shall begin on the preparation of Acquisition and Damage Maps pending approval and written authorization from the Commissioner.

D. ACQUISITION STUDY

1. The Acquisition Study shall analyze the problems involved in the acquisition of properties. It shall ascertain which properties are required for the proper construction of a roadway and whether these properties can be acquired through the use of CCOs. In addition, it shall deal with the impact of possible delays in obtaining acquisitions on the construction program.
2. The Consultant shall conduct surveys and studies and assemble data, including but not limited to the following:
 - (a) The probable cost of the acquisitions (in dollars).
 - (b) Any unusual problems, identified, that may be encountered in the acquisition of individual properties.
 - (c) The probable length of time involved in the actual acquisitions.
3. The Acquisition Study Report shall include the study and analysis of the data assembled, including all recommendations of the modified Preliminary Design Report.
4. The Report shall recommend which locations shall be handled by CCO, which through regular acquisition mapping procedures, and the limits of the areas that should be acquired to allow for construction to be undertaken in accordance with the designs developed under this contract.
5. The Report shall include all sketches, maps, etc., that may be necessary in the presentation of the proposed mapping and subsequent acquisitions.
6. The Report shall include a program, complete with a time schedule, to obtain necessary surveys and data, and to prepare Acquisition and Damage Maps.
7. Identify any requirement to perform an Environmental Assessment in accordance with applicable New York City and/or New York State Environmental laws and regulations (CEQR, SEQRA) that may result from the proposed design.
8. Upon completion of the Acquisition Study, the Consultant shall prepare and deliver his findings and recommendations to the Commissioner in letter-report format.
9. Upon review and acceptance by the Commissioner of the Acquisition Study Report, including approval of the recommendations contained therein, the Consultant shall prepare the necessary documents and back-up material to enable the Commissioner to request the required Corporation Counsel Opinions.
10. The Consultant shall assist the City with his engineering expertise in obtaining the CCOs as well as acquisition by Eminent Domain Procedural Laws. He shall attend necessary conferences and meetings, upon the request of the Commissioner, to present all necessary engineering data, and prepare additional backup material, as required.

E. MAPPING.

Upon approval of proposed acquisition by the Commissioner, the Consultant shall:

1. Establish liaison with the Office of Land Use Coordination of the Department of Transportation.
2. The Office of Land Use Coordination will direct the Consultant to the Office of the Borough President, and to any other involved agency for instructions as to the technique and format of the proposed mapping.
3. The Consultant shall assemble all plotted surveys, profiles and other existing engineering data.
4. The Consultant shall obtain any additional survey information that is necessary.
5. The Consultant shall research and review available reports, designs and documents prepared by the City or other jurisdictions relative to the site or area.
6. The Consultant shall research and review all existing street mapping and legal grade systems relative to the site or area.
7. The Consultant shall prepare the maps in accordance with the instructions of the Office of the Borough President and any other involved City agency, and shall coordinate his work as it progresses.
8. The Consultant shall modify the maps as required by the Borough President until final approvals are obtained.
9. Originals of plans and maps shall be delivered to the required City agency, upon the instructions of the Commissioner.

F. ACQUISITION. The Consultant shall assist the City with his engineering expertise during the Acquisition procedure. This shall include, but not be limited to, the following:

1. Participation in all conferences and meetings on the acquisition, upon request of the Commissioner.
2. Attend public hearings, upon request of the Commissioner, to present the engineering background necessary.
3. Prepare reports, documentation, drawings or back-up material necessary to advance the proceedings.

G. USE OF EXISTING TOPOGRAPHIC SURVEY

1. The Consultant shall make use of the information gathered and plotted under the Topographic Survey Task included in the Specific Requirements of this contract.

H. ADDITIONAL SURVEY

1. In the event that additional survey information is needed in conjunction with the Acquisition, additional survey shall be performed, and the results plotted on the previously plotted Topographic Survey. All additional plotting shall be performed in conformity with original survey plotting.
2. The Additional Topographic Survey shall obtain all property lines, lot lines, curb lines, structures, encroachments, and other data necessary to complete the property Acquisition and Damage Maps. A licensed land surveyor, who is familiar with the particular acquisition requirements of the county in which the work is being performed, shall certify the additional survey.

I. DELIVERABLES. Upon completion of the Acquisition Study, and the Acquisition and Damage Maps, the Consultant shall hand-deliver to the Commissioner the following:

1. One complete set of every Acquisition and Damage Map, in ink, on reproducible drafting film (or other reproducible material as specified by the Office of the Borough President). The license and seal of a licensed land surveyor shall be affixed to the Acquisition and Damage Maps.
2. Five (5) sets of prints of every Acquisition and Damage Map.
3. All notes, studies, designs, analyses, drawings, calculations, data, etc., used in the preparation of the Acquisition Study and Mapping Task.

4. Copies of all correspondence to and from all agencies (City, State, Federal), Utilities, Community Planning Boards, and all others having jurisdiction or interest in the project or area.
5. Original survey notes and plotted survey tracings.

J. All original Topographic Survey information shall be dated, signed and certified to by a licensed surveyor. The License Seal of the surveyor and/or Registered Professional Engineer shall be shown on all plans, tracings and tabulation sheets.

K. All of the above material shall become the property of the Commissioner.

L. The acceptance and/or approval by the Commissioner of any part of the work as herein described shall not relieve the Consultant of responsibility for the completeness and/or accuracy of the Acquisition Study and Mapping prepared under this contract.

M. Upon review and acceptance by the Commissioner of the Acquisition Study Report, and upon the approval of recommendations contained therein, the Consultant shall incorporate the design requirements necessary to implement said recommendations into the Construction Contract Documents for the Project.

4.12 QUANTITY AND COST ESTIMATING

1. Under this task the Consultant, utilizing the Schematic Geometric Design Drawings, and the Preliminary and Final Contract Drawings, shall prepare detailed Estimates of Quantities and costs for all pay items of work that are required under the ensuing construction contract at various stages of this design program. The Estimate of Quantities and costs shall be used as the basis for the detailed Consultant's Estimate for the project.

The Consultant shall prepare and submit an updated estimate of quantities and costs at the following stages of the project:

a) For Preliminary Design projects:

At the completion of Preliminary Design.

b) For Total Design Projects:

1. Phase 1: at the completion of Preliminary Design;
2. Phase 2: at Mass Mailing No. 1 (approximately 40% design completion);
3. Phase 3: at Mass Mailing No. 2 (approximately 75% design completion);
4. Phase 4: At 100% design completion for use in bid documents.

c) For Final Design Projects:

1. Phase 1: at Mass Mailing No. 1 (approximately 40% design completion);
2. Phase 2: at Mass Mailing No. 2 (approximately 75% design completion);
3. Phase 3: At 100% design completion for use in bid documents.

The Consultant shall revise and resubmit the estimate of quantities and costs in accordance with comments from DDC.

Where special materials and amenities are proposed the Consultant shall prepare a cost comparison of the standard materials versus the special materials and amenities proposed.

2. The Consultant shall prepare the detailed Consultant's Estimate in accordance with currently applicable Departmental standards and procedures.

3. The Consultant's Estimate of Quantities and Cost shall be prepared and documented on computation sheets which shall indicate:

- a) The estimator and checker's name (printed);
- b) The estimator and checker's signature or initials;
- c) Date that the estimate is prepared;
- d) The Project ID. and street name;
- e) Item number and description;
- f) The specific station(s) and/or location or limits of the item;
- g) Individual item summary sheets;
- h) The measurements (including units) and/or counts, and computations;
- i) List of all assumptions;
- j) Completely identify all/any reference source material in accordance with standard bibliographical format;
- k) Show all unit price adjustment factors.

4. Quantity take-off by CAD shall require preapproval from the Commissioner for methodology, programming and documentation.

5. Pay items and quantities for all Contract work shall specifically reflect the scope of work as defined in the contract documents.

6. Pay items and quantities for maintenance and protection of traffic work shall accurately reflect operations, staging, sequencing, working hours, weekend work, and conditions stipulated on the contract plans and in the specifications.
7. The Consultant shall provide a breakdown of the quantities and costs for the various items of work that are to be charged to each City agency's budget code(s) and to each private utility. Where participation by the State, Federal government and/or private parties is anticipated, a breakdown of costs chargeable to each is to be provided.
8. The Consultant shall prepare summary tables for all contract items - including quantities, unit prices, extensions and individual charges which shall be in sufficient detail to enable a reasonable projection of the project cost. The Consultant shall input this data into the Department's computerized scope/estimate program.
9. The level of accuracy for the estimate of quantities shall be rounded to appropriate whole multiples.
10. The Consultant shall prepare a composite Scope packet, in accordance with currently applicable Departmental standards and procedures.
11. The Consultant shall revise and update the Consultant's Estimate of Quantities and costs and account for all revisions to the contract drawings and specifications required during the review and/or bidding process.
12. The Consultant shall coordinate and incorporate estimates of quantities and cost for private utility work that is to be included in this contract. Estimates of quantities and unit prices for private utility work will be provided by the respective utility companies. Estimates of quantities and unit prices for Gas Cost Sharing Work will be provided by the Department.
13. Payment: Payment for this task shall be made at the completion of the various phases indicated below, contingent upon the Consultant's satisfactory completion of each phase, and submission of cost estimate, including all necessary back up documentation. The amount of payment for each phase shall be limited to the specified percentage of the total fee for "Quantity and Cost Estimating", as indicated below:

(A) Total Design:

- a) Phase 1: at the completion of Preliminary Design, payment shall be equal to 25% of total fee for "Quantity and Cost Estimating";
- b) Phase 2: at Mass Mailing No. 1, payment shall be equal to 25% of total fee for "Quantity and Cost Estimating";
- c) Phase 3: at Mass Mailing No. 2, payment shall be equal to 25% of total fee for "Quantity and Cost Estimating";
- d) Phase 4: at 100% design completion, payment shall be equal to 25% of total fee for "Quantity and Cost Estimating".

(B) Final Design:

- a) Phase 1: at Mass Mailing No. 1, payment shall be equal to 30% of total fee for "Quantity and Cost Estimating";
- b) Phase 2: at Mass Mailing No. 2, payment shall be equal to 30% of total fee for "Quantity and Cost Estimating";
- c) Phase 3: at 100% design completion, payment shall be equal to 40% of total fee for "Quantity and Cost Estimating".

If the Consultant fails to prepare and submit to the Commissioner the cost estimate for any of the above mentioned phases, or delays submission of the cost estimate without any justifiable reasons, an amount equal to the percentage shown for each phase will be permanently forfeited from the payments for non-compliance, and the total contract amount will be reduced by that amount, accordingly.

4.13 SEWER DATA SURVEY, AREA DRAINAGE AND GRADE STUDY, DRAINAGE PLAN

A. Under this task, the Consultant shall:

1. Survey and plot all sewer data within the project limits as defined herein.
2. Perform a thorough review and study of all adopted and proposed drainage plans, sewers, easements, existing and legal street grades and mapped street systems within the project limits, and recommend all necessary changes thereto or, develop a new Drainage Plan for the Project in conjunction with a fully coordinated street, storm and sanitary sewers, or combined sewers improvement project.

B. SEWER DATA SURVEY

1. The Consultant shall research all available maps, plans, records, etc., and where as built data is missing, take appropriate field measurements/elevations of existing sanitary, combined or storm water sewers within the limits of the project, including interceptor sewers.

2. This records search and survey shall determine the locations, elevations and sizes of all existing sewers and appurtenances, outfalls, manholes, catch basins and drains.

3. The information to be obtained by the Consultant shall include, but not be limited to, the following:

- a) Distance from existing sewers' centerlines to an existing building line;
- b) Distance of manholes from the building line in the nearest intersecting street;
- c) Existing ground surface elevations and legal grades;
- d) Invert elevations of the existing sewers;
- e) Internal sizes of the existing sewers;
- f) Type of material used, i.e., concrete, brick, vitrified clays in existing sewer construction;
- g) Invert elevations of all existing house traps;
- h) Location of all mapped sewer easements.

4. The following criteria shall be observed:

- a) All measurements and elevations shall be taken at or to an existing manhole.
- b) All distance and internal sizes of the sewers shall be measured to the nearest one-tenth of a foot.
- c) All elevations shall be measured to the nearest one-hundredth of a foot, using the respective Borough Sewer Datum.

5. The Consultant shall plot the results of the Sewer Data Survey including the boundaries of all Drainage Areas located both within and contiguous to the project area, as determined by the water shed limits of all previously completed drainage plans, existing sewers and ridge lines as may be available.

6. The plotted Sewer Data Survey shall also show the locations of all mapped sewer easements with respect to mapped street lines, and shall locate and identify all structures and other major features encroaching upon the sewer easements.

7. The Consultant shall indicate, on the plotted Sewer Data Survey drawings, all locations at which field data were obtained.

8. The Consultant shall review all data thus obtained, and shall coordinate this data with the Topographic Survey and the Utility Survey.

9. The Consultant shall reconcile all discrepancies in the location and identification of all sewer elements.

10. The Consultant shall submit, to the Department, original survey notes and survey computations together with all sewer drawings, plans and plates, which shall become the property of the City.

11. The Consultant shall plot the Sewer Data Survey in accordance with the current Departmental Drafting Standards and requirements for Topographic and Utility Surveys.

12. The Consultant shall prepare a technical supplement on the Sewer Data Survey and shall incorporate this supplement as an Appendix to the Preliminary Design Report. The supplement shall include, but not be limited to, the following factors that may impact upon future sewer construction and/or drainage of the project area:

- a) General description of all sewers located within the project area;
- b) Maps of all existing drainage plans;
- c) Maps of existing sewer easements;
- d) Maps/sketches of all proposed sewer projects;
- e) A discussion of all topographic feature;
- f) Proposed mapping or demappings;
- g) Outfall locations;
- h) Encroachments upon sewer easements, etc.

C. DRAINAGE AND GRADE STUDY, AND DRAINAGE PLAN

1. This study shall provide for:

a) The retention of as many of the existing grades and as many of the existing street systems as possible, provided the procedures, concepts and criteria used in the design of these grades and street systems are in accordance with the design parameters of the Department, and of the Bureau of Sewers.

b) The retention of as much of the existing sanitary and storm water sewer systems(s) as possible, provided the sewers meet the present design criteria of the Bureau of Sewers. The Consultant must consider the age, condition and capacity of the existing sewer system in preparing the proposed drainage plans(s). In order to evaluate all the factors relating to this decision, the Consultant will be required to consult with the various Divisions of the Department of Environmental Protection that may have knowledge of the conditions affecting the sewers.

2. In evaluating the feasibility of revising existing drainage plan(s), the Consultant shall endeavor to accommodate the recommended changes within the mapped street widths and easements, and legal grade lines of the streets. In instances where such accommodation proves impractical, the Consultant shall judiciously modify street design proposals to enable the Consultant to produce a workable drainage plan.

3. Prior to commencing the design of the proposed drainage plan, the Consultant shall consult with the Drainage Section of the Department of Environmental Protection on the retention of the existing sewer and the proposing of sewers that slope contrary to the slope of the street, as determined from the final mapped grade.

4. The Consultant is advised that there may be other projects under current or future contracts between other consultants and the Department that should be considered in the design of this project.

5. When designing the sanitary and storm water sewers for this project, the tributary flow from adjacent areas, outside the limits of this project, must be included.

6. Previously completed drainage plans that affect the project area must also be considered.

7. With respect to sanitary sewer schemes, the Consultant shall be required to utilize all existing area interceptor sewers for sanitary sewer drainage.

8. The Design of all Sanitary and Storm Water Sewers shown on the proposed drainage plans shall:

- a) Be based upon approved adopted final maps where available, and/or proposed grades and street systems, or upon otherwise available topographic maps of the area and corresponding final and/or proposed grades.

- b) Be related to the prevailing zoning regulations, land occupancy and estimated future population with due allowance for practical ultimate need when the areas are fully built up.
- c) Be related to the probable extent of pervious and impervious surface cover when the areas are fully developed. Underdeveloped residential, industrial, or commercial areas, parks, Government reservations, and institutional land shall be treated on an area basis only.
- d) Be in conformity with current practices, requirements and design criteria of the Bureau of Water and Sewer Operations.
- e) Include the streets, parkways and expressways, within the project area, shown on either adopted final maps, or on pending final maps, or on other maps as available for each of the sections.
- f) Consider sewer(s) crossing existing or proposed expressways, parkways, subways (whether underground or elevated), railroads, subsurface utilities, etc.; and design the sewers in coordination with the appropriate City Departments, State, Federal, or public and private agencies having jurisdiction over these facilities.
- g) Certain drainage studies related to sanitary and storm water sewers that were prepared by the Bureau of Sewers, over the years, may include, in part, drainage data for sections included in this study. In connection with the final design of drainage plans to be prepared under this study, it is intended to utilize the available data to their maximum usefulness and the City will make them available for the purpose.
- h) Where existing drainage plans are available for all or sections of the Project Area they shall be reviewed to determine whether they satisfy current design criteria. If the existing drainage plans satisfy current design criteria they shall be incorporated in the final drainage plans for this project. If the existing drainage plans do not satisfy current design criteria, new sewers shall be designed and incorporated in the final drainage plans for this project.
- i) In connection with the preparation or review of drainage plans, the Consultant shall obtain all available preliminary studies, drawings, sketches, field data, office computations, memoranda, and any other pertinent data from the Bureau of Sewers.
- j) All existing and proposed sanitary and storm water sewers shall be shown in worksheet form on plans and profiles. These plans and profiles shall show:
 - (i) In Plan:

Both building lines of sewer street and street crossings, block lengths, all street widths, final or proposed grades, single line for sanitary and storm water sewers and for all major utilities approximately located in sewer street, all sewer sizes and lengths.
 - (ii) In Profile:

A separate line for each curb where they are not coincident, inside top and bottom lines of sanitary and storm water sewers, inside top elevations of sewers at all changes of size and grade, sewer crossings with inside top elevations and clearances at point of crossing, all major utility crossings, sizes, slopes and velocities of sewers.
 - (iii) These plans and profiles shall be drawn to a horizontal scale of 1 inch equals 50 feet and a vertical scale of 1 inch equals 4 feet. These profiles shall be drawn in grid form.
- k) The Consultant shall design a Drainage Plan in the currently required Bureau of Sewers format, and shall submit the Drainage Plan to the Bureau of Sewers for review and approval. The submission shall include relevant sewer and topographic data, and computations required by the Bureau of Sewers.
- l) The Consultant shall revise the Drainage Plan in accordance with any comments received from the Bureau of Sewers and shall reiterate the submission until approval of the Drainage Plan is obtained from the Bureau of Sewers. The signature of the Authorized Department of Environmental Protection personnel on the Drainage Plan shall indicate its approval.
- m) The Consultant shall prepare a technical supplement to the Drainage and Grade Study and shall incorporate this supplement as an Appendix to the Preliminary Design Report. This supplement shall include all maps, drawings, sketches, notes, calculations, proposed grades and street systems, proposed drainage plans, and all other information necessary for the presentation of a properly drained and graded street improvement project.

