SOMERSET COUNTY ENGINEERING DEPARTMENT

SCOPE OF SERVICES
ROAD IMPROVEMENTS
Revised 11-1-11

Table of Contents

Project: _____

Limits: _____

Municipality: _____

Design Firm: _____

Somerset County Contact: _____

Project Guidelines:

_____

_____

_____

I. DATA COLLECTION AND NEEDS ASSESSMENT

A. Survey

1. Field procedures in accordance with SECTION X, SCOPE OF WORK FIELD SURVEY WORK FOR ROADWAY DESIGN.
2. Notice sent to all property owners within the project survey limits giving notice of entry onto their lands for survey purposes.
3. Basemap drafting and plan sheet layout in accordance with Somerset County CADD Standards.
4. Existing Right of Way determination.
    a) Field evidence.
    b) Deed research, road returns, file maps.
5. Digital Terrain Modeling.
6. Project Control Data in accordance with SECTION X, SCOPE OF WORK FIELD SURVEY WORK FOR ROADWAY DESIGN.
    a) Baseline Traverse.
    b) Bench run.
    c) Swing ties.
    d) Construction centerline stake-out.

B. Utilities

1. Field location procedures in accordance with SECTION X, SCOPE OF WORK FIELD SURVEY WORK FOR ROADWAY DESIGN.
2. Utility owner contact list.
3. Outreach to utilities for as-built plans.

C. Traffic Data Collection and existing conditions.

1. Existing traffic volumes and ADT.
2. Traffic signal warrants and manual turning movements for projects that include traffic signal installation.
3. Accident data and analysis.
4. County and Municipal master plan requirements related to road classification and vehicular, pedestrian, and bicycle usage.

D. Environmental.

1. Phase 1 Study Contaminated sites.
2. Existence and condition of special water resource protection areas.
3. Drainage areas, flood plain limits.
4. Wetlands investigation delineation, and survey.
    a) Notice sent to all property owners within the project survey limits giving notice of entry onto their lands for survey purposes.
    b) NJDEP Letter of Interpretation application *(if so directed by County).*
5. Stormwater management regulations impacts.
6. Investigate presence of threatened and endangered species.

E. Functional Analysis.

1. Substandard horizontal and vertical alignments.
2. Pavement structure.
3. Storm sewer facilities.

4. Shoulders.
5. Guide rail and recovery areas.
6. ADA compliance of existing public curb ramps within the project limits.
    a) Evaluation of each existing curb ramp using methods provided by Somerset County.
    b) Field survey work as deemed necessary by the County to evaluate and prepare plans for reconstruction.
7. Master plan requirements for roadway, bikes, and pedestrians.

F. Cultural Resources.
1. Listed historic districts and/or properties.
2. Phase 1 Architectural Investigation.
    a) Notice sent to all property owners within the project survey limits giving notice of entry onto their lands for survey purposes.
3. Phase 1 Archeological Investigation.
    a) Notice sent to all property owners within the project survey limits giving notice of entry onto their lands for survey purposes.

II. PROPOSED CONDITION ANALYSIS

A. Alignment Alternatives for projects with substandard horizontal alignment, new roadway construction, or roadway realignment.
1. Concept Plans can be presented on initial basemap, aerial photos, or County GIS data as recommended by the County Engineer.
2. Lane configurations and pavement widths based on HCM analysis and approved by County.
3. Minimum of 3 options (*quantity to be finalized in Proposal)*.
    a) To be compliant with NJDOT and AASHTO requirements based on roadway classification and design speed. *Non-compliance requires written waiver from the County Engineer or his representative.*
    b) Design speed to be approved by the County.

B. Description of impacts.
1. Environmental.
    a) Anticipated Land Use permits required
    b) Suspected or known Underground Storage Tanks (UST) information
    c) Regulated cleanup work associated with Building Demo, if applicable.
    d) Suspected or known contaminated soil or ground water location information.
2. Utility Conflicts
    a) Possible underground utility relocations.
    b) Expect utility pole relocations.
3. Property parcels and easements.
4. Full property taking and/or building demolition.

C. Conceptual profiles and critical sections for projects with substandard vertical alignment.
1. Conceptual profile and critical section data maybe obtained from contour mapping, as directed by the County Engineer.
2. The need for multiple conceptual vertical alignments to be as directed by

County Engineer and then stated in the proposal.

D. Proposed condition report incorporating:
    1. Executive Summary
    2. Project site description, with limits of evaluation and scope of the evaluation and type of proposed undertaking.
    3. Needs assessment.
    4. Traffic study with projected level of service for existing and proposed (future) conditions.
    5. Conceptual plans, profiles, sections.
    6. Right of way impacts.
    7. Project cost comparison of the studied alignment alternates.
    8. Preferred alignment recommendation.
    9. Evaluation of the function of the pedestrian access route and ADA curb ramps.
        a) Completed evaluation forms for each ramp.
        b) Description of improvements needed to comply with PROWAG requirements.
        c) Discussion of design exceptions and means to best comply.

III. PUBLIC OUTREACH

A. Municipal Officials
    1. Sharing of Needs Assessment and Alternatives Analysis,
        a) Preparation of Executive Summary of Alignment Report.
    2. Meetings to gain local input and consensus
        a) Meetings with associated boards and commissions

B. Stakeholders meeting
    1. Input from schools, churches, or major businesses impacted by the road improvements or construction work.

C. Public Information Meeting – input on concepts
    1. Mailing lists
    2. Notice letters to residents
    3. Display advertisement of public notice
    4. Project brochure
    5. Display boards
    6. Power Point presentation

D. Public Hearing – presentation of project plans and property acquisition maps
    1. Mailing lists
    2. Notice letters to residents
    3. Display advertisement of public notice
    4. Project brochure
    5. Display boards

IV. CONSTRUCTION DOCUMENTS PHASE 1 SUBMISSION - INITIAL REVIEW

A. Initial Basemap Review.
    1. Drafting and plan layout in accordance with Somerset County CADD Standards.

a) Plan scale: 1"=30' in rural areas
b) Plan scale: 1"=20' in urban areas and for signalized intersections
c) Sheet size: 24"high by 36"wide.

2. Existing features plotted. (All features as required by SECTION X, SCOPE OF WORK FIELD SURVEY WORK FOR ROADWAY DESIGN).
3. Existing drainage structures and pipes located.
4. Existing sanitary sewer structures and pipes located.
5. Location of underground utilities (gas, water, telephone, electric, CATV).
6. Utility poles located.
7. Existing right-of-way, property lines.

B. Proposed Horizontal Alignment
1. Accepted Horizontal Alignment from Public Outreach work.
a) To be compliant with NJDOT and AASHTO requirements based on roadway classification and design speed.
(1) Design exception to be prepared for any substandard elements of the design unless not required by County Engineer.
b) Design speed approved by the County.
c) Lane configurations and pavements widths approved by the County.