9. In evaluating the feasibility of retaining existing grades and street systems, the Consultant shall perform the following work:

- a) Conduct a profile study of all existing street grades, and compare with adopted and proposed legal grades and with existing and proposed sewer profiles.
- b) Conduct a general review of the Topographic Survey, noting the elevations of all first-floors and entrance ways (including garage and cellar doors, cellar windows, ventilation gratings, steps, loading docks, etc.) with respect to legal grades.
- c) Conduct a general review of the mapped street systems, noting overall existing right-of-way widths, clearances between rights-of-way and building structures, and potential future encroachments and/or demolition with respect to right-of-way widening.
- d) Study the present street system with respect to usage by passenger and commercial vehicles.

10. Upon review of all existing grades and street systems, the Consultant shall determine the impact that the raising and/or lowering of all streets to legal grade and/or the widening of rights-of-way will have upon the abutting properties and structures.

11. Upon evaluation of all data thus obtained, the Consultant shall determine, on the basis of feasibility, economic impact and preservation of the character of the neighborhood, those areas where retention of existing grades and street systems is both necessary and desirable.

12. The Consultant shall then design new proposed legal grades as necessary.

13. The design of all proposed legal grades shall be performed in accordance with procedures, concepts and criteria as required by the Department.

4.14 HAZARDOUS WASTE AND SITE CONTAMINATION

Under this task the Consultant shall conduct site investigations within the project limits to determine the extent and degree of any contamination that may exist, and develop procedures for any site remediation needed.

1. PRELIMINARY HAZARDOUS WASTE AND SITE CONTAMINATION INVESTIGATION

Using the following procedures the Consultant shall assess the site for potential involvement with hazardous waste:

a) The Consultant shall conduct an inspection of the site to determine existence of the following warning signs:

- (i) Noxious odors emanating from the soil or water;
- (ii) Discolored soil, water or foundations;
- (iii) Leaking pipes, transformers, tanks, and barrels;
- (iv) Dead vegetation or lack of vegetation.

b) The Consultant shall conduct Past Land Use Research of the area within and abutting the project limits to identify potential polluters and any indication of the likelihood of existing unknown contaminants. This should include but not be limited to the research of local assessor's records, City building permit records, title abstracts, long time area residents, local maps that are available for review at public libraries, United States Geological Survey records, available boring logs, Department of Conservation Right-to-Know survey results, historical societies' records, shipping and receiving documents, invoice records, detailed plant and site layout drawings, former employees, Department of Health and Department of Environmental Conservation employees.

Specific uses and activities of concern include, but are not limited to, chemical plants and refineries, auto body/repair shops, coal gasification plants, dry cleaning plants, electronics manufacturing, foundries, electro-plating operations, gasoline service stations, junk/scrap yards, metal and machine fabrication, municipal landfills, industrial landfills, paint shops, machine shops, printing shops, sludge management areas, transportation related chemical or petroleum spills, and rod and gun clubs.

c) The Consultant shall review the Department of Environmental Conservation's underground storage tank records and the results of leakage tests performed on such tanks.

d) The Consultant shall consult with the Health and Fire Departments to obtain information regarding known hazardous waste problems in the area.

e) The Consultant shall review the results of the Subsurface Exploration Program to determine if any of the above mentioned warning signs were identified.

2. PRELIMINARY HAZARDOUS WASTE AND SITE CONTAMINATION ASSESSMENT

The Consultant shall assess the results of the Preliminary Investigation and shall prepare and submit a report of the findings of the Preliminary Investigation and Assessment to the Commissioner. The report shall clearly state whether or not there is any indication that hazardous waste would be encountered by project activities, and shall advise the Commissioner on the need for conducting a Phase I Testing Program as specified below.

3. PHASE I TESTING

This may include air, soil and/or water sampling at the site. This testing may also include subsurface soil and/or water. The sampling shall determine what pollutants are present at the site and their concentrations. Testing of the samples shall be performed by a laboratory that is technically qualified to perform such work and listed, as such, by the DEC.

a) Where directed by the Assistant Commissioner Infrastructure Design the Consultant shall engage the services of a firm, that has been listed by the Department of Environmental Conservation (DEC) as being qualified to perform such work, to develop the scope of work for a Phase I Testing Program for the project site.

b) The Consultant shall develop the testing program in conformity with the requirements of any regulatory agency that has jurisdiction over such operations and shall submit his/her proposals to and meet with representatives of such agencies, as necessary, to ensure compliance with their requirements.

c) The Consultant shall submit the proposed scope of work for Phase I Testing and a proposal for conducting the testing program to the Commissioner for approval.

d) Upon approval of the Phase I Testing program by the Commissioner, the Consultant shall, using the services of the DEC listed firm and accepted laboratory, conduct the approved testing program.

e) The results of the testing shall be presented in a report to the Commissioner. The report shall detail the procedures employed during the field investigation and the field observations made; shall evaluate the technical data obtained; and indicate the nature, concentration and location of any contamination detected and the possible sources of such contamination. The report shall indicate, specifically, one of the following:

- i) A finding of no contamination;
- ii) A finding of minor contamination which poses no significant threat to health or the environment;
- iii) A finding of potential significant threat to health or the Environment.

f) The report shall indicate the need for site remediation and for additional testing; the extent of remediation needed; and shall present and discuss procedures and methods that should be used to accomplish such remediation.

4. SPECIFICATIONS FOR SITE REMEDIATION

Where directed by the Commissioner, the Consultant, using the services of the DEC listed firm, shall develop and provide the Commissioner with specifications for site remediation work that are to be included in the proposed construction contract. The specifications shall include procedures for removing, storing, monitoring, testing, and disposal of contaminated materials; and for protecting workers and the public from contamination during construction operations.

4.15 STREET DESIGN INCLUDING STUDY AND DESIGN OF STREET GRADES, STUDY AND DESIGN OF STREET DRAINAGE, AND PERMANENT STREET SIGNS

1. Under this task the Consultant shall study and design street components and appurtenances; incorporate the various design elements developed under the other tasks included in the Specific Requirements of this Contract; prepare Preliminary, Pre-Final and Final Contract Documents incorporating other agencies design work, including the obtaining of comments/approvals for submissions that are complete with specifications, estimates and other ancillary items; and that are ready for bidding.
2. This Street Design Task is the basic design element of the Final Design Program that is to be executed under this Contract. Under the Street Design Task the Consultant shall coordinate the technical details of all the tasks included in the Specific Requirements, including (a) Study and Design of Street Grades, (b) Study and Design of Street Drainage and (c) Permanent Street Signs into the street design, and consolidate them into one unified, Bid-Ready Contract Document. The Consultant shall not proceed with work on any Final Design Task without prior written approval from the Commissioner.
3. In studying and designing the street elements, appurtenances and other appropriate elements of this project the Consultant shall:
 - a) Be responsible for expediting and advancing the development, approval and acceptance of the final schematic design in conformity with the project objectives.
 - b) In addition to the programmed Mass Mailings No.1 and No.2 required herein, be accountable to initiate actions for incremental review(s) of the proposed designs by various agencies and interested parties, including follow-up meetings to obtain expeditious resolution of questions and concerns as needed to permit approvals and to meet the approved contract time schedule.
 - c) Design the street(s) and execute the associated tasks including the preparation of Preliminary and Final Contract Documents generally in accordance with the approved Schematic Geometric Design and, where applicable, the approved Schematic Landscape/Urban Design for the Project as developed in accordance with these Specific Requirements.
4. In preparing the Preliminary Contract Documents the Consultant shall:
 - a) Develop the Preliminary Contract Documents for the project street(s) and associated tasks, in accordance with the requirements of this and the other tasks included in the Specific Requirements of this Contract.
 - b) Develop the Preliminary Contract Drawings by superimposing the approved schematic geometric design on the "Clean Base Map", unless otherwise specified by the Commissioner. In general, the Preliminary Contract Drawings shall be in sufficient detail, especially the proposed roadway geometrics, to allow the interested parties to visualize the intended Final Design concepts.
 - c) Incorporate the plotted Utility Survey and plotted profiles into the Preliminary Contract Drawings as directed by the Commissioner, and utilize the information available from these documents to check design assumptions and potential interference with utility facilities, substructures and abutting properties.
 - d) Prepare the Preliminary Contract Drawings to generally comply with the following requirements and as otherwise directed by the Commissioner:
 - i) The drawings shall show the locations of existing physical features, both surface and subsurface, which may affect the proposed work.
 - ii) The drawings shall show the horizontal locations and vertical locations of all work proposed under this project. Horizontal locations shall be established by station and offset. Horizontal and vertical locations shall be within the limits of accuracy established in the plotted Topographic Survey developed during the Preliminary Design Stage and herein modified and updated, and shall be tied to the project baseline.

iii) The drawings shall show essential information, which shall include, but not be limited to existing elevations, proposed design elevations, street drainage proposals developed under Subsections (a) Study and Design of Street Grades, and (b) Study and Design of Street Drainage, block and lot numbers, street addresses, sections, details, notes, sketches, and any other information needed to fully define the proposed design, in accordance with currently applicable Departmental Standards.

e) In addition to the sustainable design(s) approved by the Commissioner during the Schematic Geometric Design, when a Consultant and/or DDC identify any other street elements to have a potential for use of the sustainable design, as described in Section 2.3 of these General Requirements, the Consultant shall follow High Performance Infrastructure-Best Management Practices (BMP) based on the core principles of sustainable design during development of the Final Design. The Consultant shall analyze the environmental, social and economic benefits of each alternative and present the results of their studies and their recommendations in a report format to the Commissioner. The Consultant shall incorporate the approved design into the Final Design Documents.

f) Consolidate the Preliminary Contract Drawings and transmit them for information and review by all relevant City agencies, utilities and jurisdictions in accordance with the Department's Mass Mailing No. 1 requirements.

5. In preparing the Pre-Final Contract Documents the Consultant shall:

a) Develop the Pre-Final Contract Documents for the project street(s) and associated tasks, in accordance with the requirements of this and the other tasks included in the Specific Requirements.

b) Develop/design project curbs in conjunction with usage and depth of pavement, including type, locations and appropriate details.

c) Develop/design/coordinate and locate pedestrian ramps after an analysis of potential interference caused by existing/proposed facilities in the area. The specific location, configuration and grading of pedestrian ramps, contiguous sidewalks and gutter flow at apex of corners shall be designed and coordinated with the conditions and hardware within the corner quadrant including but not limited to traffic signals, catch basins, manholes, grates, lampposts, etc.

d) Reconcile existing driveway locations with building or property activity requiring a driveway access. The Consultant shall design driveway location(s) in accordance with current Department of Transportation procedures regarding replacement driveways.

e) Prepare customized letters, for City signature, to property owners where existing driveway is not being replaced or where it is proposed to reconfigure existing driveway.

f) Develop/design adjustments to City-owned castings including details necessary for special casting adjustments.

g) Develop/design non-structural adjustments to existing Transit Authority subway ventilators and emergency exits, including replacement and adjustment of frames, gratings and doors to proposed grades, and modification of ventilators to conform with aesthetic treatments proposed for curbs and sidewalks.

h) Coordinate the preparation of a Transit Authority Force Account Agreement to allow the City to reimburse the Transit Authority for the cost of providing inspectors at the site during test pits excavation, and for access to Transit Authority ventilators for possible field inspection. The Consultant shall provide separately for Transit Authority insurance required to cover inspection of Transit Authority facilities and excavation of test pits in the vicinity of such facilities.

i) Design and define the limits of pavement construction/ restoration for all streets affected by the proposed work.

j) Develop/design pavement markings for lane delineation, pedestrian crossings, channelization and for additional traffic controls as needed.

k) Include provisions for removing/relocation/resetting of Fire Department facilities, parking meters and the Bureau of Water Supply hydrant facilities that are affected by the proposed street design and integrate the designs into the contract documents.

l) Review the results of sewer cleaning, sewer television inspection and manual sewer inspection programs performed under other contracts or by the Department of Environmental Protection personnel as they relate to this Project; coordinate the results and recommendations from said programs with this Project, and integrate and incorporate required sewer work into the contract documents.

m) Prepare, where necessary, working drawings/cross-sections/supplementary profiles conforming to currently applicable Departmental Standards.

n) Incorporate preliminary maintenance of traffic alternatives for the various construction stages of the project. The preliminary maintenance of traffic alternatives, as developed by the Consultant, shall be reviewed/coordinated with the Commissioner, the Department of Transportation's Office of Construction Mitigation and Coordination and affected interested parties in accordance with the requirements of the Construction Staging and Maintenance and Protection of Traffic Task included in the Specific Requirements.

o) Incorporate the Preliminary Consultant's Estimate and Scope package prepared under the Quantity and Cost Estimating Task included in the Specific Requirements of this Contract.

p) Update the title sheet for the contract drawings and the legend/note/reference sheets.

6. In addition to incremental packets, the Consultant shall combine the Pre-Final Street Design contract drawings, the drawings for other tasks, the updated title sheet and the legend/note/reference sheets into one composite package of Pre-Final Contract Documents.

7. The Consultant shall transmit the composite Pre-Final Contract Documents to all relevant City agencies, utilities and jurisdictions for information and review in accordance with the Department's Mass Mailing No. 2 requirements.

8. The Consultant shall submit to the Department, copies of the composite contract documents and composite scope packet for a final technical and construction review.

9. The Consultant shall schedule and conduct a joint utilities Alignment Meeting to identify and provide for the mitigation of design impacts on utility facilities.

10. Upon completion of the final technical and construction reviews, the Consultant shall prepare composite Final Contract Documents.

11. In preparing the Final Contract Documents the Consultant shall:

a) Finalize the coordination, resolution and incorporation, as appropriate, of all review comments on the composite Pre-final Contract Documents, except that comments on other agency designs shall be addressed by the design agency; but shall, however, be coordinated by the Consultant.

b) Modify and correct, as appropriate, the detailed Pre-Final Contract Documents in accordance with the comments received from the interested reviewing parties. The Contract Drawings shall be incrementally resubmitted, as necessary, to the interested parties for review, comments and/or approval. This process shall be reiterated until such time as required approvals are obtained. Comments received on "other agency" designs shall be forwarded to the design agency for resolution or modification of its contract documents.

c) Upon receipt of approvals for the detailed Pre-Final Contract Document Package, including the maintenance of traffic schemes, consolidate the Contract Drawings into a single, unified document. The Contract Drawings shall include, but not be limited to such items as title sheets, tables of contents, table of quantities, survey control sheets, sections, details, plans, profiles and other items deemed necessary for the proper completion of the

Contract Drawings. In general, this consolidated set of Contract Drawings shall represent, as near as practicable, the final design for the project.

12. The Consultant shall prepare and distribute all notices that are required, prior to the advertising for bids for construction in accordance with currently applicable Departmental Standards and Procedures.

13. The Consultant shall apply for and obtain permits and approvals required in connection with the ensuing construction contract, as directed by the Commissioner.

14. All drawings, before being submitted to the Commissioner for final acceptance, shall bear the stamps of approval and be accompanied by all necessary applications, certificates, or permits of all City, State or Federal Agencies having jurisdiction over any phase of the work.

15. Upon completion of the detailed consolidated Contract Documents, including the incorporation of changes as required in conjunction with the final technical review, the Consultant shall submit the composite Contract Document package to the Commissioner for review and approval. This submission shall include, but not be limited to the following:

- a) The original of the title sheet, signed by the Consultant, prepared in a format as approved by the Commissioner.
- b) A set of paper prints of the Contract Drawings.
- c) A copy of the Project Fact Sheet prepared in the currently required Departmental format.

16. The signature of the Commissioner on the title sheet of the Contract Drawings shall constitute approval of the Design.

17. Upon approval of the Contract Documents, the Consultant shall prepare and submit to the Commissioner, the complete Bid-Ready package of the Contract Documents. This package shall include the appropriate number of copies, as outlined in Section 2.5 of these General Requirements, of the following: complete, bound, signed Contract Drawings; complete, unbound Contract Specifications, Addenda and Bid Schedule Sheets; Composite Scope Packet; and approvals and permits required for the prosecution of the ensuing construction contract; all as required under the various tasks included in the Specific Requirements of this Contract.

18. The Consultant shall make no substantial changes to the Final Contract Documents, as approved by the Commissioner, unless specifically ordered to do so by the Commissioner.

(a) Study and Design of Street Grades

Under this subsection the Consultant shall study the existing grades and design proposed grades for the project's roadway(s), sidewalks, and intersection(s) including intersecting roadway(s) and sidewalks in accordance with the design criteria provided by the Commissioner or recommended by the Consultant and accepted by the Commissioner. The Consultant shall:

- a) Where the topographic survey is to be provided under this Contract:
 - (i) Coordinate with the Surveyor, as appropriate, the integration of project topographic survey work with project grade design work in accordance with the project design needs and approved project schedule;
 - (ii) Be solely responsible to coordinate, with the surveyor, the quantity and/or location of spot elevations and profiles to be produced, and shall "customize" the data gathering to "specifically" satisfy the design requirements for all grade design;
- b) Utilize existing topographic data to the extent necessary for the proper completion of this task;
- c) Analyze in detail and design "best fit" project grades for top of curb, back of sidewalk, building line, fence line, or other grade control points or profiles with a view to minimizing negative impacts on adjacent development, adjacent properties (driveways, walkways, loading docks, parking areas, building entrances, steps, underground

structures and/or infrastructure, plant life - including trees), while providing for adequate roadway and property drainage, adequate sidewalk cross slopes and the design of measures needed to mitigate such impacts.

d) Develop/design project sidewalk cross slopes upon completion of a review of the project profiles in compliance with the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) - specifically providing, where feasible, a continuous path having a 2% maximum cross slope with ramps having a maximum longitudinal slope of 5%, to the maximum extent possible in the design of curb and sidewalk grades;

e) Provide both graphic exhibit(s) and text to justify all "site infeasibilities". Prepare a final Americans with Disabilities Act Accessibility Guidelines "site infeasibility" justification report for all properties/locations that will have non-conforming sidewalks, in a format determined by the City. The report shall document in tabular, graphic and/or other preapproved format the location, nature, extent and justification for all locations at which, in the judgment of the Consultant, it is infeasible to comply with the 2% maximum sidewalk cross slope and 5% maximum longitudinal ramp slope requirement(s) of the Americans with Disabilities Act Accessibility Guidelines;

f) In conjunction with the mitigation of adverse property and street impacts (including substandard longitudinal gutter grades, street trees, shrubs, fences, walls, sidewalk removals, addition of entrance steps and access/egress solutions) the Consultant shall develop the "best technically feasible fit" top of curb for each block face and each individual property and intersecting street, through the performance of a detailed grade analysis and design, which shall consist of an intensified study and a reiterative design process for proposed grades on curb and sidewalk, and integrating into the detailed design process all of the factors listed above which will affect the desired solution;

g) Perform topographic surveys to obtain additional survey data including spot elevations to "fully support" the detailed grade design and reiterative grade design process where needed;

h) Locate and plot customized profiles, which shall require pre-approval by the City, for the purpose of executing the detailed analysis and design of project grades. Locate and plot customized cross sections, which shall require approval by the City, for the purpose of executing the detailed analysis and design of project grades;

i) Develop/design roadway crowns and/or cross slopes within the framework of Departmental or other approved standards and the existing crowns and cross slopes for streets abutting and/or intersecting the project limits;

j) Design sidewalk pavement grades at and into all intersections and terminal streets to meet the existing conditions and/or the proposed design in each intersecting street. The application and/or use of transition areas to satisfy this design requirement shall, for the purposes of this program, not be considered an adequate level of study and or design;

k) Reiterate the foregoing grade study and design requirements, until a "best fit" grade design is achieved, including, but not limited to: the plotting and study of additional profiles; plotting and study of additional cross sections, the securing and study of additional topographic data as described above, and as needed to meet/comply with the specific site constraints and specific site issues including, but not limited to, street/roadway drainage, required cover for storm sewers, drainage of private properties, and the Americans with Disabilities Act Accessibility Guidelines;

l) Incorporate and integrate the proposed design grades into the composite Contract Drawings and with other affected project components;

m) Prepare a "grade change exhibit" for the entire project site, in the standard format prescribed by the Department in consultation with the Topographical Bureau of the respective Borough President's Office, identifying all locations where the proposed design grades vary from the existing Legal Grades.

(b) Study and Design of Street Drainage

1. Under this subsection the Consultant shall study the site and tributary storm water flow patterns and/or their routings; study the proposed street grades developed under the preceding Subsection (a) Study and Design of Street Grades as described above; design the locations of proposed catch basins; design the locations of catch basin chute

connections to existing or proposed storm or combined sewers; and provide adequately for drainage of all streets that are included in this project.

2. In studying the existing street drainage facilities, researching storm water run-off and designing new drainage facilities the Consultant shall:

- a) Utilize the topographic data provided to the extent necessary and applicable for the proper completion of this task;
- b) Conduct a "rainy day survey" to observe all gutter flow routings, all ponding and flooding locations, and all inoperative catch basins and inlets;
- c) Design the locations of catch basins and the routing of chute connections into appropriate storm or combined sewers;
- d) In coordination with the Study and Design of Street Grades Task, analyze and design alternate sidewalk and street drainage schemes including, but not limited to, the adjustment of transverse sidewalk slopes and provision of longitudinal troughs.
- e) Design all non-standard sewer appurtenances;
- f) Design, coordinate and incorporate into the contract documents the conversion of existing manholes with 24 inch diameter frame and covers to manholes with 27 inch diameter frame and covers, and all other catch basins, manholes, basin connections, and non standard drainage appurtenances;
- g) Provide a constructability review and reiterate all drainage design elements with regards to the mitigation of impacts with City owned facilities in accordance with pre-engineered methodology;
- h) Present the street drainage plans to private utility companies for private utility impact assessment.

(c) Permanent Street Signs

1. Under this subsection the Consultant shall inspect and inventory the existing street signs, research and review the "street sign work order" records of the Bureau of Traffic Operations, make recommendations for modifications to the existing street signs and for new street signs, as appropriate.

2. The Consultant shall take into consideration all existing traffic regulatory signs, traffic warning signs, street name signs, including Landmark District special signs, parking regulation signs, and information signs, in executing the work required under this task.

3. The Consultant shall inventory all permanent street signs as defined above.

4. The Consultant shall design street signage required for the project street(s) in compliance with the latest standards of the Bureau of Traffic Operations, and/or the New York State Manual of Uniform Traffic Control Devices, where applicable, as determined by the Commissioner in consultation with the Consultant.

5. The Consultant shall present his/her proposals, for new street signage, to the Bureau of Traffic Operations for review and approval.

6. The Consultant shall prepare a list of all street signs required for this project in tabular format. The list shall indicate the text and size of each sign required, and the Consultant's estimated quantity for each sign.

7. The Consultant shall include a tabulation of all required street signs on the contract drawings being developed for this project in accordance with current Departmental requirements.

8. The Consultant shall prepare a list, including the quantities, of all street signs and street sign posts to be removed and installed during construction, in accordance with current Departmental policy, and shall include the items of work and their respective quantities in the construction bid documents.

4.16 TREE INVENTORY

1. Under this task the Consultant shall prepare a Tree Inventory for the project in accordance with current Departmental practice.

2. The Consultant shall prepare a Tree Inventory in accordance with current Departmental requirements as generally outlined below. Where it is available the Consultant will be permitted to "fully update" any tree inventory previously prepared by the City or its consultants. However, the deliverables required under this task shall be in full conformity with the current Departmental requirements. The Tree Inventory shall be prepared in a Technical Supplement Report format and shall include, but not be limited to:

- a) A Key Plan identifying the stationing of each tree and/or planting;
- b) An approved index numbering system;
- c) Cut/fill magnitude at each location resulting from proposed design grades;
- d) Species of trees;
- e) Diameter of trees;
- f) Tree Condition - (healthy, diseased or dead).

3. The Consultant shall prepare a tree and plant life photo log of all trees and plant life located within the project area. The Tree Photo log shall be prepared in a Technical Supplement format and shall include, but not limited to:

- a) The photo log shall show the base of each tree with its exposed root system, with particular emphasis on the extent to which the root system has grown within and/or heaved the existing curb and/or sidewalk. Photos shall be taken from an angle and distance which also show the trunk and crown or portions thereof of each tree (samples shall be submitted for approval prior to filming photo log).
- b) Photos shall be in color;
- c) Photos shall be 4" x 6" in size;
- d) Photos shall be mounted in transparent jackets and shall be bound in hard cover binder;
- e) Each photo shall indicate the tree index number, and proposed cut/fill data;
- f) Date of photo;
- g) Original photo log and one color copy shall be required.

4. The Consultant shall plot all tree and major shrub locations on "working" or other profiles by stationing, and the profiles at these locations shall show spot elevations at the curb, at the root zone and at the front of sidewalk (at back of tree). The Consultant shall coordinate and integrate the plotting of these profiles with the plotting of profiles produced under other tasks of this Final Design program.

4.17 TREE IMPACT MITIGATION AND TREE PLANTING PROGRAM

1. Under this task the Consultant shall incorporate tree impact mitigation analysis into the design of street grades, prepare a Tree Impact Mitigation Plan for incorporation into the contract documents and design/develop a tree planting program for the project in accordance with current Departmental practice.

2. The Consultant shall engage the services of a Forester/Arborist/Tree Consultant, who shall be approved by the City, in conjunction with the work required herein.

A) TREE IMPACT MITIGATION

a. The Consultant shall study and analyze the proposed schematic geometric design, the proposed design grades, the Tree Inventory, and the Tree Photo Log for the purpose of identifying locations where the proposed work has a potentially negative impact on existing trees. The Consultant shall identify construction impacts from all stages of the proposed work and design a tree impact mitigation program for each tree within the right-of-way.

b. The Consultant shall make every technically defensible and reasonable effort to preserve the existing trees from construction trauma and minimize potential tree loss and/or tree damage by:

- a) The use of available techniques and standard mitigation strategies provided by the City and/or by developing and detailing special designs - as required;
- b) Developing and proposing vertical and horizontal geometric roadway and/or sidewalk modifications;
- c) Reiterating the design in accordance with design requirements included elsewhere in this agreement.

c. The Consultant shall incorporate the standard mitigation measures, and the standard details and special designs that are used to mitigate tree impacts, into the Composite Contract Documents.

d. The Consultant shall take-off an estimate of quantities for the work required to implement the tree impact mitigation proposals.

e. The Consultant, in conjunction with his Forester/Arborist/Tree Consultant, shall meet with representative(s) of the Department of Parks and Recreation to make a joint reconnaissance of the project site, and to present the proposed design, the findings of the tree impact study and the tree impact mitigation measures proposed and incorporate their concerns, where accepted by the DOT, into the composite contract documents.

f. The Consultant shall prepare, graphically, an impact assessment plan exhibit (using an approved color coded format) showing items requiring removal as a result of the design proposals under consideration. The exhibit shall indicate the right-of-way and possession lines. In addition, the Consultant shall provide a summary inventory of trees requiring removal.

10. Where the Department's standard tree impact mitigation procedures are inadequate or inappropriate, the Consultant shall prepare site specific construction protocol to protect all trees.

B) Tree Planting Program

A. The Consultant shall through its subconsultant Forester/Tree Consultant/Arborist design/develop a tree planting program for the project in accordance with current Departmental practice.

B. The Consultant, in consultation with the Forester/Arborist/Tree Consultant shall:

a) Inspect the site, Design Plans, Topographic Plans and Utility Plans for the purpose of identifying locations where new trees can be planted and identifying and listing all dead and diseased trees that must be removed;

b) Compute the quantity of the required replacement trees using the NYC Parks Department Trunk Formula Method, further documented in the International Society of Arboriculture's (ISA's) Guide for Plant Appraisal, 9th edition, to determine the value of each tree to be removed.

- c) Prepare a schematic tree planting plan superimposed on a modified set of Highway Design Plans (modified to indicate the locations of lampposts, traffic signals, hydrants and catch basins) to show the proposed location size and specie of each new tree that is to be planted and each existing tree that is to be removed;
- d) Select the proposed locations for new trees in accordance with current Departmental guidelines for clearance to various utility facilities. Furthermore, in selecting the locations of the new trees the Consultant shall avoid interference with the existing underground City and private utilities.
- e) The consultant shall study the site conditions and all available subsurface information/data, determine the need for special borings and develop the location plans, and take the borings (under Subsurface Exploration Program) specifically intended to analyze and determine the suitability of existing subsurface materials for planting purposes as approved and directed by the Commissioner. The consultant shall, recommend appropriate mitigation measures for soil quality improvements, when required.
- f) Design the size and paving treatment for all tree pits within the project limits;
- g) Present the proposed tree planting and tree removal plan to the Department of Transportation (DOT) for approval;
- h) Upon receipt of concurrence from the Commissioner and in conjunction with the Forester/Arborist/Tree Consultant, meet with representative(s) of the Department of Parks and Recreation (DPR) to present the proposed tree planting/tree removal program, obtain their concurrence and/or concerns, and modify the tree planting/tree removal proposals until DPR's approval is obtained.
- i) Incorporate the approved tree planting/tree removal plan into the Composite Contract Documents.

4.18 SEEPAGE BASIN AND/OR HIGHWAY DRAIN DESIGN

A. Under this task the Consultant shall provide for the preparation of Seepage Basin and/or Highway Drain Design(s) to be performed in conjunction with the Project. This work shall include the collection of sewer data, the development of boring locations, the study of soils analyses and soils classification results, the determination of storm water flow rates, the preparation of Seepage Basin and/or Highway Drain Design Letter Report, and the preparation of Seepage Basin and/or Highway Drain Design, including manholes, basin connections and other appurtenances necessary for the proper functioning of the seepage basin and/or highway drain system(s).

B. The scope of work for the Seepage Basin and/or Highway Drain Design includes performance of the following services:

a) The Consultant shall research and check available records of the Department of Environmental Protection (DEP) Bureau of Sewers to obtain pertinent information needed in the preparation of Seepage Basin and/or Highway Drain Design. The records to be researched and checked shall include, but not be limited to, the following:

- 1) As-built sewer plans;
- 2) Borough sewer maintenance records;
- 3) Drainage Plans
- 4) Proposed sewer construction and schedules;
- 5) Previous seepage basin construction;

b) The Consultant shall research and check available records of other City agencies and public utilities, including:

- 1) The plotted utility survey as furnished for the Final Design of the Project.
- 2) The records of various utilities regarding water mains, gas mains, electrical ducts, steam mains, and telephone and fire alarm systems.

c) The Consultant shall research available boring logs and soils analysis and classification results.

d) The Consultant shall coordinate the development of Seepage Basin and/or Highway Drain Design proposals with the Bureau of Sewers, and shall identify those locations requiring seepage basins and/or highway drains. The following are some of the factors that should be considered:

- 1) Need for drainage facilities based upon present drainage patterns and flows (present grades maintained);
- 2) Need for drainage facilities based upon future drainage patterns and flows (construction to legal grade, or to intermediate grades as determined in this Final Design Program);
- 3) Lack of existing storm sewer or combined sewer facilities at the site(s);
- 4) Possible future sewer construction at the site(s);
- 5) Highway drain(s) discharge provisions;
- 6) Where feasible, highway drains shall be proposed in preference to seepage basins.

e) The Consultant shall visit the site and shall conduct a visual inspection to confirm and/or correlate the information obtained from his research of available records with actual field conditions. Discrepancies shall be noted and reconciled, wherever possible, prior to the commencement of Seepage Basin and/or Highway Drain design.

f) The Consultant shall study the area contiguous to the project and shall:

- 1) Define and measure the tributary drainage areas;
- 2) Develop storm water run-off factors based on actual field conditions; and

- 3) Calculate design run-off and hydraulic flow rates for each proposed seepage basin and/or highway drain using the appropriate New York City Department of Environmental Protection design criteria;
- g) The Consultant shall develop a soil boring locations plan to supplement the available soil data, as needed to complete the design of each proposed seepage basin, and shall incorporate said locations into the Subsurface Exploration Program provided for in this Contract;
- h) The Consultant shall coordinate the design proposals with private utilities and the Department of Environmental Protection to identify and mitigate utility interference issues relative to proposed borings, seepage basin and highway drain locations, and shall incorporate approved utility accommodation work into the contract documents;
- i) The Consultant shall review the soil samples and the results of the soils analysis, soil classification and permeability tests as obtained under the Subsurface Exploration Program, and shall determine the capacity of the soils to drain storm water at each proposed seepage basin location. The Consultant's review shall include:
- 1) All diaries, logs, test results, boring location plans, etc.;
 - 2) The soil samples and soil classification and analysis results;
 - 3) The results of soil permeability tests.
- j) The Consultant shall design the proposed seepage basin and/or highway drains system to accommodate the design storm water run-off including the depth and diameter of the seepage basins to be installed at each location; and/or the invert elevations, sizes and drain pipe material to be used, along with all manholes, and drain pipe support and protection required.
- k) The Consultant shall assemble information, tests and analyses obtained, and shall prepare a Seepage Basin Design and/or Highway Drain Letter Report containing the compilation and analysis of data obtained, recommended locations for seepage basins and/or highway drains, including approximate street grade elevations (based upon a coordinated review of grades in conjunction with all other street design tasks included in the Specific Requirements of this Contract), basin depths, types of seepage basins, approximate seepage basin array(s), and proposed construction.
- l) The Consultant shall submit a draft of the Seepage Basin and/or Highway Drain Design letter report to the Commissioner for review and approval, and shall make revisions as the Commissioner may require.
- m) Upon approval of the draft report by the Commissioner, the Consultant shall hand-deliver to the Commissioner three (3) copies of the Seepage Basin and/or Highway Drain Design letter report, and original notes, sketches, calculations, etc., used in the preparation of the Report.
- n) The Consultant shall prepare Preliminary Seepage Basin and/or Highway Drains, Catch Basin and Basin Connection Construction Contract Documents including plans, specifications and Consultant's Estimate in accordance with the approved letter report, and shall submit the preliminary plans to the Commissioner, relevant City agencies, and to the utility companies for review comments and utility impact assessment and mitigation.
- o) The Consultant shall modify locations as required and incorporate appropriate comments into the Seepage Basin and/or Highway Drains design, and shall prepare Final Seepage Basin and/or Highway Drains Construction Contract Documents, including plans, specifications, Consultant's estimate, etc., for incorporation into the Contract Documents of the Project in accordance with the Street Design Element contained in the Specific Requirements of this Contract.
- p) The Consultant shall prepare Final Seepage Basin and/or Highway Drains Construction Contract Documents, and incorporate the Seepage Basin and/or Highway Drains Construction Contract Documents into the Final Consolidated Contract Documents for the Project.