C. Road Profile
1. Submit preliminary main roadway profile for County approval
a) To be compliant with NJDOT and AASHTO requirements based on roadway classification and design speed. *Non-compliance requires written waiver from the County Engineer or his representative.*
b) To meet requirements for minimum pavement overlay depth as provided by County Highway Engineer
c) Preliminary cross sections taken every 50’ to be submitted with profile to assist in County review.
d) Profile design to be considerate of existing bridges/culverts, intersections, Railroad grade crossings, underground gas transmission lines, and driveways.

D. Alignment Map (When Property Acquisition is Required).
1. Initial submission.
a) Map prepared according SECTION IX, subsection on Alignment Maps.
b) Submission to occur after Initial Review of Construction Plans.
2. Final Submission.
a) Review Comments addressed.
b) 1 set -Black ink on Mylar (matte film) final drawings
(1) Signed by NJ Licensed Professional Surveyor
c) 1 set – prints
(1) Signed and sealed by NJ Licensed Professional Surveyor
d) Digital drawing file – see SECTION XI.

V. CONSTRUCTION DOCUMENTS PHASE 2 SUBMISSION - PRIMARY REVIEW

A. Road Construction Plans
1. Completed Basemap.
a) Drafting and plan layout in accordance with Somerset County CADD

Standards.

(1) Plan scale: 1"=30' in rural areas

(2) Plan scale: 1"=20' in urban areas and for signalized intersections

(3) Sheet size: 24"high by 36"wide.

b) Existing features plotted and labeled. (All features as required by SECTION X, SCOPE OF WORK FIELD SURVEY WORK FOR ROADWAY DESIGN).

c) Existing drainage structures and pipes located and described.

d) Existing sanitary sewer structures and pipes located and described.

e) Horizontal location of underground utilities (gas, water, telephone, electric, CATV).

f) Utility poles located and numbered.

g) Existing right-of-way, property lines, lot and block numbers, property owners names, and **house numbers**.

2. Proposed Horizontal Alignment.
   a) Centerline
      (1) Stationed every 50' and at PCs and PTs of horizontal curves.
      (2) Bearings on tangents and curve data for horizontal curves.
      (3) Centerline intersection stations.
   b) Edge of Pavement/Face of Curb
      (1) Road widths at all angle points, PCs and PTs of horizontal curves, intersections, and transitions. Radii of curb returns.
   c) Curve Data Labels and Table
      (1) Curve labels on all centerline curves
      (2) Curve labels on all curbline/EOP curves
      (3) Curve data table containing the following information: Label number, Radius, Delta, Length, Tangent, PC station and centerline offset, PT station and centerline offset.
3. Proposed Drainage.
   a) Existing pipe flow calculations.
   b) Layout of Pipes and structures on plan.
   c) Sketches of proposed intersection and superelevation grading shall be submitted to support drainage layout.
   d) Layout should be compliant with grading and to avoid existing underground utility lines.
   e) Avoid impacts to private property or features *(Commercial signs, walls, landscaping, etc.)*
   f) All existing corrugated metal pipe should be replaced.
   g) Existing RCCP should be utilized. *Existing pipe flow calculations will show if capacity is acceptable. Discuss with County staff.*
   h) Inlets at a maximum spacing of 250' when gutter grades are less then 1%.
4. Bridge/Culvert Crossing
   a) Alignment to reflect stream and proposed roadway locations.
   b) Sizing
      (1) Set bridge span/culvert size and obtain approval from the

Somerset County Engineer's Office.

(2) Culvert length to reflect "Clear Zones In Lieu Of Guiderail" reference N.J.D.O.T. Design Manual - Roadway.

B. Road Profiles
    1. Main Road
        a) Existing vertical alignment
            (1) Elevations every 50'.
            (2) Horizontal scale to be the same as the construction plans.
            (3) Existing drainage system
                (a) Station and offset of structure
                (b) Rim elevations
                (c) Inverts leadered to pipes and structures
                (d) Pipe sizes
            (4) Existing sanitary sewer system
                (a) Station and offset of structure
                (b) Rim elevations
                (c) Inverts leadered to pipes and structures
                (d) Pipe sizes
            (5) Location of side street centerline intersections.
        b) Proposed vertical alignment
            (1) To be compliant with NJDOT and AASHTO requirements based on roadway classification and design speed.
                (a) Design speed to be approved by the County.
            (2) Elevations every 50'
            (3) Vertical curve data and slopes on tangents
    2. Side Streets – *defined as any public road, private road, or commercial driveway which will not receive depressed curb across the entrance.*
        a) Existing vertical alignment
            (1) From 0+00 at centerline intersection with main road to station 2+50 minimum.
            (2) Elevations every 25'
            (3) Horizontal and vertical scale to be the same as the road profile
        b) Proposed vertical alignment
            (1) Elevations every 25'
            (2) vertical alignment to match into the gutterline of the main road
            (3) slope of road within the first 50' not to exceed 5% unless approved by the Somerset County Engineer.

C. Typical Sections
    1. Section to reflect each change in cross pitch (ie normal crown, superelevation).
    2. Section to reflect each change in pavement treatment (ie. milling, excavation, overlay).
    3. Description of pavement layers and depths.

D. Road Cross Sections
    1. Main Road
        a) Existing sections

(1) Horizontal and vertical scales to be 1"=5' or 1"=10'
(2) Every 50' station extended to 50' each side of centerline
(3) Cross sections at 25' through intersections with side streets.
(4) Extra sections for driveways, extended to 75' from centerline as necessary to design proposed profile
(a) Description of driveway width and surface material
(5) Elevations on existing pavement centerline, edge of pavement, and grade breaks.
(6) Labeling of side street names at sections within intersections.

b) Proposed sections
(1) Proposed road template reflecting cross pitch, edge treatment, slopes, and drainage of adjoining properties.
(2) Elevations on centerline, edge of pavement, changes in grade, and new sidewalks.
(3) "Back" and "ahead" sections where construction treatment changes significantly such as excavation areas to overlay areas.
(4) Earthwork summary required showing calculations of Roadway Excavation, Borrow Excavation, Topsoil area and Stripping (if required).

2. Driveways
a) Design according to standards shown in the Somerset County Driveway Details

3. Side Streets
a) Existing sections
(1) Horizontal and vertical scales to be 1"=5'
(2) Every 25' station extended to 50' each side of centerline
(a) Begin at station 0+25 typically, end one section past match into existing roadway

b) Proposed sections
(1) Proposed road template reflecting cross pitch, edge treatment, slopes, and drainage of adjoining properties.
(2) Elevations on centerline, edge of pavement, and changes in grade.
(3) Include side street cut and fill volumes in earthwork summary. Insure that there is no overlap or gore area between main road and side street sections.