4.19 SEWER DESIGN

A. Under this task the Consultant shall provide for the preparation of Sewer Design to be performed in conjunction with the project. This work shall include the rehabilitation, relocation, or replacement of existing sewers and/or the installation of new sewers, including the design of necessary appurtenances, all in accordance with a prescribed Drainage Plan.

B. The scope of work for Sewer Design shall include performance of the following services:

1. Preparation of a Preliminary Sewer Design which shall include:
 - a) Plotting of existing and proposed sewers, and sewer rehabilitation work on Utility Plans for the project streets in standard Departmental format.
 - b) Plotting of profiles for existing and proposed sewers in standard Departmental format.
 - c) Designing and locating all necessary chambers, manholes and other appurtenances.
 - d) Researching and reviewing all available soil data for the project area, identifying soils exploration requirements to provide additional data that is needed to complete the design, and incorporating the soils exploration requirements into the Subsurface Exploration Program provided for in this Contract.
 - e) Designing all bedding, encasement and piles for the support and protection of sewers and sewer appurtenances in accordance with the latest standards of the Department.
2. Submission of the Preliminary Sewer Design to the Commissioner for review and comments, and incorporation of the Commissioner's comments on the Preliminary Design before incorporating the design into the Preliminary Contract Documents under the Street Design Task.
3. Preparation of Final Sewer Design and obtaining approval from the Commissioner prior to incorporating the Final Sewer Design into the Final Contract Documents in accordance with the Street Design Task.

C. Development of Contract Documents

1. In preparing the Contract Drawings and any addenda to the standard Sewer Specifications that are needed, the Consultant shall take cognizance of the basic minimum requirements set forth herein, together with such other requirements as may be proper for the complete fulfillment of this contract for the purpose for which the project is to be used. The proposed construction is to be designed generally in accordance with the requirements of any other agency having jurisdiction as the design progresses.
2. The Consultant shall review all boring and soil data obtained in other sections of this program with a view to identifying unacceptable fill material for purpose of preparing estimates of quantities that are to be included in the contract documents.

D. Surveys

In preparing Sewer Design, the Consultant shall utilize information as obtained in the Topographic and Utility Surveys for the Project, and test pit and/or boring information as may be provided by the various public/private utilities, and soils information obtained under the Soils Exploration Program provided for under this Contract. The Consultant shall supplement this information with field trips, additional surveys and searches for information as may be required.

E. Sewer Design: In connection with Sewer Design, the Consultant shall provide the following services:

1. Prepare preliminary and final designs superimposed over the composite utility plan, addenda to Standard Sewer Specifications, estimates of cost, including utility charges and Gas Cost Sharing reimbursements (if any), and such pertinent engineering data as may be required. The design drawings shall be in accordance with current Departmental standards and guidelines, and shall show, to the satisfaction of the Commissioner, all necessary sewer design details.
2. Present the Sewer Design Plans to private utility companies for private utility impact assessment and alignment coordination.
3. During design, confer and meet with representatives of the Commissioner in order to coordinate requirements for the design of the proposed project. In addition, the Consultant shall confer with, and where and when necessary, meet with other City, State or Federal Agencies and private utilities having jurisdiction in order to integrate any of their requirements or contemplated work into this project.

4.20 WATER MAIN DESIGN

A. Under this task the Consultant shall provide for the preparation of Water Main Design to be performed in conjunction with the project. This design work shall include the rehabilitation, replacement or relocation of existing Water Mains and/or the installation of new Water Mains, including the design of other appurtenances, in accordance with a pre-engineered lane selection methodology.

B. The scope of work for the Water Main Design shall include the performance of the following services:

a) Preparation of a Schematic Water Main Design, the submission of said design to the Commissioner for review and comment, and obtaining approval of the Schematic Design from the Commissioner.

b) Coordinating and meeting with affected public/private utilities with regard to lane selection and/or interference mitigation in accordance with pre-engineering methodology.

c) Coordinating with Keyspan Energy/Consolidated Edison regarding New York State enabling legislation relative to City reimbursement for interference mitigation, including review of the gas cost-sharing analysis prepared by Keyspan Energy/Consolidated Edison, and incorporation of Keyspan Energy/Consolidated Edison items of work in the Contract Documents.

d) Preparing Preliminary Water Main Design and obtaining approvals from the Commissioner prior to incorporating the design into the Preliminary Contract Documents under the Street Design Task.

e) Preparing Final Water Main Design and obtaining approvals from the Commissioner prior to incorporating the Final Water Main Design into the Final Contract Documents under the Street Design Task.

C. Development of Contract Documents

a) In preparing the Contract Drawings and addenda to the Standard Water Main Specifications, the Consultant shall take cognizance of the basic minimum requirements set forth herein, together with such other requirements as may be necessary and proper for the complete fulfillment of this contract for the purpose for which the project is to be used. The proposed water mains are to be designed, generally, in accordance with the requirements of any other agencies having jurisdiction as the design progresses.

b) The Consultant shall review all boring and soil data obtained under other tasks in this design program with a view to identifying unacceptable fill material for purpose of preparing estimates of quantities that are to be included in the contract documents.

D. Surveys

In preparing Water Main Design, the Consultant shall utilize information as contained in the plotted Topographic and Utility Surveys for the Project, and test pit and/or boring information as may be provided by the various public/private utilities. The Consultant shall supplement this information with field trips, additional surveys and searches for information as may be required.

E. Water Main Design

In connection with Water Main Design, the Consultant shall provide the following services:

a) Prepare preliminary and final designs superimposed over the composite utility plan, addenda to Standard Water Main Specifications, estimates of cost, incorporating utility charges and Keyspan Energy/Consolidated Edison reimbursements (if any), and such pertinent engineering data as may be required. The design shall be in accordance with current Departmental standards and guidelines, and shall show, to the satisfaction of the Commissioner, all necessary water main design details including, but not limited to, valves, valve chambers, and fire hydrants.

b) Present the Water Main Design plans to private utility companies for private utility impact assessment and alignment coordination.

c) During design, confer and meet with representatives of the Commissioner in order to coordinate requirements for the design of the proposed project. In addition, the Consultant shall confer with and, where and when necessary, meet with other City, State or Federal Agencies and private utilities having jurisdiction in order to integrate any of their requirements or contemplated work into this project.

4.21 STREET LIGHTING SYSTEM DESIGN

1. Under this task the Consultant shall design a lighting system and electrical appurtenances in connection with the illumination of streets, avenues and public spaces within the project and shall prepare cost estimates for the proposed work. The design will include provisions for removal and relocation of existing street lighting facilities and installation of new lighting facilities.

2. Unless otherwise approved by the Department of Transportation, Bureau of Traffic, Division of Signals and Street Lighting, the level of illumination required is a maintained average of one (1) foot candle, a maintenance factor of 0.58 and a uniformity ratio of 6 to 1 (average to minimum) for Local Roads. For Expressways, Major Roads, and Collector Roads, the illumination level shall be 1.5 to 2 foot candles with a uniformity ratio of 3 to 1 (average to minimum).

3. The design shall conform with the latest standards and specifications of the Department of Transportation, Bureau of Traffic, Division of Signals and Street Lighting; the Illuminating Engineering Society of North America (IESNA); the American Association of State Highway Officials; and the National Electrical Code (NEC).

Should any conflict occur between these specifications, standards and codes, the Division of Signals and Street Lighting shall make the final decision on the requirement.

4. The Consultant shall prepare preliminary drawings, showing the location and details of all equipment to be installed in connection with the proposed Street Lighting design, the electrical connections and electrical services, and shall submit the preliminary drawings to the Department of Transportation, Bureau of Traffic, Division of Signals and Street Lighting for review and comments.

5. Drawings prepared and symbols used shall be in standard Bureau of Traffic, Division of Signals and Street Lighting format.

6. The submission of preliminary drawings to the Division of Signals and Street Lighting shall include:

- a) The Consultant's photometric calculations for the proposed design which shall be performed using CALA, ALADIN, AGI or other software programs which shall be subject to pre-approval by the Division of Signals and Street Lighting;
- b) Parameters used in the calculation, including roadway and sidewalk widths, mounting height, luminaire position (overhang, setback, spacing), wattage and luminaire classification.

7. The Consultant shall address the review comments and incorporate the requirements of the Division of Signals and Street Lighting in the proposed design.

8. The Consultant shall prepare preliminary estimates of quantities and cost for the proposed Street Lighting work based on the revised preliminary drawings. The estimates shall be in standard Division of Signals and Street Lighting format. The Consultant shall incorporate the preliminary estimate of quantities and cost into the Consultant's Estimate for Mass Mailing No. 2 as provided for in the Quantity and Cost Estimating Task included in the Specific Requirements of this Contract

9. The Consultant shall prepare and submit final drawings, for the proposed Street Lighting design, to the Division of Signals and Street Lighting for review and approval.

10. The final drawings shall include the proposed electrical distribution system and shall be submitted with an analysis of the voltage drop for the proposed City distribution system including voltage drop calculations.

11. The Consultant shall prepare and submit to the Division of Signals and Street Lighting, for review and approval, pre-final estimates of quantities and cost for the proposed Street Lighting Work.

12. The Consultant shall revise the final drawings and estimates to incorporate comments received from the Division of Signals and Street Lighting.

13. Upon receipt of final approval of the drawings and estimates for proposed Street Lighting work from the Division of Signals and Street Lighting, the Consultant shall incorporate the final Street Lighting plans and estimates into the Contract Documents as provided for in the Street Design Task included in the Specific Requirements of this Contract. The Consultant shall submit to the Division of Signals and Street Lighting, for record purpose, the following:

- a) A set of final drawings on mylar for the Street Lighting Work;
- b) A copy of the final estimate for Street Lighting Work;
- c) The photometric calculations using maintenance factors of 1 and 0.58.

4.22 TRAFFIC SIGNALS SYSTEM DESIGN

1. Under this task the Consultant shall design traffic signals and appurtenances in connection with traffic controls required for streets within the project and shall prepare cost estimates for the proposed Traffic Signal Work. The design will include provisions for modification, removal and relocation of existing traffic signal facilities and installation of new traffic signal facilities.
2. The design shall conform to the latest standards and specifications of the Department of Transportation, Bureau of Traffic, Division of Signal Controls.
3. The Consultant shall design the locations of traffic signal poles in coordination with the schematic geometric design developed for the project including, but not limited to, traffic lane(s) configuration, pedestrian crosswalks, traffic flow direction, mall and roadway widths, and pedestrian ramp locations.
4. The Consultant shall review available subsurface data and inspect existing buildings in the vicinity of proposed Traffic signal poles to identify possible impacts with proposed traffic signal pole foundations.
5. The Consultant shall prepare preliminary drawings, showing the location and details of all traffic signal poles, mast arms, signal heads, cables, conduits, traffic controllers, and loop detectors and/sensors that are to be removed, relocated, modified, or installed in connection with the proposed Traffic Signals design and shall submit the preliminary drawings to the Department of Transportation, Bureau of Traffic, Division of Signal Controls for review and comments.
6. Drawings prepared and symbols used shall be in standard Bureau of Traffic, Division of Signal Control's format.
7. The Consultant shall address the review comments and incorporate the requirements of the Division of Signal Control into the proposed design.
8. The Consultant shall prepare preliminary estimates of quantities and cost for the proposed Traffic Signal Work based on the revised preliminary drawings. The estimates shall be in standard Division of Signal Control format. The Consultant shall incorporate the preliminary estimate of quantities and cost into the Consultant's Estimate for Mass Mailing No. 2 as provided for in the Quantity and Cost Estimating Task included in the Specific Requirements of this Contract.
9. The Consultant shall prepare and submit pre-final drawings, for the proposed Traffic Signals, to the Division of Signal Control for review and approval.
10. The Consultant shall prepare and submit to the Division of Signal Control, for review and approval, pre-final estimates of quantities and cost for the proposed Traffic Signal Work.
11. The Consultant shall revise the pre-final drawings and estimates to incorporate comments received from the Division of Signal Control.
12. Upon receipt of approval of the drawings and estimates for proposed Traffic Signal Work from the Division of Signal Control, the Consultant shall incorporate the final Traffic Signal plans and estimates into the Final Contract Documents.

4.23 DESIGN OF RETAINING WALLS AND BULKHEADS

1. Under this task the Consultant shall develop Final Design(s) for retaining walls and bulkheads including but not limited to waterfront structures.

2. PRELIMINARY CONSTRUCTION CONTRACT DRAWINGS

a) The Consultant shall study the findings and recommendations of any embankment protection study that was previously conducted for the project.

b) The Consultant shall determine the nature and extent of subsurface exploration that is needed to update and supplement previous studies and to complete the final design. The Consultant shall incorporate the subsurface exploration requirements in the scope of work to be performed under the Subsurface Exploration Task included in the Specific Requirements of the Contract.

c) The Consultant shall study the results of the subsurface exploration program performed and the design details being developed for reconstruction of adjacent street.

d) The Consultant shall design and prepare preliminary construction contract drawings for the retaining wall/bulkhead. The drawings shall be sufficiently detailed to clearly show the location, limits and structural composition of retaining wall/bulkhead to be reconstructed; the extent of structural replacement and repairs needed; and any aesthetic repairs and/or treatments proposed.

e) The Consultant shall prepare updated preliminary cost estimates for the proposed retaining wall/bulkhead.

f) The Consultant shall include the preliminary construction contract drawings in the programmed Mass Mailing No.1 that is required under the Street Design Task.

g) The Consultant shall modify the preliminary construction contract drawings to incorporate comments received in response to Mass Mailing No. 1, as approved by the Commissioner.

3. FINAL CONSTRUCTION CONTRACT DOCUMENTS

a) The Consultant shall develop detailed construction contract drawings for the retaining wall/bulkhead.

b) The Consultant shall coordinate the Final Design details with the design details being developed for reconstruction of the adjacent street.

c) The Consultant shall prepare all submissions to City, State and Federal Agencies to obtain required approvals and permits. Such submissions shall include as required, but shall not be limited to, drawings, specifications, estimates, design criteria and computations.

d) The Consultant shall determine and advise the Commissioner of the need for temporary easements on private property to facilitate construction and shall, as directed by the Commissioner, prepare appropriate documentation and serve notices on property owners, and meet with property owners and other parties as needed to obtain such easements.

e) The Consultant shall prepare detailed cost estimates and specifications for the proposed work.

f) The Consultant shall develop Pre-final Contract Documents for reconstruction/construction of the retaining wall/bulkhead, including drawings, specifications and estimates.

g) The Consultant shall submit the Pre-final Design contract documents to the Commissioner for review and approval, and shall incorporate the approved drawings in the programmed Mass Mailing No. 2.

h) The Consultant shall modify the Pre-final construction contract documents to incorporate comments received in response to Mass Mailing No. 2, as approved by the Commissioner.

4.24 CONSTRUCTION STAGING AND MAINTENANCE AND PROTECTION OF TRAFFIC

1. Under this task the Consultant shall analyze, develop, design, and fully integrate into the Composite Contract Documents, a specific and detailed plan for the maintenance and protection of traffic during the execution of construction work on the project and for the staging of all proposed construction contract work which shall, hereinafter, be referred to as the Maintenance and Protection of Traffic (MPT) Plan.
2. MPT, for the purposes of this contract shall refer to, include and address all pedestrian traffic within and crossing the site, all modes of vehicular traffic within and crossing the site, and access and egress for all properties fronting and/or affected by the proposed construction work.
3. At the appropriate stage in the development of the Composite Contract Documents and/or as accepted in the design work schedule or as otherwise directed by the Commissioner, the Consultant shall initiate the MPT planning activity.
4. The Consultant shall develop a "Specific MPT Plan", which shall be specific to the site and specific to the site properties. The plan shall provide, where appropriate, for construction work to be advanced concurrently in subsections of the project to allow for accelerated completion of the work.
5. The Consultant shall examine various MPT strategies for portions and/or all of the project street(s) including but not limited to proposals for street closures, full or partial detour(s), one-way street conversions or other appropriate MPT staging techniques.
6. The Consultant shall familiarize him/herself regarding the operation, activity and intensity of traffic within the project site on a block by block and zone of influence basis, and shall identify, analyze, study and address and/or mitigate issues including, but not limited to, the following: main line traffic volumes; intersecting street(s) traffic volumes; turning movements; vehicular classifications {cars, trucks, buses, railroad(s)}, curbside activity (loading and unloading); parking requirements; planned special events (parades, street fair(s), marathon); special traffic generators (hospitals, police stations, large parking garages or areas); public or private institutional properties; manufacturing/warehousing facilities, supermarkets, fire stations, government buildings, parks, schools, subway stations; intense traffic generators (all types of commercial, manufacturing, warehousing establishments); other current or planned construction projects within the zone of influence; and all sources of pedestrian activity.
7. The Consultant shall develop the MPT plan generally in three stages - as follows:
 - A. STAGE 1 - CONCEPTUAL MPT PLAN. In this stage the Consultant shall:
 - a) Conceptualize the overall MPT strategy and, more specifically, conceptualize subdividing the project for concurrent staging of the work where applicable, and the staging of each category of the proposed construction work (such as sewer lining, sewer reconstruction, catch basin/inlet installation and basin/inlet connections, water mains - 12, 20, 36, 48 inch, installation of hydrants, curb construction, sidewalk construction, roadway base construction, and laying roadway wearing course);
 - b) Meet with and present his/her conceptual scheme to the Commissioner including presentation of the rationale for pursuing the selected MPT strategy based on the information, analysis and issues identified above. The presentation shall include graphics, which shall be suitable and adequate to demonstrate/represent the conceptual scheme(s);
 - c) Upon receipt of general concurrence from the Commissioner or direction to pursue additional alternative(s) the Consultant shall proceed with Stage II of the MPT development.