E. Maintenance of Traffic
1. Detour Plan – *must have approval of the County Engineer prior to determination of road closure and detour.*
a) Key of detour signs.
b) Map of detour route.
(1) Road names.
(2) Municipal boundaries.
(3) Location of detour signs and barricades.
(4) Field check of detour route.
(5) Approval box for signatures by Municipal Officials.

c) All proposed elements to be compliant with MUTCD and NJDOT guidelines for Maintenance and protection of traffic.

2. Staging Plan
    a) Key of construction signs.
    b) Multiple sketches of job site showing flow of traffic through each stage.
        (1) Description of work to be performed during each stage.
        (2) Road names.
        (3) Location of signs, barriers, arrow boards, attenuators.
    c) All proposed elements to be compliant with MUTCD and NJDOT guidelines for Maintenance and protection of traffic.

F. Signing and Striping plans – *to be included as directed by County staff.*
    1. Basemap
        a) Scale to match construction plan
        b) Basemap to show construction centerline, proposed curb, existing curb where matching in, existing signs, existing striping where matching in, traffic signal devices, sidewalks, driveways, and storm sewer system.
    2. Proposed Striping and Signing
        a) All proposed elements to be compliant with MUTCD and NJDOT guidelines for Traffic Control.
        b) Proposed striping shown in bold, labeled with lane dimensions, taper lengths, and stripe width and color.
        c) Proposed signs shown in bold, labeled with MUTCD designation and offsets from plan elements.

G. Bridge Plans – *as coordinated with the Somerset County Engineering Bridge Section*.

H. Stream Encroachment Plans - *as coordinated with the Somerset County Engineering Hydraulic Engineers*.

I. Traffic Signal Plans – *as coordinated with the Somerset County Engineering Traffic Section.*
    1. Signal plan.
        a) Lane dimensions and pavement markings
        b) Curb radii
        c) Vehicular and pedestrian indications located
        d) Phasing diagram
    2. Electrical underground plan.
        a) Quantities
        b) Controller locations
        c) Areas of detection
        d) Signal foundation locations
        e) Conduit locations

J. Property Acquisition Documentation
    1. Entire Tract Map
        a) Completed maps prepared according to Section IX
    2. Property Parcel Maps
        a) Completed maps prepared according to Section IX
    3. Descriptions

a) Completed for each parcel and easement. Fee parcels to have metes and bounds descriptions.

K. Permits

1. Land Use
    a) Storm Water Management
        (1) If major project, provide County with calculations of impervious coverage and areas of disturbance.
        (2) Prepare concept of BMP measures.
        (3) Meet with County to review Concept.
        (4) Have pre-application meeting with NJDEP staff.
    b) Wetlands
        (1) Status of LOI *(if required).*
        (2) Provide County with plan of disturbance areas and description of impacts.
        (3) Have pre-application meeting with NJDEP staff.
    c) Stream Encroachment
        (1) Plan showing floodway, flood hazard, contours, project impacts.
        (2) Net fill calculations.
2. Cultural Resources
    a) Status on preliminary architectural and archeological studies.
    b) Schedule and plan for finalizing studies and submission of report to SHPO.
3. Green Acres encroachment
    a) Preliminary mitigation plan.
    b) Status of communications with Green Acres staff.
4. Soil Erosion and Sediment Control
    a) Design proceeding with consideration of SCS measures and regulations.

L. Utilities

1. Arrange with utilities for test pits at all conflicts of proposed drainage with underground utilities.
2. Contact Sewer Authority of need to reset/relocate sewer manholes/pipes
3. Contact electric company of need to relocate poles, guys, wires, or underground facilities.
4. Contact telephone company of need to relocate poles, guys, wires, or underground facilities.

M. Documentation

1. 2 sets of plans containing all the above completed.
2. Approximate major quantities including pavement, curb, earthwork, drainage, bridge items.
3. Preliminary estimate.
4. Final Design Exception report.
5. ADA compliance report
    a) Description of project and scope of work
    b) Description of compliance on each ramp and/or design exception description.

c) Engineer's certification of curb ramps.

6. Completed QA/QC Certification.

N. Miscellaneous

1. Stake out of construction centerline with a PK nail at every 50' station. *Discuss with County the schedule for this work.*

VI. CONSTRUCTION DOCUMENTS PHASE 3 SUBMITTAL – MAJOR REVIEW

A. Cover sheet

1. Format according to Somerset County Engineers Office standard cover sheet, *template provided on request*.
    a) Sheet size: 24" high by 36" wide for all sheets
2. Key map showing limits of construction
3. Index of sheets
4. List of Utilities with contact names.
5. Roadway Classification, ADT, Design Speed, Horizontal and Vertical Datums.

B. Estimate of Quantities – *a spreadsheet document maybe submitted at this point for review. Submit E of Q drawing at Phase 4 Submittal (delaying its preparation until the quantities have been finalized).*

1. Pay items
    a) All items and associated units as described in the "NJDOT Standard Specification for Roadway and Bridge Construction" and supplements. *Specialty items and/or units must be approved by the County*.
2. Quantities – tabulated per sheet quantities.

C. Typical Sections

1. Completion of revisions from Phase 2 Submittal
2. Sections reflect Phase II Road Cross Section design.

D. Road Construction Plans

1. Completion of revisions from Phase 2 Submittal
2. Overall map/Sheet index. *As deemed necessary by the County.*
3. Proposed drainage design
    a) Storm sewer design calculation sheets.
    b) structures
        (1) type of structure and pay item for construction
        (2) location by station and offset
        (3) rim or grate elevation and curb piece height for Type B inlets.
    c) pipes
        (1) length, size, and slope of RCCP. Pipe class when not Class IV.
        (2) called out as combination drain where deemed necessary
        (3) inverts
    d) curb return elevations should be established so inlets can be placed at low points
    e) conflicts with utilities, based on test holes, should be addressed.
4. Construct items
    a) pay items, quantities, units must conform to the "NJDOT Standard Specification for Roadway and Bridge Construction" and supplements.

Specialty items and/or units must be approved by the County.

b) Table of sheet quantities must appear on each sheet.

c) Limits of construction.

d) Shading of different construction treatments – overlay, excavation, milling, other.

e) Toe of slope/top of slope, limits of disturbance.