B. STAGE II - PRELIMINARY MPT DEVELOPMENT. In this stage the Consultant shall:

- a) Respond to the questions and concerns raised during the Conceptual MPT planning strategy session and develop the MPT proposals to a preliminary level of detail for each stage of construction work (such as but not limited to sewer lining, sewer reconstruction, catch basin/inlet installation and basin/inlet connections, water mains - 12, 20, 36, 48 inch, installation of hydrants, curb construction, sidewalk construction, roadway base construction, and laying roadway wearing course);
- b) Develop and provide graphics and notes to specifically describe the proposed MPT plans for each category of construction work. For this presentation the Consultant may be permitted to use 8 1/2 by 11 or 8 1/2 by 14 inch sheet sizes, as an alternative to the standard contract drawing sheet size, with hand drawn sketches provided that the graphics are of a professional quality and acceptable to the City;
- c) The Consultant shall meet with and present the Preliminary MPT Plan to the Commissioner;
- d) Upon receipt of general concurrence from the Commissioner or direction to pursue additional alternatives and/or expand the specificity of the MPT proposal, the Consultant shall request a review of the proposed MPT scheme by the Department of Transportation's Office of Construction Mitigation and Coordination.

C. STAGE III - FINAL MPT DEVELOPMENT. In this stage the Consultant shall:

- a) Develop and prepare final MPT plans and fully incorporate the final MPT plans into the composite final contract documents;
- b) The Consultant shall fully integrate and incorporate any comments and/or stipulations received from the Department of Transportation's Office of Construction Mitigation and Coordination into the Composite Final Contract Documents.

4.25 PREPARATION OF SPECIFICATIONS

Under this task, the Consultant shall prepare and print complete sets of Specifications for the ensuing construction contract. The specifications, which shall include boiler plate, required Addenda and Bid Schedule Sheets, shall be prepared within the framework of the following parameters:

1. Standard Specifications of the Department and of the agencies having jurisdiction over various elements of the project shall be used as directed by the Commissioner.
2. Addenda shall contain either modifications to standard items or complete descriptions for new items of work. In addition, addenda may contain special provisions for conducting the work, including but not limited to time of construction, maintenance of traffic stipulations, insurance requirements, State/Federal requirements, and incorporation of additional provisions for both private and City-Owned Utility work.
3. The Specifications shall conform to the appropriate Standard Specifications for the various items of work involved; excepting where there is no standard specification for a proposed bid item or item of work, the Consultant shall prepare the necessary special specification, as an Addendum to the Standard Specifications, and shall submit such special specification to the Commissioner for review and approval.

Where required by the Commissioner, the Consultant shall prepare a justification for New York State Department of Transportation (NYSDOT) review - specifically outlining the technical circumstances requiring a new specification write-up and shall be responsible for obtaining NYSDOT approval of new specifications.

4. Bid Schedule sheets will be provided to the Consultant by the Commissioner for incorporation into the Specifications. The Bid Schedule sheets will contain contract bid items listed by item number and description, presented in standard Departmental format, and will be produced in accordance with the detailed Consultant's Estimate and Scope packet produced and provided by the Consultant under other tasks included in the Specific Requirement of this Contract.
5. The Consultant shall provide Supplemental Data in standard Departmental format for the Bid Schedule, as needed, and shall verify the Bid Schedule, produced by the Commissioner, for correctness.
6. When directed by the Commissioner, collated and bound copies of the complete Specifications, Addenda and Bid Schedule Sheets shall be furnished by the Consultant for technical and construction reviews in accordance with the approved project schedule.
7. When directed by the Commissioner, the Consultant shall prepare a draft specification in accordance with the approved project schedule.
8. The Consultant shall print, inspect, and deliver to the Department the required number of collated, unbound, sets of the completed Specifications for advertisement as outlined in Section 2.5 of these General Requirements and Specific Requirements.
9. During advertisement, the Consultant shall answer all questions submitted by prospective bidders and, when and as required, expeditiously prepare, notify and distribute addenda to prospective bidders.
10. The Consultant shall continuously maintain, update and submit to the Commissioner "on demand" (at any time during the public advertisement period) a complete bidders' inquiry and disposition report (IDR) which shall, at a minimum, identify each question exactly as phrased by the prospective bidder's inquiry (questions with multiple issues or sub-questions shall be subdivided and listed as separate questions - suitably numbered in the IDR, the date inquiry was received and the date of the Consultant's response, method of delivery (fax, certified letter, telephone, other), name of proposed bidder, disposition (must be specific and complete) and date of close out. The format of the IDR shall be as approved by the City.

4.26 REVIEW AND ANALYSIS OF BIDS

1. Under this task the Consultant shall evaluate and analyze the unit bid prices submitted for the work included in the proposed construction contract for this project, compare the bids received from the various bidders, and submit a letter report of his/her findings to the Commissioner to assist the Commissioner in deciding to award a contract for the proposed work.
2. The Commissioner will provide the Consultant with a tabulation of the Consultant's estimate of quantities and prices for the various items of work along with the prices submitted by each bidder and their extended amounts. Also provided by the Commissioner will be a Bid Analysis Report containing a tabulation of all the unit prices submitted by the apparent low bidder that exceed the Consultant's estimated price by more than fifteen (15) percent, and a tabulation of all the bid items with the percentage deviation of the low bidder's price for each from the Consultant's estimated price.
3. The Consultant shall study, analyze and compare the prices submitted by each of the three lowest bidders and of other bidders where required by the Commissioner. The Consultant shall, based on the Consultant's experience and judgment, attempt to identify the possibility for unbalanced bids (including "penny bids" and "front loading") and any indications of collusion in the pricing of bids.
4. Where the unit price bid for any item of work exceeds the Consultant's estimated unit price by more than fifteen (15) percent, the Consultant shall study the item's payment provisions and appropriate design details, and recheck the estimated quantity for each such item, restudy the contract documents and identify and quantify any possible overrun or underrun in the estimated quantity for each such item, and the impact of such overrun or underrun on the bids received and on the ranking of bidders.
5. The Consultant shall identify all items of work (including items of work not identified in the Commissioner's Bid Analysis Report) submitted by each of the lowest three bidders, and of other bidders where required by the Commissioner, that appears, in the judgment of the Consultant, to be lower or higher than it is reasonable to anticipate.
6. The Consultant shall compare the pricing of items in the bids received and shall identify any bids in which items of work have been priced in a manner that indicates possible collusion by bidders in the preparation of bids.
7. The Consultant shall identify any bids received and the relevant items of work in such bids where it appears that any bidder unbalanced items of work, that are to be performed during the early stages of construction (referred to as "front loading").
8. The Consultant shall report his/her "initial findings" to the Commissioner by telephone or facsimile transmittal within two working days of the tabulation of bids being made available by the Commissioner.
9. The Consultant shall prepare and submit to the Commissioner a written statement of his/her findings within four working days of the tabulation of bids being made available by the Commissioner.
10. The Consultant shall not have any direct or indirect contact with any bidder regarding the bids received. Any such contact requested or found necessary shall be referred to the appropriate Department personnel for action.

4.27 ELECTRONIC ARCHIVING AND INDEXING

1. INTENT. It is the intent of this task to provide for assembling, indexing and electronic archiving of project records and documentation.

2. RECORDS KEEPING. Records shall be kept complete in a central project file which the Consultant shall maintain. This file shall contain letters, reports, field notes, sketches, computations, telephone messages, diaries, surveys, marked-up drawings, worksheets, data, research records, computer printouts, payments, problem reports, applications, renderings, permits, etc. Additionally, the central project file shall be kept in a format in accordance with currently applicable Departmental Standards and Procedures, which in general shall mean a format which shall facilitate retrieval of information, and customized indexing of the required records.

3. ELECTRONIC ARCHIVING:

a) For Preliminary Design and Investigation projects the Consultant shall assemble, index, prepare and submit:

1. PDF files of executed Contract/Task Order(s)
2. PDF files of the PDI Report
3. PDF files of all technical supplements
4. PDF files of important documents (CPIs, signoff letters, etc.)
5. PDF files of all payment requisitions
6. Digital files of all photos
7. Digital files (AutoCAD 2004 or latest edition) of the approved schematic Geometric Design and Pavement Marking plans
8. Digital (AutoCAD 2004 or latest edition) files of the final survey

b) For Final Design projects the Consultant shall assemble, index, prepare and submit:

1. PDF files of executed Contract/Task Order(s)
2. PDF files of other important documents (CPIs, sign off letters, etc.)
3. PDF files of all payment requisitions
4. PDF files of conformed (all addenda incorporated) bid documents (i.e. Plans, Specifications, and Estimate)
5. PDF files of the Design Report (for Federally funded projects)
6. Digital files of all photos
7. Digital files (AutoCAD 2004 or latest edition) of all final plans

c) For Total Design projects the Consultant shall assemble, index, prepare and submit all applicable items listed under (a) and (b) above.

4. ELECTRONIC DOCUMENT STORAGE. The Consultant shall record all required PDF files on CDs. All files shall be custom indexed and stored in such manner to allow for electronic search/retrieval and printing.

a) Scanning

- (i) To insure maximum clarity all documents shall be scanned to a minimum of 400 dpi.
- (ii) All documentation shall be scanned to PDF image.
- (iii) All drawings shall be scanned to a positive image, regardless of the original polarity.
- (iv) All supporting text documents shall be scanned into separate folders titled by the type of document or file name.
- (v) All documents within each folder shall be scanned as a multi-page PDF image (i.e.: Letters, Reports, Minutes, Work Sheets, etc.).

b) Indexing and Retrieval

- (i) The Consultant shall customize the index of stored documents to allow for electronic search/retrieval.

(ii) The stored documents shall be retrievable and printable from any PC that is operating with Microsoft Windows 2000 Professional or Windows NT, Microsoft Office 2000 Professional, AutoCAD 2004 or latest edition, and has a CD-ROM drive. No additional software or licenses shall be needed.

(iii) As Built Drawings

All As Built drawings shall be scanned to a separate folder, titled As Builts.

All drawings shall be titled by drawing name.

All drawings shall be retrievable by:

Project ID.
Contract name
Drawing number
Drawing name

(iv) Shop Drawings

All Shop drawings shall be scanned to a separate folder, titled Shops.

All drawings shall be titled by drawing name.

All drawings shall be retrievable by:

Project ID.
Contract name
Vender name
Drawing number
Drawing name

(v) The construction contract shall be custom indexed and its text shall be retrievable by division numbers and/or titles (Standard Construction Contract, "Information for Bidders" Notices, Addenda, General Conditions, General Provisions, General Requirements, Bid Booklet and Miscellaneous sections; all as applicable), numbers and/or titles of Sections and Subsections in each division, and the contract work item numbers.

(vi) It shall be possible to print the documents from each CD in normal full size pages/sheets or in detailed zoomed view for sections of drawing sheets, on a standard type printer or plotter.

c) Compact Discs (CDs)

(i) Five (5) copies of the original CDs shall be required.

d) The Consultant shall provide a printed Document Index, and the electronic file of the same, including an abstract of the document content for the central project file.

4.28 SIDEWALK CELLAR DOORS CONDITION INVENTORY

- A. Under this task element the Consultant shall conduct a survey and prepare a condition inventory of all cellar doors within the limits of this project.
- B. The Consultant shall establish and define criteria for, and prepare a rating scale for the condition of cellar doors.
- C. The Consultant shall visit the site and make a visual inspection of every existing cellar door that is located within the limits of the mapped right-of-way(s). The Consultant shall note the condition of each cellar door inspected, and shall measure and record the dimensions of each cellar door.
- D. The Consultant shall take a photograph of each cellar door. The photographs shall be in color and prints shall be 4 inches by 6 inches in size to produce a photo log. All prints shall be appropriately marked/numbered for easy identification/correlation and an index of all the photographs shall be prepared and inserted in the photo log. The index shall identify the cellar door(s) in each photograph by location, including Block and Lot number, street name and house number. The original photo log and one color copy shall be provided to the Commissioner.
- E. The Consultant shall prepare a tabulated summary of the condition inventory, by station, for all cellar doors. The inventory shall include a tabulation and sequential listing of all cellar doors, the identification of each cellar door by the marking/number used in the photo log and the size, rated condition and location of each cellar door.
- F. The Consultant shall verify that all cellar doors are incorporated in the topographic survey.
- G. The Consultant shall perform the visual inspection of the existing sidewalk cellar doors, as an independent task. If the Consultant for his/her own convenience elects to perform the said inspection in conjunction with another assigned task in the project, he/she shall be required to obtain approval from the Commissioner for doing so, prior to performing the inspection.

4.29 BUILDINGS RESEARCH

1. Under this task the Consultant shall research the records of all existing buildings for properties abutting the project streets, ascertain the nature of their construction and whether or not grade waivers were issued by the City for the construction of each building, to allow the City to determine liability for damage to property that may result from construction and construction operations that are to be performed in connection with this project.
2. The Consultant shall research the records of the respective County Clerks' Office to locate the original Certificates of Occupancy for each building and to determine whether or not a waiver of grade was issued for each property at the time each building was erected thereon.
3. The Consultant shall research the records of the New York City Department of Buildings to ascertain the nature of the foundations provided for each building.
4. The Consultant shall research the records of the Topographic Bureau of the respective Borough Presidents' Office to supplement the data obtained from the records of the County Clerks' Offices and the Department of Buildings. The Consultant shall obtain the dates on which the original legal grades were established as well as any subsequent changes/remapping of lines and grades.
5. The Consultant shall obtain copies and dates of all relevant records located, and shall record the source and file location of each item of record obtained.
6. The Consultant shall report on the results of the research conducted on the buildings. The report shall be prepared in tabular format with a graphical summary complete with legend, and shall be submitted to the Commissioner for approval. The report shall indicate:
 - (a) The City Block and Lot Number of each property in ascending order.
 - (b) The type and usage of each building that exists on each lot.
 - (c) The nature of construction of each building and its foundation.
 - (d) Buildings for which waivers of grade were issued at the time of construction.
7. The Consultant shall prepare an index for and shall include all records obtained, under this task, in Technical Supplement to the Design Report produced under the Project Development/Identification Task included in the Specific Requirements for the Project.

4.30 CONSTRUCTION CONTRACT DURATION/SCHEDULING STUDY

1. Under this task the Consultant shall develop and study alternate construction staging proposals and corresponding schedules for each staging proposal, and analyze the general impact of each proposal on the community and on traffic and traffic operations, for the purpose of assessing the optimum time to be allowed for the proposed construction contract duration and finalize the development of the Maintenance and Protection of Traffic Plans in accordance with an approved staging proposal.
2. The Consultant shall study the design proposals, as-available contract documents, review relevant design/study support data and perform additional reconnaissance, as necessary, to familiarize itself with the project site and area.
3. The Consultant shall identify all significant work activities and develop productivity rates, for the various elements of construction activities identified, for use in this construction staging/time study analysis.
4. The Consultant shall prepare/develop a "baseline" construction staging plan. The Consultant shall take cognizance of the impact of the staging plan on contract duration, the community and on traffic circulation and operations, and identify possible mitigation measures.
5. The Consultant shall develop time/productivity curves for the proposed construction staging and for each construction contract activity included in the contract - including, but not limited to, sewer lining/sewer construction, catch basin installation, basin connections, water mains (12, 20, 36, 48 inch or metric equivalents and other sizes), curb and sidewalk work, roadway base, roadway pavement, tree planting, street lighting, traffic signal, and any other work proposed.
6. The Consultant shall present its preliminary construction staging and scheduling analysis to the Commissioner at a meeting. The presentation shall include the use of professional quality overheads and/or graphic display boards as exhibits, supplemented with handouts and other presentation material.
7. Upon general concurrence from the Commissioner or direction to pursue different and/or additional construction staging strategies the Consultant shall develop two accelerated construction staging alternatives and their corresponding schedules. The Consultant shall take cognizance of the impact of the accelerated work/staging plans on the community and on traffic circulation and operations, and identify possible mitigation measures.
8. The Consultant shall present its fully developed construction staging and duration analyses to the Commissioner at a meeting. The presentation shall include the use of professional quality overheads and/or graphic display boards as exhibits, supplemented with handouts and other presentation material.
9. The Consultant shall incorporate the construction staging and scheduling alternative, accepted by the Commissioner, into the Composite Contract Documents' Maintenance and Protection of Traffic Plans.

4.31 SCHEMATIC LANDSCAPE/URBAN DESIGN

Under this task the Consultant shall provide for the preparation of a Schematic Landscape/urban design including provision of pedestrian amenities to be performed in conjunction with the Project.

The scope of work for the schematic landscape/urban design shall include performance of the following services:

1. The consultant shall study the site conditions and all available subsurface information/data, determine the need for special borings and develop the location plans, and take the borings (under Subsurface Exploration Program) specifically intended to analyze and determine the suitability of existing subsurface materials for planting purposes as approved and directed by the Commissioner. The consultant shall, recommend appropriate mitigation measures for soil quality improvements, when required.
2. The consultant shall prepare a Schematic Landscape/Urban Design coordinated with the Schematic Geometric Street Design elements developed for the project; submit the said design to other Agencies designated by the Commissioner, and to the Public Design Commission for review and comment; and obtain approval and or acceptance of the Schematic Landscape/Urban Design from the Commissioner.
3. **INCREMENTAL REVIEWS:** The Landscape Architect/Urban Designer shall be accountable to initiate all actions for incremental review of proposed designs by the Department, other Agencies designated by the Commissioner and the Public Design Commission, including all follow-up meetings, as required, to expeditiously resolve all questions and concerns necessary to develop designs, to obtain the approval of said agencies, and to advance the project to completion.
4. The Consultant's Landscape Architect/Urban Designer shall study all data obtained and designs developed under the other tasks included in the Specific Requirements for the Project, and develop a functional Schematic Landscape/Urban Design for the project. This shall include, but not be limited to, the following:
 - a. When a Consultant and/or DDC identify landscape/urban design elements to have a potential for use of the sustainable design, the Consultant shall follow High Performance Infrastructure-Best Management Practices (BMP) based on the core principles of sustainable design during development of Schematic Design. The Consultant shall analyze the environmental, social and economic benefits of each alternative and include the results of their studies and their recommendations in a report. The Consultant shall incorporate the approved design into the Preliminary Design Documents.
 - b. The Consultant and Landscape Architect/Urban Designer shall review the topographic and utility surveys, the Preliminary Design/Investigation Report for the project, maintenance records, boring and test pit results, and all technical supplements prepared in connection with the program.
 - c. The Landscape Architect/Urban Designer shall prepare a report compiling all relevant base data for the landscape of the project and other locations within the project limits including a complete photographic record of the project area in order to illustrate the general character of the environs, as well as to illustrate the typical conditions and specified problems/issues/impacts of the proposed project. All graphics shall be reduced and included in a 8.5" x 11" report. The photographic record shall be 4" x 6" format, and shall be suitably indexed, bound, annotated and submitted with the final contract documents.
 - d. The Landscape Architect/Urban Designer, in coordination with the Consultant, shall develop conceptual designs for the landscaping/urban design.
 - e. The Schematic Landscape/Urban design for the above themes shall be bounded by the following elements:
 - (i) Proposed geometric curb alignment as developed under the Schematic Design Task.
 - (ii) Existing and proposed substructures and utilities within the area of the project site.
 - f. The conceptual design shall respond to, but not be limited to, the following urban design criteria:
 - (i) Encourage appropriate use and discourage inappropriate use of public spaces.
 - (ii) Create an opportunity for public art.
 - (iii) Plans for future development of the abutting properties in accordance with existing zoning regulation.
 - g. Pedestrian landscape treatment may include, but not be limited to, the following:

- (i) Sidewalks and pavements consisting of special materials such as granite, hexagonal asphalt block pavers, bluestone and stone screenings.
 - (ii) Granite curbing.
 - (iii) Tree Planting.
 - (iv) Special tree pits.
 - (v) Special street lighting and low-level pedestrian lighting that will be subject to approval by the Department of Transportation. Street lighting must conform to the Department of Transportation standards. Proposed designs shall be coordinated with the Department of Transportation's Bureau of Traffic Operations, Division of Signals and Street Lighting.
 - (vi) New traffic signals/poles that will be subject to approval by the Department of Transportation. Traffic signals must conform to the Department of Transportation standards. Proposed designs shall be coordinated with the Department of Transportation's Bureau of Traffic Operations, Division of Signals and Street Lighting.
 - (vii) Relocation of utilities, as required.
 - (viii) Consideration of the use of the Department of Parks and Recreation's standard benches.
- h. The Landscape Architect/Urban Designer shall develop/recommend not more than two alternate landscape treatments for the project. These landscape treatments shall correspond to the schematic geometric treatments as developed in cooperation with the Consultant, and shall include, but not be limited to, such items as curb and sidewalk treatments; tree planting; pedestrian amenities; street and pedestrian lighting; street furniture; signage; and traffic signal systems.
- i. The Landscape Architect/Urban Designer shall identify and quantify all impacts for each alternative.
- j. The Landscape Architect/Urban Designer shall present each of the proposed Landscape treatment alternatives in schematic plan view(s) using a "modified" clean base format. The modified clean base plans shall be reformatted/matched to present linear continuity for individual thoroughfares/segments/routes. Suitable key location figures and/or key windows shall be employed, and cross-sections shall be required where appropriate. All elements of the schematic landscape/urban design presentation plans, including sheet size, scale, sheet coverage and indexing, shall be subject to the approval of the Commissioner.
- k. The Landscape Architect/Urban Designer shall submit the proposed schematic landscape/urban design(s) to the Commissioner, for review. Upon approval, the Landscape Architect/Urban Designer shall present the recommended schematic design to other Agencies designated by the Commissioner, and the Public Design Commission for their review and comments; and to various other interested parties, as directed by the Commissioner, for their comment(s).
- l. The Landscape Architect/Urban Designer shall evaluate all comments received and shall analyze each concern. Upon consultation with the Department's Infrastructure Design Division the Landscape Architect/Urban Designer shall prepare a letter report to the Department summarizing all comments and concerns, and making all necessary recommendations.
- m. The Landscape Architect/Urban Designer shall be required to either modify the original schematic design or prepare one additional alternative schematic design responding to identified concerns where, in the judgment of the Landscape Architect/Urban Designer and the Commissioner, the adjustments/modifications are in the best interests of the City of New York, are technically defensible and represent acceptable architectural practice.
- n. The Landscape Architect/Urban Designer shall submit the proposed Schematic Landscape/Urban Design to the Commissioner for review. Upon acceptance by the Commissioner, the Landscape Architect/Urban Designer shall present the recommended schematic design to other agencies designated by the Commissioner, and to the affected Community Planning Board(s), and the Public Design Commission at formal public meetings/hearings, and shall incorporate the schematic design into a Schematic Landscape/urban design Technical Supplement.
- o. Upon acceptance of the final Schematic Landscape/urban design by the Department and upon receipt of written notice to proceed by the Commissioner, the Landscape Architect/Urban Designer shall commence work in conjunction with the Final Design Services of the Project.

4.32 FINAL LANDSCAPE/URBAN DESIGN

Under this task the Consultant shall provide for the preparation of a final landscape/urban design including the provision of pedestrian amenities to be performed in conjunction with the Project.

1. The Landscape Architect/Urban Designer shall provide the following services:

a. When a Consultant and/or DDC identify landscape/urban design elements to have a potential for use of the sustainable design, the Consultant shall follow High Performance Infrastructure-Best Management Practices (BMP) based on the core principles of sustainable design during development of Final Design. The Consultant shall analyze the environmental, social and economic benefits of each alternative and include the results of their studies and their recommendations in a report. The Consultant shall incorporate the approved design into the Design Documents.

b. The preparation of final construction contract documents for Landscaping/Urban Design work which shall be advanced in two phases as follows:

(i) The preparation of Preliminary Landscape/Urban Design in cooperation with the Department and the Public Design Commission; and obtaining approvals from the Department and from said Agency prior to incorporation of the Preliminary Landscape/Urban Design into the Preliminary Contract Documents under the Street Design Task.

(ii) The preparation of Final Landscape/Urban Design in cooperation with the Department and other agencies designated by the Commissioner and the Public Design Commission; and obtaining approvals from the Department and from said Agency prior to incorporation of the Final Landscape/urban design into the Final Contract Documents under the Street Design Task.

c. INCREMENTAL REVIEWS: The Landscape Architect/Urban Designer shall be accountable to initiate all actions for incremental review of proposed designs by the Department, other Agencies designated by the Commissioner and the Public Design Commission, including all follow-up meetings, as required, to expeditiously resolve all questions and concerns necessary to develop designs, to obtain the approval of said agencies, and to advance the project to completion.

d. Prepare preliminary and final contract drawings, addenda to Standard Department and Department of Parks Specifications, estimates of cost, and such pertinent architectural data as may be required. The drawings shall be in accordance with the standards of the Department, and shall show, to the satisfaction of the Commissioner, all necessary Landscape/Urban Design details.

(i) Contract documents shall include but not be limited to the following list of separate contract drawings:

- Topographic Survey
- Removals Plan
- Layout Plan
- Site Plan
- Grading and Utilities Plan
- Planting Plan
- Sections and Elevations
- Details

(ii) During design, confer and meet with the Commissioner in order to coordinate requirements for the design of the proposed project. In addition, the Landscape Architect/Urban Designer shall confer with, and where and when necessary, meet with other City, State or Federal Agencies and private utilities having jurisdiction in order to integrate any of their contemplated work into this project.

Complete sets of prints of the plans, specifications and cost estimates shall be submitted for Preliminary, Final and Compliance Review.

(iii) Contract drawings shall be developed for the following landscape items:

- (i) Removals and Excavation
 - (ii) Pavements and Curbs
 - (iii) Fencing
 - (iv) Site Furniture
 - (v) Miscellaneous Construction
 - (vi) Planting
 - (vii) Drainage and Water Supply
 - (viii) Lighting

(ix) Monuments and Art Work

e. In preparing the Contract Drawings and addenda to the Standard Specification of the Department, the Landscape Architect/Urban Designer shall take cognizance of the basic minimum requirements set forth herein, together with such other requirements as may be stipulated and proper for the complete fulfillment of this contract for the purposes for which the projects is to be used. The proposed construction is to be designed generally in accordance with these Specific Requirements of the contract, subject to such further requirements of the Department, the Public Design Commission, and any other agencies having jurisdiction as the design progresses.

f. In preparing the Final Landscape/Urban Design, the Landscape Architect/Urban Designer shall utilize all information as contained in the plotted topographic and Utility Surveys for the Project. The Architect shall supplement this information with field trips and additional searches for information as may be required, including obtaining supplemental surveys.

4.33 LANDSCAPE/URBAN DESIGN CONSTRUCTION SUPPORT SERVICES

During the construction stages of the project the Landscape Architect/Urban Designer will be required to inspect and approve shop drawings, material samples and the landscaping work being performed by the contractor to ensure that the landscaping materials and the finished work meet the quality and standards specified.

The Landscape Architect/Urban Designer will be required to visit the site at various stages of the landscaping work to inspect the landscaping being performed, and shall provide such instructions and guidance to the Contractor as is necessary and appropriate to ensure that the required quality of the landscaping work is achieved.

The Commissioner will transmit the necessary shop drawings to the Landscape Architect/Urban Designer for review and approval and will, in consultation with the Landscape Architect/Urban Designer, advise the Landscape Architect/Urban Designer of the need and schedule for inspecting various phases of the landscaping work as the work progresses.

4.34 DESIGN OF MODIFICATIONS TO SUBWAY VENTILATORS

1. Under this task the Consultant shall research and study the details of existing subway structures and facilities, develop preliminary and final designs, preliminary and final cost estimates, and specifications for modification of subway ventilators as needed to implement street reconstruction proposals.

2. PRELIMINARY DESIGN

(a) The Consultant shall utilize any topographic and utility data provided to the extent necessary for the proper completion of this task.

(b) The consultant shall supplement any survey and utility data provided by conducting additional research of Transit Authority, and public and private utilities' records; and by conducting additional field surveys to ensure that there is adequate and accurate data to identify possible design alternatives and to fully develop the design details.

(c) The Consultant shall develop and provide the Commissioner with an estimate of the number of days and locations at which it intends to have personnel conducting surveys within the subway structure. The Consultant shall coordinate, with the Department, the development of a Transit Authority Force Account to allow the City to reimburse the Transit Authority for the cost of its personnel assigned to facilitate the Consultant's field surveys of the subway structure and its facilities.

(d) The Consultant shall identify design alternatives for modifying the subway ventilator(s) to allow for implementation of the street reconstruction proposals. Proposed modifications may include, but not be limited to, relocation of ventilators, and modification of the subway structure and facilities.

(e) The Consultant shall develop design alternatives in full coordination with the Transit Authority. All modifications to the subway structure and Transit Authority facilities are to be designed in accordance with design criteria stipulated by the Transit Authority, or recommended by the Consultant and accepted by the Transit Authority. Design details shall conform to the Transit Authority's standards.

(f) The Consultant shall prepare preliminary drawings for the design alternatives identified. The preliminary drawings shall include plans, profiles and cross sections drawn to scale; shall indicate overall dimensions of existing structural elements that are to be modified and of the new construction proposed including hardware and equipment that must be removed and/or installed.

(g) The Consultant shall make a preliminary assessment of the impact that each design alternative will have on existing sewers, water mains, and all other City owned facilities, identify and recommend measures that can be implemented to mitigate those impacts, and prepare preliminary drawings for the mitigation measures recommended.

(h) The Consultant shall submit the preliminary drawings for the design alternatives, including details of proposed City owned utilities impact mitigation measures, to all private utility companies that own and operate facilities within the project limits. The Consultant shall ask each utility company to make a preliminary assessment of the impact of each design alternative on its facilities and to identify private utilities impact mitigation proposals for each alternative.

(i) The Consultant shall develop preliminary estimates of the cost of implementing each design alternative considered including the cost of measures proposed to mitigate City owned utility impacts.

(j) The consultant shall identify, on the Preliminary Drawings, the existing utilities that may be impacted and shall submit the preliminary drawings and preliminary cost estimates for the design alternatives to the Commissioner along with recommendations, including justification, for selection of a preferred alternative(s). The Consultant shall meet with the Commissioner and present the design alternatives, recommendations and justifications.

(k) The Consultant shall incorporate comments received from the Commissioner on the preliminary design alternatives and shall revise the preliminary drawings accordingly.

(l) Upon acceptance of a preferred design alternative(s) by the Commissioner the Consultant shall submit the preferred alternative to the Transit Authority for approval/acceptance and shall meet with the Transit Authority's representatives, if required, to present the proposed design. The presentation shall include, if appropriate, discussion of other design alternatives considered and justification for selection of the preferred design.

(m) The Consultant shall advise the Commissioner of all design requirements imposed by the Transit Authority. Where approved by the Commissioner, the Consultant shall incorporate such requirements in the proposed design(s), resubmit the proposed design to the Transit Authority, and obtain the Transit Authority's written approval/ acceptance of the proposed design.

(n) The Consultant shall not commence any work on the Final Design for modification of subway ventilator(s) without written authorization from the Commissioner to proceed with such work.

3. FINAL DESIGN

(a) Upon receipt of written instructions from the Commissioner to proceed with work on the final design for modification of subway ventilators, the Consultant shall proceed to design, and develop details and construction contract drawings, specifications and final cost estimates for the approved/accepted design alternative(s).

(b) The contract drawings shall show all dimensions and indicate all materials, including requirements for hardware and equipment,, that are needed to modify the existing ventilator(s), and include details for demolition of and/or sealing the existing ventilator(s) where necessary and for construction of the new ventilator(s).

(c) The Consultant shall develop final design details for the mitigation of City owned utility impacts and shall include the design details in the construction contract drawings that are being developed.

(d) The Consultant shall submit the construction contract drawings to the Transit Authority for review and comments and shall include the construction contract drawings in the programmed Mass Mailing No. 1 required under the Street Design Task included in these Specific Requirements.

(e) The Consultant's submission of construction contract drawings to the Transit Authority shall include the consultant's design computations where required by the Transit Authority.

(f) The Consultant shall meet with private utility representatives to coordinate the design and implementation of measures needed to mitigate private utility impacts.

(g) The Consultant shall revise the construction drawings to incorporate comments received from the Transit Authority and in responses to Mass Mailing No. 1 submissions, as approved by the Commissioner.

(h) The consultant shall prepare detailed specifications for all work needed to modify the subway ventilator(s).

(i) The Consultant shall prepare itemized cost estimates for constructing the proposed modifications to ventilator(s) and shall include the detailed cost estimate in the Consultant's Estimate for this project.

(j) The Consultant shall submit the revised construction contract drawings and specifications for the proposed work to the Transit Authority for review and approval. The Consultant shall include the construction contract drawings, for modification of ventilators, in the programmed Mass Mailing No. 2 required under the Street Design Task that is included in these Specific Requirements.

(k) Upon receipt of written approval of the contract drawings and specifications, for proposed subway ventilator modifications, from the Transit Authority, the Consultant shall incorporate the subway ventilator modification drawings, specifications, and cost estimates in the construction contract documents for this project.

4.35 ENVIRONMENTAL ASSESSMENT STATEMENT (EAS)

Under this task, the consultant shall collect all pertinent data and prepare an Environmental Assessment Statement (EAS) for the proposed project work as described in this section. The Consultant shall assess the potential impacts of the proposed project construction to satisfy the environmental review requirements of The City Environmental Quality Review process (CEQR) and the New York State Environmental Quality Review Act (SEQRA) in order to implement this project. The scope of the EAS shall meet the requirements for all tasks (i.e. ULURP, Acquisition, Adding or Removing Traffic Lanes, Etc.) that require Environmental Assessments in the specific requirements for the project.

The Consultant shall conduct a detailed study of the impact of the proposed street improvement project as specified here below in accordance with the City Environmental Quality Review (CEQR) process as set forth in Executive Order 91 of 1977 and its amendments. The Consultant shall use the methodologies and environmental impact thresholds detailed in the CEQR Technical Manual and its appendices dated 2001. Upon completion of the Environmental review the Consultant shall duly fill out the attached CEQR Environmental Assessment Statement.