5. Miscellaneous
    a) Call out of remove items to be paid under clearing site.
    b) Call out of reset/relocation of utilities by others.
    c) Benchmark locations and elevations.
    d) General notes.
        (1) Include daily traffic volumes (ADT).
        (2) Include area of disturbance in acres.
        (3) Include amount of additional impervious coverage in acres.
    e) Standard Legend
    f) North Arrow with reference Horizontal Datum NAD 1983 and Vertical Datum NAVD 1988.
6. Building Demolition Plan *(if required).*
    a) Site plan of building lots.
    b) Staging notes, details, work zones.
    c) Description of Clearing Site
    d) Environmental work items and quantities.

E. Profiles
1. Road
    a) Completion of revisions from Phase 2 Submittal
    b) Complete drainage design
        (1) Type, location, and rim elevation on all structures.
        (2) Pipe length, size, and slope.
        (3) Inverts "leadered" to pipes and structures.
    c) Utilities
        (1) Location of underground utilities from test pits.
        (2) Call outs on reset/relocation of utilities.
2. Side Streets
    a) Completion of revisions from Phase 2 Submittal.
    b) Show drainage according to standards of road profile.
3. Off-Road Pipe Profiles– *as deemed necessary by the County staff.*
    a) Existing and proposed grade lines and elevations.
    b) Station baseline.
    c) New drainage pipe
        (1) Type, location, and rim elevation on all structures.
        (2) Pipe length, size, and slope.
        (3) Inverts leadered to pipes and structures.
        (4) Utility test holes and conflicts noted.

F. Grading Plans
1. To be provided for the entire project unless waived by the County Highway

Engineer due to road sections following normal crown with no superelevation or intersections grading.

2. Show construction centerline/baseline, stationing, and roadway dimensions from Construction Plans.

3. Elevations at centerline, edge of pavement, grade breaks. Indicate exposed curb face especially if the face varies.

a) For every even 50' station along the main road.
b) Extra grades at 25' stations thru intersections.
c) 25' stations on side streets.

4. Curb returns to have gutter elevations every 10' along the curb face.

5. Location and rim/grate elevations on all drainage structures. Specifically indicate curb piece height on Type B Inlets.

6. Elevations on all utility manholes to be reset.

G. Control Sheet – Benchmarks, Ties

1. Table of benchmarks including surveyors number, elevation, and location established according to Section X, Survey requirements

2. Schematic of each construction centerline point tied down to at least three (3) off road objects, established according to Section X, Survey requirements. *Permission maybe granted by the County Engineer for swing ties on the Traverse in lieu of the construction centerline.*

3. Signature box for surveyor

H. Detour/Staging Plan

1. Completion of revisions from Phase 2 Submittal
2. Table of sheet quantities
3. Traffic control details
4. Signature box for municipal officials

I. Signing and Striping plans

1. Construction item call outs on all proposed work.
2. Sheet Quantities Table
3. Detail of each new sign.

J. Traffic Signal Plan and Underground Electrical Plan.

1. Timing Schedule
2. Numbering of indications
3. County traffic signal details
4. Sign legend.
5. Work items and quantities

K. Cross Sections

1. Road
   a) Completion of revisions from Phase 2 Submittal
   b) Labeling of proposed construction materials used in cross sections
   c) Quantities for cut, fill, topsoil on each section or in a volume table shown on the plans.
   d) Earthwork summary and legend placed on first road cross section sheet.
2. Side Streets
   a) Completion of revisions from Phase 2 Submittal

b) Quantities for cut, fill, topsoil on each section or in a volume table shown on the plans.

L. Details – NJDOT and Somerset County standard details can be provided (imperial units) upon request to the County.

1. Soil Erosion and Sediment Control Details
2. Traffic Control Details
3. Drainage Details
4. Construction Details
5. Landscaping Details
6. Traffic Signal Details

M. Permits

1. Land Use
    a) Submission of applications, reports, and plans for review by County prior to submitting to NJDEP.
    b) Required application fees outlined for purchase order processing by County.
2. Cultural Resources
    a) Status and schedule for approval of project by SHPO.
3. Green Acres encroachment
    a) Mitigation plan.
    b) Status and schedule for State House Committee appearance.
4. Soil Erosion and Sediment Control
    a) Plans and application completed.

N. Contacts

1. Submit Detour Plan to local officials for their approval/comments.
2. Schedule of utility work in relocating facilities.

O. Documentation

1. Centerline alignment reports (from CADD software) for all roadway centerlines.
2. Drainage design calculations according to criteria defined in the NJDOT Roadway Design Manual.
3. Hydraulic/hydrologic models of bridges, culverts, and stream – digital files, submitted on CD.
4. Engineer's estimate developed from the Estimate of Quantities
    a) Calculation sheets to support pavement and earthwork quantities.
5. Report listing all foreseeable utility conflicts.
6. Completed QA/QC Certification.
7. 2 sets of contract plans
8. Marked up plans from Phase 2 Submittal

P. Final Parcel Maps.

1. 1 set -Black ink on mylar (matte film) final Parcel Maps
    a) signed by NJ Licensed Professional Surveyor
2. 2 sets – prints
    a) signed and sealed by NJ Licensed Professional Surveyor
3. Digital submission of all plans – see Section XI.

Q. Renderings - for Public Hearing

1. Mounted rendered Construction Plans
2. Mounted rendered Parcel Maps

R. Miscellaneous
1. Stake out of new easement and parcel lines.

VII. CONSTRUCTION DOCUMENTS PHASE 4 SUBMITTAL – FINAL REVIEW

A. Contract Plans
1. 2 sets - all sheets to be 100% complete
a) Completion of revisions from Phase 3 Submittal

B. Documentation
1. 1 set of supplemental specifications, printed, plus digital file – see Section XI "Digital Submissions"
2. Marked up set of plans from Phase 3 Submittals
3. Final engineer's estimate in digital format – see Section XI
4. All permits and approvals from governing agencies.
5. Completed QA/QC Certification.
6. Post Construction Program Design Checklist for Individual Projects
a) form available at: http://www.njstormwater.org/highway/forms.htm

VIII. CONTRACT DOCUMENTS PHASE 5 FINAL SUBMISSION

A. Contract Plans
1. 1 set -Black ink on mylar (matte film) final drawings
a) signed by NJ Licensed Professional Engineer
2. 1 set – prints
a) signed and sealed by NJ Licensed Professional Engineer
3. Digital submission of all plans – see Section XI.

IX. PROPERTY ACQUISITION DOCUMENTATION

A. ALIGNMENT MAPS

The Alignment Map shall include the following:

1. Size of sheet: 24" X 36"
2. TITLE BOXES;
a) Proposed Project Block
b) Revision Block
c) Professional Land Surveyor's Block and Professional Engineer's Block
3. Provide a signature block for County approvals, at the bottom right of sheet:

County Approvals
Recommended for Approval: County Engineer_____ Date___
Approved by the Board of Chosen Freeholders, Director_____ Date___

A listing of the Board of Chosen Freeholders shall be placed in the bottom left corner of sheet:

Board of Chosen Freeholders
Director-Freeholder
Deputy Director-Freeholder
Freeholder

Freeholder
Freeholder

The list of Board of Chosen Freeholders' names will be supplied by the County of Somerset Engineering Division.

4. On projects containing more than 1 alignment sheet, a Title Sheet will be provided with:
    a) All sheets shall be numbered consecutively.
    b) Key map in the center of sheet with a referenced North Arrow.
    c) Above the Key Map and centered:
        (1) COUNTY OF SOMERSET
        (2) BOARD OF CHOSEN FREEHOLDERS
        (3) ALIGNMENT MAP
        (4) Correct Project Name, Road name and description per Construction Plans
        (5) County Route No. (if applicable)
        (6) MUNICIPALITY where project is located
        (7) COUNTY OF SOMERSET
        (8) STATE OF NEW JERSEY
    d) County Approvals lines are to be located in the bottom right corner of sheet.
    e) A listing of the Board of Chosen Freeholders shall be placed in the bottom left corner of sheet.
    f) Below the Key Map and centered:
        (1) Layout and Key Map
        (2) Scale 1"= ----
    g) An "Index of Sheets" shall be provided centered between the Key Map and the right side of the sheet.
    h) The Month and Year the Map was created shall be centered below the Index of Sheets.
5. North arrow with reference to N.A.D. 1983.
6. Scale : 1"=20' or 1"=30' (same as construction plans)
7. Somerset County Legend shall be placed on the first full sheet of the Alignment Map.
8. Existing Planimetric Information: (No Elevations are to be shown on the Alignment, Entire Tract or General Property Parcel Maps)
9. Show existing houses, particularly on property where parcels are to be acquired, with house number, number of stories and type of house.
10. Show existing Right of Way width and source documentation (must have a Road Return Book and Page, Deed Book and Page and/or, Filed Map Reference). (**Tax Map references are not acceptable**)
11. Existing property lines.
12. Indicate property owner's name, Tax Map Block, Tax Lot and Deed Book Page and Number.
13. Sufficient research shall be performed to determine the owner of each parcel within the "Project Area". The designation "Unknown Owner" is not acceptable.
14. Indicate existing easements of record with Deed Book and Page reference.

15. Proposed Construction Centerline or Baseline (being the same as the centerline or baseline used on Construction Plans) with full Stationing (Angle Points, PC's, PT's, PRC's, PCC's, etc.).
16. Proposed Right of Way and width set from the centerline or baseline set at certain points (ex: PC, PT, PCC, PRC, Property Lines, Angle Points, or at intervals as directed by the County Engineer).
17. Proposed Parcels and Easements (slope, drainage, traffic signal, etc.) indicate with # (number and type of parcel.
18. Proposed roadway (indicate curb and/or pavement, and width from the construction centerline or baseline), bridges, headwalls, inlets, pipes, culverts, traffic signal bases.

The preparer (Licensed Land Surveyor) of the Alignment Map shall be solely responsible for ascertaining Somerset County's Alignment Map requirements current at the time of preparation of same.

B. PROPERTY PARCEL MAPS

1. MAP STANDARDS:

Maps shall conform to the following:

a) "*N.J.D.O.T. Right of Way Engineering Manual, Preparation of Right of Way Documents*", dated February 2005 and with Somerset County Requirements as further detailed herein.

(1) The "N.J.D.O.T. Right of Way Engineering Manual, Preparation of Right of Way Documents", dated February 2005" is available through:

(a) State of New Jersey, Department of Transportation, 1035 Parkway Avenue, Trenton, N.J. 08625 **or**

(b) County of Somerset, Department of Public Works, P.O. Box 3000, 20 Grove Street, County Administration Building, Somerville, N.J. 08876

b) The sections of the New Jersey "Map Filing Law", P.L. 1999, Chapter 258, pertaining to Right of way parcel maps.

c) The preparer of the Property Parcel Maps shall be solely responsible for ascertaining all Property Parcel Map requirements current at the time of preparation of same.

2. MAP SET:

On Property Parcel Maps consisting of more than one sheet a TITLE SHEET, ENTIRE TRACT MAP, GENERAL PROPERTY PARCEL MAPS and TABULATION SHEET shall be submitted.

3. COMMON MAP FEATURES:

All sheets shall conform to the following:

a) Size of sheets: 24" X 36"

b) All sheets shall be numbered consecutively

c) Title Boxes:

(1) Proposed Project Block

(2) Revision Block

(3) Professional Land Surveyor's Block and Professional Engineer's Block

d) County and Municipality designated in upper right hand corner of each sheet

4. TITLE SHEET: shall be provided on projects containing 2 or more sheets.

a) If no title sheet, provide a signature block for County approvals, in the bottom right of sheet with a list of the current Freeholders on the bottom left of sheet. The Board of Chosen Freeholders' names will be supplied by the County of Somerset Engineering Division.

b) When required, the title sheet will be provided with:

(1) All sheets numbered consecutively.

(2) Key map in the center of sheet with a referenced North Arrow.

(3) The Map Title shall be centered above the Key Map as follows:

(a) COUNTY OF SOMERSET

(b) BOARD OF CHOSEN FREEHOLDERS

(c) ENTIRE TRACT AND GENERAL PROPERTY PARCEL MAPS FOR

(d) Project Name, Road Name and Description per Construction Plans

(e) County Route No. (if applicable)

(f) MUNICIPALITY where project is located

(g) COUNTY OF SOMERSET

(h) STATE OF NEW JERSEY

c) County Freeholder and Engineer Approvals shall be located in the bottom right corner of the Title Sheet as follows:

County Approvals

Recommended for Approval: County Engineer_____ Date _____

Approved by the Board of Chosen Freeholders, Director_____ Date _____

d) Board of Chosen Freeholders List shall be provided in the bottom left corner of the Title Sheet as follows:

Board of Chosen Freeholders

Director-Freeholder

Deputy Director-Freeholder

Freeholder

Freeholder

Freeholder

Board of Chosen Freeholders' names will be supplied by the County of Somerset Engineering Division.

e) Below the Key Map and centered:

(1) Layout and Key Map

(2) Scale 1"= ----

f) An "Index of Sheets" Block with Sheet No. and Description of each Sheet in the set shall be centered between the Key Map and the right edge.

g) The Month and Year the Map was created shall be centered below the Index of Sheets.