If any of the proposed action triggers review by New York State Department of Environmental Conservation, the Consultant shall conduct additional assessment in accordance with State Environmental Quality Review Act (SEQRA) as set forth in 6NYCRR Part 617. For the SEQRA process the following current blank forms from New York State Department of Environmental Conservation should be used which are downloadable from New York State website:

- i. Joint Application for Permit
- ii. Full Environmental Assessment Form
- iii. Negative Declaration Form
- iv. Positive Declaration Form
- v. Structural Archeological Assessment Form

The EAS shall include, but not be limited to the following. For definitions, assessment methods, determining impact significance etc, the consultant shall refer to appropriate chapters indicated below in the CEQR technical manual:

1. Land use, zoning, and public policy (Refer to Chapter 3A of CEQR technical Manual)

The Consultant shall examine the potential impact of the proposed plan in terms of land use and zoning the project area.

2. Socioeconomic conditions (Refer to Chapter 3B of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon fiscal and economic issues, water and sewer rates, employment, wages and salaries, economic activity, tax revenues, and NYC capital and operational budget expenditures.

3. Community facilities and services (Refer to Chapter 3C of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon community facilities and services in the project area.

4. Open Space (Refer to Chapter 3D of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon open space and recreational resources in the project area.

5. Historic resources (Refer to Chapter 3F of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon cultural resources in the project area, including archaeological and historic resources.

6. Urban design / visual resources (Refer to Chapter 3G of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon urban design and visual resources in the project area.

7. Neighborhood character (Refer to Chapter 3H of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon neighborhood character in the project area.

8. Natural resources (Refer to Chapter 3I of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan on natural resources including wetlands and upland areas. This effort shall include detailed tree inventory report for the project area and an assessment of tree loss as an environmental impact.

The Consultant shall examine the potential impacts of the proposed plan on existing natural habitats and wildlife within all the wooded areas surrounding the project site.

The Consultant shall identify any permits or other regulatory approvals, which may be required to facilitate the proposed plan, contact the respective agencies, and secure information on the applications and supporting materials. These permits may include the following:

- Wetland Permits (NYSDEC), and Army Corps of Engineers.
- Authorizations and other approvals under the City Planning Commission.

9. Hazardous materials (Refer to Chapter 3J of CEQR technical Manual)

The Consultant shall incorporate the results of the "Preliminary Investigation and Assessment of Site Contamination" with regard to Hazardous Waste within the Project Streets. For those locations, the Consultant shall conduct a Phase I analysis. The Phase I analysis will be based on historical and current land use patterns along with site surveys. Once locations are identified where hazardous materials may be an issue, the Consultant shall propose a site-sampling program in order to characterize the potential for significant impact. The Consultant shall propose a sampling program for the hazardous materials sampling along with the development of a conceptual mediation approach.

10. Waterfront revitalization program (Refer to Chapter 3K of CEQR technical Manual)

The Consultant shall verify if the project limits are situated within the designated boundaries of New York City's Coastal Zone. If this is the case, the consultant shall examine the potential impacts of the proposed action for their consistency with the City's Local Waterfront Revitalization Program (LWRP). The WRP consistency assessment form, which is included in the CEQR manual, shall be utilized for this purpose. For a detailed explanation of the Waterfront Revitalization Program and its policies, the consultant shall obtain the City Planning's publication of the *New York City Waterfront Revitalization Program*.

11. Infrastructure (Refer to Chapter 3L of CEQR technical Manual)

- a) The Consultant shall assess the potential environmental impact of the proposed infrastructure improvement including the installation of new sanitary and storm sewers and the reconstruction of the Project Streets, on the existing infrastructure facilities such as the water supply system, sewage treatment and storm water systems.
- b) The Consultant shall examine the potential impacts of the proposed plan upon public and private utilities in the Project Streets.
- c) The Consultant shall assess the potential environmental impacts of any growth-inducing aspects of the proposed plan including, but not limited to, the construction of new storm water and sanitary sewer system, street reconstruction and the impact of change in grade if any. The Engineer shall estimate the additional demand flow created by the proposal based on current formulas provided by the Department.
- d) The Consultant shall examine the potential impacts on City Water Pollution Control Plants (WPCPs) from additional sanitary flow collected by the sanitary system proposed as part of the project. In accordance with State Pollution Discharge elimination Permits and applicable water quality standards, the potential effects of the greater sanitary flow on water quality of receiving bodies should be analyzed.

12. Solid Waste and sanitation services (Refer to Chapter 3M of CEQR technical Manual)

The Consultant shall examine the potential impacts of the proposed plan upon solid waste generation and sanitation services.

13. Traffic and Parking (Refer to Chapter 3O of CEQR technical Manual)

Traffic Study:

- i. The consultant shall examine the potential impacts of the current vehicular and pedestrian traffic and the projected increase in traffic for the next 20 years. The results of the traffic study done for this project under the PDI program should be utilized for these purposes. The Consultant shall develop a computer traffic model for the proposed roadway along the project streets using the current industry software as approved by the Department.
- ii. The Consultant shall conduct turning lane analysis for the projected traffic because of widening of the project streets if any.
- iii. The Consultant shall study accident data and make a comparative analysis of the existing conditions with regard to vertical and horizontal sight distance and the proposed vertical and horizontal sight distance at the critical intersections and along the project streets in accordance with the current AASHTO standards.
- iv. In conducting the detailed traffic study of the project area as detailed in General Requirements, the Consultant shall investigate the current traffic data, the projected traffic increase (20 year design), the type of traffic and substantiate the proposed lane widths, proposed schematic design and the proposed geometric layout of project streets in accordance with AASHTO standards. The Consultant shall pay particular attention to the list of projects proposed by the Department of Transportation in their 10 year Capital Commitment Plan, that are within the vicinity of the project.
- v. Parking conditions: The consultant shall examine the potential impact of the proposed action on parking resources in the area.

14. Transit and pedestrians (Refer to Chapter 3P of CEQR technical Manual)

The consultant shall examine the potential impacts of the proposed action on public transportation facilities and services and on pedestrian flows.

15. Air Quality (Refer to Chapter 3Q of CEQR technical Manual)

The Consultant shall assess the potential transportation and air quality impacts of the de-mapping of mapped but un-built streets and creation of a new street layout. The Consultant shall assess the potential air quality impact of the projected increase in traffic counts for the Project Streets and in its vicinity, giving due consideration to the future growth in the project area. In assessing the air quality impact, the Consultant shall take into consideration the affect of the proposed roadway reconstruction, sewer and water main installation. This should include an analysis on the duration of road closure that would take place during the sewer, water main and street construction work.

16. Noise (Refer to Chapter 3R of CEQR technical Manual)

The Consultant shall assess the potential noise level generated because of the increase in traffic counts for the Project Streets and its vicinity.

17. Construction impacts (Refer to Chapter 3S of CEQR technical Manual)

The Consultant shall assess the potential for construction related impacts, including potential impacts to water quality. A description of the construction process for all aspects of the proposed plan should be provided in the EAS along with general mitigation.

18. Public Health (Refer to Chapter 3T of CEQR technical Manual)

The consultant shall assess the potential impacts of the proposed action on public health of the community or certain group of individuals in the project site.

General:

Upon completion of the Environmental Assessment Study, the Consultant shall publish a detailed report and the results of this Study, in a format, which is acceptable to the Department.

4.36 UNIFORM LAND USE REVIEW PROCEDURE (ULURP)

Under this task the Consultant shall provide the following services that are necessary for a complete ULURP action process:

A. ULURP Application

In preparing the ULURP application package, the Consultant shall obtain and become familiar with the following booklets/documents available through the NYC Department of City Planning:

1. Department of City Planning Land Use Review Application Package
 2. Uniform Land Use Review Procedure (ULURP)
 3. Information for Applicants for Alterations in the City Map
1. The Consultant shall arrange a pre-application meeting with New York City Department of City Planning, Technical Review Unit (NYCDDP-TRU) prior to the preparation of the ULURP applications. NYCDDP-TRU will provide guidelines and requirements for preparation of the application, related drawings, and attachments.
 2. The Consultant shall provide a survey in accordance with New York City Department of City Planning (NYCDDP) standards. In preparing the Maps for the ULURP Application, the Consultant shall utilize, where applicable, all information as contained in the plotted Topographic and Utility Surveys. The Consultant shall supplement this information with field trips, additional surveys and searches for information as may be required.
 3. The Consultant shall prepare maps (Land Use Map/Application Drawings and Preliminary Alteration Maps) suitable for submission to the NYCDDP for Pre-application review. The drawings will be prepared in accordance with the standards/instructions of the Department of City Planning, and the Topographical Bureau of the Office of the Borough President of Queens/Manhattan/Brooklyn/Staten Island/Bronx (as applicable).
 4. The Consultant shall modify the drawings as required until approval (sign-off) is obtained from NYCDDP.
 5. Upon review and approval (sign-off) by NYCDDP of the draft ULURP Application, the Consultant shall assemble and transmit to NYCDDC for review a single ULURP Application package, including application form for signature, and all required attachments. Upon receipt of the signed application from NYCDDC, the Consultant shall be required to duplicate the signed application form to be collated with the required attachments, and submit to NYCDDP.
 6. The Consultant shall file the required number of copies of the application and attachments with the Central Intake Unit of NYCDDP (NYCDDP will determine the number of application packages to be filed).
 7. Documents to be delivered:
 - a) Upon being stamped "received" and assigned a ULURP number by NYCDDP, the Consultant shall immediately transmit to NYCDDC one (1) complete copy of the ULURP application package.
 - b) On issuance by NYCDDP of the Precertification Report, the Consultant shall immediately transmit two (2) copies of that Report, with findings, to NYCDDC.

B. City Environmental Quality Review (CEQR)

The Consultant shall identify any requirement to perform an Environmental Assessment in accordance with applicable New York City and/or New York State Environmental laws and regulations (CEQR, SEQRA) that may result from the ULURP procedures required under this task.

C. Incremental Review

The Consultant shall initiate all actions for incremental review, of proposed Mapping, by the Office of Borough President of Queens/Manhattan/Brooklyn/Staten Island/Bronx (as applicable), and other involved City/Public Agencies including all follow-up meetings, as required, to expeditiously resolve all questions and concerns necessary to obtain all required approvals. The Consultant is required to:

- Participate in all conferences, meetings, and public hearings on the mapping, to present the necessary engineering background/expertise.

- The Consultant shall notify NYCDDC of the date, time, and location of the interagency conferences/meetings/hearings. NYCDDC will attend the conferences, etc. to monitor task for tracking purposes.
- Notify, by certified mail, return receipt requested, all property owners and mortgagors of each property abutting or underlying the map change; respond to any inquiries from said property owners or mortgagors; and account for all return receipts, returned notification letters, and written responses.
- Prepare reports, documentations, drawings or backup material necessary to advance the proceedings.

D. Final Deliverables

Upon completion of ULURP (Adoption of Maps), the Consultant shall hand-deliver to the NYCDDC the following:

1. One (1) complete set of every Map, in ink, on reproducible drafting film or other reproducible material as specified by the Topographical Bureau of the Office of the Borough President of Queens/Manhattan/Brooklyn/Staten Island/Bronx (as applicable) and a corresponding 35 sets of prints of every map for distribution to other agencies.
2. All notes, studies, designs, analysis, drawings, calculations, data, etc. used in the preparation of Maps, including a listing, in table form, showing Block and Lot numbers for each property abutting or underlying the map change; address of each property; name and address of each property owner, and name and address of the mortgagor (as applicable) for each lot, as obtained from a review of Department of Finance records.
3. Copies of all correspondence to and from all agencies (City, State, Federal), Utilities, Community Planning Boards, and all others having jurisdiction or interest in the project area.
4. Originals, and a single set of copies of all return receipts, returned letters, and written responses to/from all property owners and mortgagors of each property abutting or underlying the map change.
5. Original survey notes and plotted survey tracings. All original topographical survey information shall be dated, signed and certified by a licensed Surveyor. The license seal of the surveyor and/or Registered Professional Engineer shall be shown on all plans, tracings, and tabulation sheets.
6. The materials required under paragraphs D2 thru D5 above shall be presented in book form, and arranged in a series of sections indexed to identify the required materials. All materials shall be packaged and delivered to NYCDDC in temporary file type cartons.

4.37 CLEANING, TELEVISION INSPECTION AND VIDEO TAPE RECORDING OF SEWERS

1. Under this task the consultant is required to perform the following activities:

(a) Conduct a closed circuit television inspection and video tape recording of sewers which vary from eight (8) inches to forty-eight inches in their least inside dimension, and that are within or contiguous to the project limits. The sewers may vary in material of construction (e.g. clay cement, brick or concrete).

(b) Where deposits within the sewers prevent proper inspection and video taping of the sewers, manholes and appurtenances, the Consultant shall provide all labor, equipment and material required for the removal and disposal, in an approved manner, of all such deposits. Such deposits shall include debris, sediment, silt, refuse, timber, roots, and materials of all kinds which can be removed by conventional non-excavation type pipe cleaning equipment operating within the existing sewers and appurtenances. The cleaning operation shall include all shoveling, handling, picking, raking, loading, and placing in trucks, transporting to approved dumping places and there unloading, discharging and disposing of same according to the requirements of all agencies having jurisdiction.

Video tape recordings that do not clearly indicate the condition of sewers and appurtenances due to inadequate cleaning of the sewers and appurtenances, or due to improper lighting and focus of cameras, or due to the inadequacy, improper performance or operation of the equipment will not be accepted by the Commissioner.

2. The consultant shall engage the services of a subcontractor to perform the cleaning and inspection of sewers required under this task. The subcontractor shall employ an experienced supervisor who has a minimum of three (3) years experience in the field of pipeline inspection to supervise the entire inspection operation required under this task.

3. The Consultant shall execute all the requirements of this task in a manner approved by the Commissioner. All labor, experienced supervision, technicians, mobile television studios, electronic equipment, television and Polaroid cameras, materials and equipment required and needed to perform the work of this section shall be subject to the approval of the Commissioner.

4. The Consultant shall give the Commissioner five (5) days notice of his intention to commence the work required under this section.

5. It shall be the Consultant's responsibility to obtain any and all permits needed to do the work required under this task which shall include, but not be limited to, any permits required by the Department of Transportation (Bureau of Traffic Operations), Police Department, Fire Department and the Transit Authority.

6. The Consultant shall notify the Transit Authority, Department of Transportation (Bureau of Traffic Operations), Police Department and Fire Department twenty-four (24) hours prior to the start of the work, in a manner satisfactory to the Engineer, so that proper arrangements can be implemented for maintaining traffic during the course of the work.

7. TELEVISION INSPECTION AND VIDEOTAPE RECORDING

(a) Operation and movement of the video camera shall be remotely controlled from above the ground and from a mobile television studio, by a skilled technician.

(b) The technician shall have the capability to adjust the brilliance of the built-in lighting system and be able to change the focus of the television camera by remote control. The television camera shall be positioned as near as possible to the spring line of the sewer.

(c) The television camera shall be a radial eye camera. The lens of the camera shall be able to rotate three hundred sixty (360) degrees, and pan and tilt in any direction, left, right, up and down. Open joints, cracks, infiltration and spurs shall be viewed directly.

(d) The television camera shall be attached to a rod, cable, or other device that shall be metered to indicate the exact location of the camera, within the sewer, at all times. Where accessibility to a sewer is limited, and where permitted by the Consultant, a self-propelled camera may be used.

(e) An intercom system shall be used to coordinate the movement of the television camera at all times.

(f) Prior to television inspection, water shall be introduced to the upstream manhole to aid in identifying sags in the sewer.

(g) The view seen by the television camera shall be transmitted to a monitor of not less than fourteen (14) inches in width. The monitor shall be located inside the mobile television studio.

(h) The mobile television studio shall be large enough to accommodate up to four (4) persons comfortably seated for the purpose of viewing the monitor while the inspection is in progress. The Consultant's representative shall have access to view the television screen at all times.

(i) The equipment in the mobile television studio shall provide for simultaneous recording of each camera view on two separate videotapes.

(j) Two simultaneous video tape recordings of each view shall be made on standard format VHS tape cassettes and shall be recorded at the maximum speed at which the recorder can operate. The video recorder(s) shall permit the recording of both sound and video information. The recording unit(s) shall have the capability of recording both in color or black and white. The black and white mode shall be used for recording unless the Consultant can demonstrate that an equal or superior color recording can be made.

(k) Each videocassette shall have a label affixed with the following information:

Project ID.:
Consultant's Job No.:
Project Location:
Date Inspection Commenced:
Date Inspection Completed:
Name of Consultant:

(l) The Consultant shall require the subcontractor to provide all electricity needed for all operations, at its own cost and expense.

(m) The Consultant shall prepare a drawing, herein referred to as the "route sheet", that shows all sewer manholes and sewers within and contiguous to the project site in plan view. The manholes shall be numbered consecutively on the route sheet.

(n) As the television inspection proceeds, the supervisor shall observe and record the location and description of all defects that are found in the sewers and appurtenances. The locations of defects shall be correlated with the route sheet and shall include the distances from the centerline of an adjacent manhole to both the starting point and end of each defect. The record of defects (Sewer Defects Log) shall be prepared in standard Departmental format.

(o) The Consultant shall study the Sewer Defects Log and the video taped records and shall indicate, on the Sewer Defects Log, its recommended treatment for each defect. Such recommendation may include, but not be limited to, sewer replacement or rehabilitation by Department of Environmental Protection approved methods.

8. SEWER CLEANING

(a) All equipment and procedures for cleaning and removing deposits from the sewers shall be in accordance with current industry standards and shall be subject to approval by the Commissioner.

(b) Cleaning Manholes: The consultant shall provide all labor, equipment and materials required to clean the manholes which are clogged with materials and which require excavation type equipment to be used. The manholes that are to be cleaned shall be identified and approved by the Consultant prior to cleaning.