5. ENTIRE TRACT MAP: The Entire Tract Map may be incorporated with the

GENERAL PROPERTY PARCEL MAP, if approved by the County Engineer. The Title Sheet will then read "ENTIRE TRACT AND GENERAL PROPERTY PARCEL MAPS FOR…"

The Entire Tract Map shall include but not limited to the following:

a) Baseline: Full stationing of Baseline used in Parcel Takings, if more than one Baseline is being used then call them out as "Baseline "A"", "Baseline "B"". Linetype for all baselines shall be a centerline.

b) Municipality and County designated in upper right hand corner of each sheet in a box.

c) Scale: 1"=200' (may use 1"=100' if approved by the Engineer).

d) North arrow with reference to N.A.D. 1983.

e) Existing planimetric information, including buildings and structures.

f) Existing Right of Way width and source documentation (ex. Filed Maps, Road Book and Page, Deeds of Dedication).

g) Existing property lines.

h) Indicate last property owner's name and address, Tax Map Block, Tax Lot, Deed Book and Page, and Filed Map where applicable.

i) Existing easements of record with Deed Book and Page or Filed Map Reference Number.

j) Proposed construction centerline or baseline (being the same as the centerline or baseline used on Construction Plans) with:

(1) Stationing (including PC's, PT'S, PRC's, PCC's)

(2) Bearings (N.J.P.C.S.)

(3) Curve Data (Delta, Radius, Tangent, Length, chord bearing, chord length).

(4) Angle points and stationing.

(5) Coordinates (N.J.P.C.S.)

(a) On at least two points of the centerline or baseline.

(b) Indicate reference Monuments where coordinates were obtained.

k) Proposed Right of Way and width set from the centerline or baseline set at certain points (ex: PC, PT, PCC, PRC, Property Lines, Angle Points, or as directed by the County Engineer).

l) Schematic of proposed Fee Parcels and Easements with description (slope, drainage, traffic signal, temporary construction, etc.) indicated with parcel number.

m) Proposed roadway (indicate curb and/or pavement, and width from the centerline or baseline), bridges, culverts, traffic signal bases.

6. GENERAL PROPERTY PARCEL MAP: General Property Parcel Maps or Individual Property Parcel Maps are to be created based on a thorough and accurate title search of the properties included in the "Project Area". The preparer of these maps shall certify that an accurate, current and thorough title search has been performed for all properties where the acquisition of property, or property rights, is anticipated. Said title search shall be conducted for a minimum period of sixty (60) years prior to the preparation of the Parcel Maps. In the event that inconsistencies or uncertainties are discovered within the source documents, the preparer of the

Property Parcel Maps shall conduct additional research as necessary to resolve all such concerns.

Property Parcel Maps shall contain the following:

a) The Property Parcel Maps are to be clear and legible, and the parcels to be acquired are to stand out and be easily recognizable.

b) The Property Parcel Map shall include the following:

(1) Size of sheets: 24" X 36"

(2) TITLE BOXES:

(a) Proposed Project Block

(b) Revision Block

(c) Professional Land Surveyor's Block and Professional Engineer's Block

(3) All sheets will be numbered

(4) Somerset County Engineering Department STANDARD R.O.W. LEGEND (as found in the Somerset County CAD Standards)

c) Municipality and County designated in upper right hand corner of each sheet.

d) North arrow with reference to N.A.D. 1983

e) Scale: 1"=20' or 1"=30' (same as construction or as approved by the Engineer)

f) Construction Centerline or Construction Baseline

(1) All control lines must be marked Construction Centerline or Construction Baseline

(2) Construction Centerline will be shown to the nearest second of grid bearing

(3) Where there is more than one Construction Centerline, use controlling Construction Centerline Construction Centerline "A"; others as Construction Centerline "B", Construction Centerline "C".

(4) Information on Construction Centerline:

(a) Full stationing of main points, as P.C.'s, P.T.'s, P.I.'s, P.C.C.'s, P.R.C.'s, centerline intersections, etc.

(b) Curves on the Construction Centerline must be numbered and tabulated in a box listing:

(5) Curve number (corresponding to curve number of curve)

(a) Curve Number

(b) Radius

(c) Tangent

(d) Length of Curve

(e) Chord Bearing

(f) Chord Length

(g) Full station of the P.C. (P.C.C. or P.R.C.) of curve

(h) Full station of the P.T. (P.C.C. or P.R.C.) of curve

A curve geometry box containing the above items (a) through (h) shall be placed on the each sheet of the General Property Parcel Maps.

(6) Coordinates of main points of the Construction Centerline shall be shown on the first sheet of the General Property Parcel Maps in a box listing:

Full station, Northing, Easting and Designation (ie: P.C., P.T.)

(7) Indicate reference Monuments or method utilized to establish N.J.S.P.C.S. in a box (preferably on the first page of a Property Parcel Map if more than one sheet).

MONUMENT NUMBER	NORTHING	EASTING
N.J.G.C. 7758	XXX,XXX.XX	X,XXX,XXX.XX

(8) Existing monuments designating or controlling existing base line must be shown.

g) Existing Planimetric Information:

(1) Structures:

(a) Show existing houses, buildings with: Type, Use, Height (ie: 2-1/2 Story Brick Dwelling, 1 Story Masonry Warehouse, etc.), and street address numbers.

(b) Offsets to remaining structure less than 5' from the Proposed R.O.W. line and those within any easement must be measured and shown from the Proposed R.O.W. line.

(c) All overhangs of structures shall be shown when being within 5' of Proposed R.O.W. line.

(2) Show existing physical features, above and below ground, including but not limited to:

(a) Transmission lines.

(b) Railroad lines.

(c) Manholes, inlets and drainage pipes with type.

(Do not show any existing or proposed elevations on the plans)

(d) Drives (and type) and paved areas outlined.

(e) Fences, mailboxes, signs and light standards.

(f) Signs (and type).

(g) Traffic signal structures.

(h) Trees (type and size) and valuable shrubbery, especially within any Takings or Easements. Trees to be removed shall be indicated with large heavy "X" through the tree.

h) Existing Right of Way width and source documentation (ex. Filed Maps, Road Book and Page, Deeds of Dedication). **Tax Maps are not acceptable source documents for the establishment of existing right of way widths.**

i) Provide sufficient information to enable a surveyor to lay out the right of way lines as shown by only using the Property Parcel Maps.

j) Use heavy line weights and continuous lines to designate proposed right of way lines with small circles accurately defining each angle or direction change in the right of way.

k) Proposed and existing right of way lines must be clearly marked.

l) FIELD COORDINATES OF EXISTING PROPERTY CORNER MARKERS shall be obtained by actual ground surveys to control the location of the various title lines within the scope of the project. Coordinates for all property evidence found the project shall be tabulated on the plans as follows:

STATION OFFSET NORTHING EASTING TYPE

m) Properties Plotted. (SHOW FOLLOWING INFORMATION)

(1) Use a solid unbroken line to designate property lines.

(2) If a Deed Line runs to the center of the roadway, or beyond, show Deed line as a light line with the Deed Call inside property near the R.O.W. line using "to/from/along Centerline/road (D)".

(3) Show each deed course number, deed bearing and deed distance using a (D) designation after each course.

(4) Current Tax Block and Tax Lot numbers.

(5) Use “et ux”, “et vir”, or “et al” on plan sheets per deed. Spell out names on tabulation sheet.

(6) Deed Book and Page or Will Book and Page (as 436/121), shown within property lines if possible.

(7) Indicate last property owner's name, Tax Map Lot, Deed Book and Page, and Filed Map where applicable. This information shall be shown as follows:

Lot number
N/F
Owner's full name
and
Spouse's full name (where applicable)
Deed Book
Page

(8) Tract number and tract lines, where applicable.

(9) Current names of adjacent owners in the space representing their property.

(10) Exceptions outlined and noted by Deed Book and Page.

(11) Easements outlined and noted as follows: width, use, location, within right of way, Deed Book and Page.

(12) Roads and Streets with official width, name, creating and establishing information, noted on Property Parcel Map. (Give Road Return Book and Page or Dedication Deed Book and Page or Filed Map name, number and date filed.

(13) Vacations or abandonments must be noted as to date and location of information. (As Road Book and Page, name, date, and index references).

(14) Filed Map Reference Number (if available).

n) Show all proposed:

(1) Roadway (indicate curb/or pavement, and width from the centerline or baseline)

(2) Bridges, subsurface structures and footings.

(3) Culverts, subsurface structures and footings.
(4) Traffic signal structures.
(5) Driveways & Sidewalks.
(6) Tree Removal indicated with "X" through the tree along with Type and Size.
(7) All drainage structures.

o) PROPOSED RIGHT OF WAY MONUMENTS:
Proposed right of way monuments shall be shown on the Parcel Maps in accordance with the New Jersey "Map Filing Law", P.L. 1999, Chapter 258 or as directed by the County Engineer.

p) PROPOSED EASEMENT DESIGNATIONS:
(1) Easement numbers are to coincide with base Parcel Number; ie: Parcel 8 would have easements DE-8 or SE-8. Multiple easements of the same type, on the same parcel shall be designated with a letter suffix; ie: Parcel 8 would have easements DE-8A, DE-8B, DE-8C, etc….
(2) Somerset County distinguishes between various easements as follows:
(a) Slope easement designated as SE-XX
(b) Sight Right easement designate as SRE-XX
(c) Bridge easement designated as BE-XX
(d) Drainage easement designated as DE-XX
(e) Temporary Construction easement designated as TCE-XX
(f) Utility easement designated as UE-XX
(g) Traffic Signal Easement designated as TSE-XX
(h) Other easements shall be designated as directed by the County Engineer.
(3) All Easement Areas shall be expressed in Square Feet (Sq. Ft.) only.
(4) When easements overlap (i.e., drainage and slope) each easement is calculated separately and considered as a separate entity; the overlap is not deducted. The only exception is for Temporary Construction Easements which do not overlap other easements being acquired.
(5) Slope easement areas must be calculated and shown in square foot units (Sq. Ft.) for each parcel. Slope easements traversing multiple parcels areas must be shown individually.

q) PROPOSED SLOPE LINES shall be shown using the proper line type designation to properly distinguish between slope lines both inside and outside proposed right of way lines. Proposed Slope Lines shall include:
(1) Offsets at 50' intervals, in general, as measured from the Proposed R.O.W. line to the Slope "E" Line.
(2) Slopes easements previously acquired must be shown with references to Deed Book and Page or Filed Map.
(3) In order to avoid inaccurate appraisals, the slope ratio for all slopes shall be labeled on all Property Parcel Maps. The slope shall be labeled as: Slope "E" (4:1) or whatever the slope ratio may be.

r) PROPOSED DRAINAGE STRUCTURES

(1) Proposed drainage system shown with arrows showing direction of flow and accentuated by heavier lines. (Do not show pipe size or inverts).
(2) Proposed headwalls, pipes, and culverts accentuated by heavier lines.
(3) Bridge, Footings, retaining walls and other structures delineated and footing labeled "Limit of Footing".

s) PROPOSED UTILITY EASEMENTS
(1) Area defined (width indicated).
(2) Area of easement in Sq. Ft.
(3) Location of proposed utility within easement must be shown.
(4) Indicate the easement purpose.

t) PROPOSED TRAFFIC SIGNAL EASEMENTS
(1). Area defined (width indicated).
(2) Area of easement in Sq. Ft.
(3) Location of facility within easement must be shown.
(4) If no easement is required, show any and all Proposed Traffic Signal Appurtenance.

u) TEMPORARY CONSTRUCTION EASEMENTS
(1) Area of easement in Sq. Ft.
(2) Example of a Temporary Construction Easements;
(a) Shown (called out) as a 5' offset on the Slope "E" line, or the area needed to re-grade a driveway to meet proposed roadway grades.
(3) Temporary Construction Easements are temporary in that they are only needed to construct the slope or drive. They are extinguished and revert back to the owner upon completion of the project.

v) DRAINAGE AND BRIDGE EASEMENTS
(1) Drainage Easements for flared end sections, headwalls and stormwater pipes may be described by offsets as a function of the pipe or structure location rather than by metes and bounds. This will permit flexibility during construction allowing the easement's final location to be based on the as-built location of the drainage structure.
(2) Do not acquire drainage rights where none are needed by virtue of an existing water course (wet or dry) in which others have a vested right.
(3) Flared end sections, headwalls and appurtenances in connection with ordinary cross drains should be kept within the right of way wherever possible.
(4) Bridge easements and detention basin easements shall be described by metes and bounds on the plans. All bridge easements must have a P.O.B. with a corresponding station and offset from the project baseline.
(4) Bridge footings, retaining walls, wing walls and other heavy structures should be delineated and labeled "Limit of Footing".

x) PARCELS TO BE ACQUIRED shall follow the following format:
(1) Parcels are to be outlined with a heavy linetype.
(2) Parcels are to be called out with a unique Parcel number.
(3) Parcel areas shall be expressed in Square Feet (Sq. Ft.) only.

(4) Areas of Parcel To Be Acquired plus Remainder Area must equal the Deed Area.

(5) A Point of Beginning (P.O.B.) is to be shown on all Parcels to be Acquired, since Somerset County requires a Meets and Bounds description for all Parcels to be Acquired. P.O.B.'s shall be shown with a station and offset to the Construction Centerline or Baseline.