(c) Under no condition shall deposits that are removed from the sewer and appurtenances be placed on the adjacent ground surface pending disposal, but shall be placed in trucks or suitable container pending removal from the site. All deposits removed from the sewer during a workday shall be removed from the site by the end of that day. All trucks and containers shall be watertight if used to transport removed deposits over City streets.

(d) When a sewer condition or an obstruction, which cannot be relieved by the normal operation of the equipment, is encountered, the Consultant shall report such conditions to the Commissioner by telephone as soon as possible. In addition, the Consultant shall report such conditions as may occur on the reports required herein, including all pertinent information relating to the condition encountered.

(e) All material removed from the sewers under this task shall be disposed of in sanitary landfill operated by the Department of Sanitation, located in the borough of Staten Island, City of New York.

(f) The subcontractor shall submit to the Consultant the individual dump tickets or receipts issued by the operator of the approved dumpsite within forty-eight (48) hours of the removal of each load from the site. Failure to submit dump tickets or receipts within the specified time will affect the Consultant's payment for this work.

9. REPORTS.

(a) Daily Reports. The subcontractor shall prepare and submit daily, to the Consultant, a written report of the work performed the previous day. The daily reports shall be prepared by the subcontractor's experienced supervisor and shall bear his signature. Each report shall contain the following information:

- (i) The type of material and major equipment being used by the subcontractor and the total number or employees of each category that work on the particular day;
- (ii) Location and linear feet of sewers cleaned;
- (iii) Location and linear feet of sewers televised;
- (iv) Number of trips/loads/cubic yards to disposal site along with the dump tickets/receipts.
- (v) Copy of the Sewer Defects Log

The experienced supervisor shall sign the daily report.

(b) Final Report

(i) Within ten (10) days of completion of the television inspection, the Consultant shall prepare and furnish the Commissioner with one original and one copy of a complete bound report of the television inspection and its results.

(ii) The report and copy thereof shall each include but not be limited to a log of the sections of sewers televised, the route sheet indicating schematically the locations and sections of sewers inspected and the sequence of the video tape recording with specific details as to service connections, water infiltration from the joints, the Sewer Defects Log indicating cracks and other defects observed in the sewers, other matters of interest noted during the inspection, and the video tape recordings.

(iii) The video tape recordings taken during the inspection shall be referenced as to their exact location on the route sheet and shall be submitted to the Commissioner with the report.

(iv) The Consultant shall sign the report certifying the recommendations made, the location and quantities of sewers cleaned, and the quantity of debris removed from sewers and appurtenances that were delivered to dump sites.

4.38 DRAINAGE PLAN GRADE IMPACTS AND GRADE IMPACTS MITIGATION STUDIES

Under these tasks the Consultant shall identify and study the impact that proposed sewers will have on existing and proposed street grades, and on adjacent properties if the proposed sewers are built in accordance with the Drainage Plan provided; and shall identify modifications to the drainage plan that may be implemented and/or may be studied in an effort to mitigate the street and property impacts identified.

1. In studying the impact of proposed sewers on street grades and adjacent properties the Consultant shall perform a Preliminary Sewer and Street Grades Study for the project. Under this study the Consultant shall examine and compare existing street elevations with the proposed sewer elevations provided on the Drainage Plan to determine the adequacy of cover above the proposed sewers, and shall identify and present to the Commissioner the locations at which the street grades would have to be adjusted to accommodate proposed sewers as shown on the Drainage Plan.

The Consultant shall follow the following criteria for depth of sewer covers:

- a) The cover for sewers is defined as the distance between the ground surface and the outer top of the pipe.
For storm sewers, the minimum cover shall be 4'-0".
- b) For sanitary and combined sewers, the minimum cover shall be 10'-0".
- c) Where the cover for the sewers has to be reduced or is not adequate, an absolute minimum of 2.0 feet and 8.5 feet has been defined for storm sewers and sanitary/combined sewers respectively. When there is less than 4 feet cover or the maximum limit of cover as shown on DEP Sewer Design Standards is exceeded, the sewer pipe must be encased in 6" concrete.

For example:

- i) if the cover is more than 20 feet for 10" ESVP pipe, and
- ii) if the cover is more than 18', 16' and 15' for 12", 15" and 18" sewers respectively, the sewers shall be encased in concrete

2. The consultant shall perform a Study to clarify sewer and street grade impacts at locations identified in Subsection 1 above. The consultant shall:

- a) Plot and superimpose working profiles of proposed sewers on profiles of the respective street segments including, as necessary, first floor, entrance, and cellar door, driveway, etc. elevations of adjacent buildings.
- b) Develop and superimpose preliminary design street grade profiles that provide adequate cover for the proposed sewers.
- c) Compare and assess the impact of proposed preliminary design grades on private property, and existing City owned facilities including, but not limited to, buildings, fences, encroachments, driveways, etc.
- d) Utilize available topographic data to the extent needed to assess and study any impacts that may result from adjustments proposed to the street grades, and conduct additional topographic surveys as needed to complete this study.
- e) The Consultant shall identify feasible mitigation measures that meet the New York City Department of Environmental Protection's design criteria and can be implemented to minimize negative impacts on street grades and adjacent properties. Such mitigation measures may include, but not be limited to:
 - (i) Adjustment of proposed sewer elevations and longitudinal slopes
 - (ii) Adjustment to cross sections (size/shape) for proposed sewers to minimize sewer impacts on street grades
- f) The Consultant shall identify alternative measures, to mitigate the impact of new sewers on existing properties, which would require further detailed study. Such measures may include, but not be limited to:
 - (i) Rerouting the direction of sewer flows indicated on the drainage Plan
 - (ii) Revising the location of sewer outfalls and/or adding additional outfalls

(iii) Revising the location of discharge points for proposed sewers to existing sewers

3. The consultant shall prepare and submit a DRAINAGE PLAN GRADE IMPACTS AND GRADE IMPACTS MITIGATION STUDY REPORT to the Commissioner. The report shall:

- (a) Identify the impacts, if any, of proposed sewers on street grades and adjacent properties and City owned facilities.
- (b) Recommend feasible modifications to proposed sewer elevations, grades and sewer cross sections (size/shape) that may be implemented to mitigate street grade and property impacts.
- (c) If necessary, identify alternative mitigation measures that may be studied to determine their feasibility.
- (d) Include cross sections, photographs, and other graphic details as needed to show impacts/issues/concerns that have been identified.
- (e) Identify private properties that will be adversely impacted by the proposed sewers and the nature of such impacts.

4. The Commissioner will review and, in consultation with the New York City Department of Environmental Protection, if necessary, comment on the DRAFT DRAINAGE PLAN GRADE IMPACTS AND GRADE IMPACTS MITIGATION STUDY REPORT, and may require the consultant to make such revisions, provide additional information, and make further studies, and to revise the report accordingly.

5. The consultant shall conduct further studies and make revisions to the DRAINAGE PLAN GRADE IMPACTS AND GRADE IMPACTS MITIGATION STUDY REPORT as directed by the Commissioner and shall submit the FINAL DRAINAGE PLAN GRADE IMPACTS AND GRADE IMPACTS MITIGATION STUDY REPORT to the Commissioner for acceptance.

4.39 FINAL DESIGN OF STEP STREET

Under this task the Consultant shall develop Final Design(s) for step street.

The design of the step street structure must be done in three phases as follow:

a) Conceptual Design

- 1) The Consultant shall inspect the site and become familiar with the general and specific nature of the Project and the surrounding area. The consultant shall prepare a photographic record, including all adjacent roadways and properties, review the topographic survey, study the elevations and grades, prepare a site plan, and document the existing conditions.
- 2) The Consultant shall prepare two or more alternative Schematic Designs (as directed by the Commissioner) for the step street and present along with impact assessment and an approximate cost estimate of each alternative to the Commissioner for review and approval. The conceptual design shall include site plan, typical cross section, geometric design including stair layouts, landscape design, street lighting, special treatment details along with material descriptions. A 3D rendering for each proposed alternative must also be submitted for review and approval.
- 3) The consultant shall present the "DDC approved" conceptual design(s) to the Public Design Commission, DOT Geometrics/Bridges, Parks Department, Community Board, and other City, State, and Federal agencies as needed and as directed by the Commissioner, for their review and approval.
- 4) Upon approval of the selected conceptual design by the Public Design Commission, DOT Geometrics/Bridges, Parks Department, Community Board, and other City, State, and Federal agencies as required, and as directed by the Commissioner, the consultant shall proceed with the Preliminary Design phase.

b) Preliminary Design

In conjunction with the preliminary design of the step street, the Consultant shall:

- 1) Gather and study all available information and records from all City agencies or private utilities who have interest in the existing or the proposed step street structure.
- 2) Collect and study all available record drawings pertaining to the existing step street structure or to the area where the new step street structure is to be installed at, and update site information, as necessary.
- 3) Study all available subsurface data, and develop and prepare a subsurface exploration program and take borings (under Subsurface Exploration Program) if required, indicating the locations and the specific requirements for borings, test pits and test strips, as needed.
- 4) Study the results of the subsurface investigation (i.e. borings, test pits, etc.) and utilize the data in designing a suitable foundation for the step street structure.
- 5) Design and prepare preliminary construction contract drawings for step street. The drawings shall be sufficiently detailed to clearly show the location, limits, and structural composition of the step street that is to be constructed. The drawings shall also indicate the extent of structural replacement/repairs as well as any aesthetic treatments and repairs for the step street that is to be reconstructed.
- 6) Include the preliminary construction contract drawings in the programmed Mass Mailing No.1 that is required under the Street Design Task and present the preliminary design drawings to DOT Geometrics/Bridges, Parks Department, Community Board, private utility companies, and other City, State and Federal agencies as needed and as directed by the Commissioner, for their review and comments.
- 7) Modify the preliminary construction contract drawings to incorporate comments received in response to Mass Mailing No. 1, as directed and approved by the Commissioner.

8) Prepare updated preliminary cost estimate for the proposed step street.

c) Final Design

1) The Consultant shall develop detailed construction contract documents for construction/reconstruction of the step street, including but not limited to detailed drawings (plan, elevation and section views, as well as any proposed landscaping work), specifications and estimate.

2) The Consultant shall coordinate the Final Design details of the step street with the design details being developed for reconstruction of the adjacent connecting streets.

3) The Consultant shall submit the pre-final Design contract documents to the Commissioner for review and approval, and shall incorporate the pre-final design documents in the programmed Mass Mailing No. 2 that is required under Street Design task and submit the documents to the Public Design Commission, DOT Geometrics/Bridges, Parks Department, Community Board, Private utility companies, and other City, State and Federal agencies and obtain required approvals and permits, as required. Such submissions shall include but shall not be limited to drawings, specifications, estimates, design criteria and computations, as needed.

4) The Consultant shall modify the Pre-final construction contract documents to incorporate comments received in response to Mass Mailing No. 2 as approved by the Commissioner, and finalize the contract documents.

5) Upon finalizing the construction drawings, The Consultant shall prepare detailed cost estimate and specifications for the approved proposed work.

6) The consultant shall prepare and present the finalized drawings for the step street to the Public Design commission for approval.

7) Consultant shall determine and advise the Commissioner of the need for temporary easements on private property to facilitate construction of the step street and shall, as directed by the Commissioner, prepare appropriate documentation and serve notices on property owners, and meet with property owners and other parties as needed to obtain such easements.

4.40 SCHEDULING AND PROGRESS REPORTING

(a) Upon written notice to proceed, all work required for the project specified in the Task Order/Contract shall be completed within the time schedule set forth in the Specific Requirements, unless the Commissioner, for good cause shown by the Consultant, extends the time of completion.

(b) The Consultant shall be required to submit a Progress Report in accordance with the requirements of this section. Such Progress Report shall consist of the following two components: a Bar Chart Schedule, and a Detailed Analysis of project's progress, as described in paragraph (e) below.

- (1) For projects having a duration of six (6) months or less, the Commissioner may, in his/her discretion, suspend the requirement for the monthly Progress Report.
- (2) For projects having a duration of longer than six (6) months, the Consultant shall be required to submit a monthly Progress Report; however, the Commissioner may, in his/her discretion, suspend the requirement for the monthly Progress Report.
- (3) Suspension of the requirement for the monthly Progress Report may be for a specific month(s), or may be for the entire duration of the Task Order/Contract. Written notification of such suspension will be provided to the Consultant. In the event of such suspension, the Consultant shall not be entitled to payment of the Monthly Fee for the Progress Report.

(c) Upon receipt of notice to proceed with work required for the project, the Consultant shall prepare and submit to the Commissioner, within 10 working days of the date of such notice, a Bar Chart Schedule for the services required in connection with the project, for approval by DDC. The Consultant shall not be entitled to any payment for the initial Bar Chart Schedule described in this paragraph. The Bar Chart Schedule shall be prepared using Microsoft Project 2003 and shall be printed on 8 1/2" x 11" to 11" x 17" (fold-over) size paper. The Bar Chart Schedule shall indicate execution of all tasks as applicable, and shall include but not be limited to the following:

- (1) Contract number and date, project name, names of Engineer-In-Charge and project Engineer, border, monthly calendar and weekly calendar;
- (2) Dates for completion of required services;
- (3) The tasks, sub-tasks and milestones to be undertaken or achieved in connection with the project including where applicable Preliminary Design, Mass Mailings, Pre-Final and Final Contract Documents;
- (4) The interrelationship and dependency of the various activities required under the tasks included in the Specific Requirements of the project;
- (5) The time needed to complete or achieve the various tasks, sub-tasks and milestones;
- (6) Dates for completion/submission of any agency work by others, such as television sewer inspection program;
- (7) The date for submission of the packages of Bid-Ready Contract Documents where applicable;
- (8) The project's critical path;
- (9) The dates for Consultant's performance evaluation which shall be prepared on a six (6) months basis (from the notice to proceed date) for the entire specified duration of the project.

(d) For the purpose of progress reporting, the date of the Notice To Proceed on any project shall be considered the monthly "Anniversary Date" for that project.

(e) Progress Report: No later than two (2) working days following the monthly "Anniversary Date", the Consultant shall submit a Progress Report, consisting of the two components set forth below.

- (1) Bar Chart Schedule: The Consultant shall revise and update the Bar Chart Schedule to indicate (1) the actual start and completion dates of all tasks that have been completed, and (2) the projected start and completion date of all remaining tasks that are to be performed for the Project. The revised/updated Bar Chart Schedule shall reflect the project's current status at the end of the reporting period and shall include actual dates (year and month), as well as columns showing the cumulative percentage (%) completion of each task.

(2) Detailed Analysis: The Consultant shall prepare and submit to the Commissioner a Detailed Analysis of the project's progress. Such Detailed Analysis shall include, but not be limited to, the following: actual time used for each activity in the schedule; changes in targeted completion dates for the various activities in the schedule; the reasons for any delays in the targeted completion dates; the need and justification for any extensions of time; a narrative description of the work performed during the reporting period, including dates, facts, and breakdown by contract elements. In the absence of progress in the reporting period with respect to individual tasks, the Consultant shall refer to the previous progress report during which work was last performed on those tasks. The report shall also include a narrative description of the overall project schedule, project budget, work anticipated for the next reporting period and the needs from DDC necessary to move the project forward. In addition, the Consultant shall affix to the report a "Project Report Summary" table that includes the following columns/information:

- (1) Task
- (2) Description
- (3) % Completion
- (4) Scheduled Completion Date
- (5) Projected Completion date
- (6) Variance (weeks), (-) ahead (+) behind

(f) There shall be a monthly meeting with the Commissioner at which time the Consultant shall discuss: the actual progress of the project; the outstanding issues; and the necessary revisions to the project schedule. Based on the meeting discussions, and in accordance with directions provided by the Commissioner, the Consultant shall revise and resubmit the updated Bar Chart Schedule for the project. The Consultant shall not be entitled to any payment for the Bar Chart Schedule described in this paragraph.

(g) No later than two (2) working days following the monthly "Anniversary Date", the Consultant shall be required to submit to the Commissioner (via hand delivery or express mail) a revised/updated Progress Report. The Consultant shall continue to submit a monthly Progress Report until the final completion of the project, unless directed otherwise by the Commissioner.

(h) Monthly Fee for the Progress Report: For preparation and submission of the monthly Progress Report, in accordance with the requirements set forth herein, the Consultant shall be paid a monthly fee in the amount of \$1000.00. The Monthly Fee for the Progress Report is deemed to include all costs and expenses incurred by the Consultant and/or its Subconsultants in connection with preparation of the monthly Progress Report, including all expenses related to management, overhead and any anticipated profit. Payment of the Monthly Fee for the Progress Report is subject to the conditions set forth below.

- (1) The Progress Report must be complete and approved in writing by DDC.
- (2) The Consultant must submit the Progress Report within the stipulated time frame, i.e., within two working days after the monthly "Anniversary Date". The Consultant shall not be entitled to payment of the Monthly Fee for the Progress Report for any Progress Report that is not submitted within the stipulated time frame, except as otherwise provided below.
- (3) The Commissioner may, in his/her discretion, provide written authorization to the Consultant to submit the monthly Progress Report after the stipulated time frame has expired. In the event of such written authorization, the Consultant shall be entitled to payment of the Monthly Fee upon submission of an acceptable Progress Report.
- (4) As part of its requisition for payment, the Consultant is required to submit a Project progress report. Such report submitted as part of the payment requisition, shall not constitute submission of the monthly Progress Report in accordance with the requirements of this section.
- (5) If the Commissioner has provided written notification to the Consultant suspending the requirement for the Progress Report, the Consultant shall not be entitled to payment of the Monthly Fee for the Progress Report.

5. CERTIFICATION OF COMPLETENESS

The Consultant's final submission shall include certification that the completed work meets the requirements of the design contract and all applicable regulatory agencies. The certification shall be in the form of a letter attached to the submission.