(6) Total Areas may be shown in several ways depending on the status of the right of way. The following scenarios are provided as examples:

(a) Deed runs to the sideline is shown as follows:

AREA OF TRACT = +/- Sq. Ft.
PARCEL TO BE ACQUIRED = +/- Sq. Ft.
R.A. = +/- Sq. Ft.

(b) Deed runs to the center of the road or beyond and there is a Road Return or dedication:

AREA OF TRACT = +/- Sq. Ft.
AREA IN EXISTING R.O.W. (reference Road Return Book and Page or Dedication with Deed Book and Page) = +/- Sq. Ft.
R.A. (BEFORE TAKING) = +/- Sq. Ft.
PARCEL TO BE ACQUIRED = +/- Sq. Ft.
R.A. = +/- Sq. Ft.
"AREA IN EXISTING R.O.W." shall only be shown in the above Area Table.

(c) Deed runs to the center of the road or beyond, with no Road Return or Dedication:

AREA OF TRACT = +/- Sq. Ft.
AREA IN EXISTING R.O.W. = +/- Sq. Ft.
R.A. (BEFORE TAKING) = +/- Sq. Ft.
PARCEL TO BE ACQUIRED = +/- Sq. Ft.
R.A. = +/- Sq. Ft.
"AREA IN EXISTING R.O.W." shall only be shown in the above Area Table.

(d) Deed runs to the center of the road or beyond, with no Road Return or Dedication, and there is an exception (list any and all exceptions to the Deed with the Deed Book and Page as follows):

AREA OF TRACT = +/- Sq. Ft.
Exceptions (list Deed Book and Page) = +/- Sq. Ft.
AREA IN EXISTING R.O.W. = +/- Sq. Ft.
R.A. (BEFORE TAKING) = +/- Sq. Ft.
PARCEL TO BE ACQUIRED = +/- Sq. Ft.
R.A. = +/- Sq. Ft.
"AREA IN EXISTING R.O.W." shall only be shown in the above Area Table.

(e) Deed runs to the center of the road or beyond, with no Road Return or Dedication, and there is an exception (list any and all exceptions to the Deed with the Deed Book and Page as follows),

but there are Exceptions after the Deed of record (list any and all exceptions to the Deed with the Deed Book and Page as follows):

AREA OF TRACT =	+/- Sq. Ft.
Exceptions (list Deed Book and Page) =	+/- Sq. Ft.
AREA IN EXISTING R.O.W. =	+/- Sq. Ft.
R.A. =	+/- Sq. Ft.
Exceptions (list all Deed Book and Page) =	+/- Sq. Ft.
R.A. (BEFORE TAKING) =	+/- Sq. Ft.
PARCEL TO BE ACQUIRED =	+/- Sq. Ft.
R.A. =	+/- Sq. Ft.

"AREA IN EXISTING R.O.W." shall only be shown in the above Area Table.

(f) Any format not listed will be as directed by the County Engineer.

y) TABULATION SHEET

1) All Parcels and Easements except Temporary Construction Easements are to be shown in the "PARCEL NO." column
2) All Areas are to be expressed in Square Feet (Sq. Ft.).
3) The full name of the Property Owner and spouse, if known. Where there are multiple owners, all names must be given such as Corporation, Institutes, Municipality, etc., as given in deed.
4) The Property Owner's mailing address.
5) In the Remarks all pertinent information relative to the Deed. All dedications or easements are listed by Name of Dedication with Deed Book and Page. Also listed are any Temporary Construction Easements within the Parcel, in Square Feet.

C. LEGAL DESCRIPTIONS:

1. DOCUMENT ORDER: Legal descriptions shall be prepared in accordance with the following order:
   a) Name of owner or owners of record (from deed).
   b) Description of Parcel. Description will be a Meets and Bounds description only.
   c) Slope Clause.
   d) Drainage Clause.
   e) Bridge, retaining wall easements, etc.
   f) Right, title, and interest clause when parcel abuts an existing road.
   g) Signature of Licensed Land Surveyor with embossed seal and date signed.

2. TYPICAL CLAUSES: The following typical clauses are to be used on forms of agreement:

The first clause after the meets and bounds description will start "TOGETHER WITH". Subsequent clauses will start "AND ALSO"

a) RIGHT, TITLE, AND INTEREST CLAUSE: Clause to be used when the parcel abuts an existing public thoroughfare. Example: “TOGETHER WITH all right, title, and interest that the owner may have in and to Washington Valley Road (County Route #620), contiguous to the above described premises as shown on the aforesaid map.”

b) SLOPE CLAUSE:

AND ALSO the right to form and maintain slopes for grading the said (name the road and the County Route number, if applicable) as far as the line marked "SLOPE "E"" on the aforesaid map, including the right to topsoil and seed and to maintain the same so as to stabilize the soil, prevent erosion and/or to improve the aesthetic aspects of the roadway.

PROVIDED HOWEVER, that the Temporary Construction Easement and Slope line may be extinguished by furnishing and maintaining adequate support or protection for the said road so as to make the continuance of those rights unnecessary.

AND ALSO the right to form and maintain slopes for grading and drainage for Washington Valley Road (County Route #620) as far as the line marked "Permanent Slope Easement Line" on the aforesaid map.

c) DRAINAGE CLAUSE:

AND ALSO the right to construct and maintain an open ditch and appurtenances as shown on the aforesaid map.

e) TEMPORARY CONSTRUCTION EASEMENT:

AND ALSO the Temporary Construction Easement TCE-XX as shown on the aforesaid map.

f) SIGHT TRIANGLE EASEMENT:

AND ALSO the Sight Easement SRE-4 as shown on the aforesaid map in which no permanent or temporary structure exceeding six (6) inches in height is to be constructed and in which nothing is to be planted that will grow to a height exceeding six (6) inches.

g) RIGHT OF ENTRY CLAUSE:

The following sample right of entry clauses are to be utilized to clarify rights of acquisition and/or as directed by the County Engineer:

AND ALSO the temporary right to enter upon the remaining lands of the owner for the purpose of construction slopes and/or berms, said temporary right being granted for no consideration and expiring upon completion of construction. The owner grants these rights or easements to the County of Somerset and releases the County of Somerset from any claims with respect to the construction of said slopes and/or berms and further indemnifies and holds the County harmless from any and all claims that may arise as a result of the construction of said slopes and/or berms.

AND ALSO the temporary right to enter upon the remaining lands of the owner for the purpose of locating survey markers related to the proposed construction. Said markers to be removed at the termination of the project at which time the temporary right expires.

AND ALSO the right; if required; to enter upon the remaining lands of the owner with personnel, material, and equipment for the purpose of constructing a relocated driveway and appurtenances; as shown on the aforesaid map. Said right to terminate upon completion of the work and the driveway is open to traffic.

AND ALSO the right to enter upon the owner's land as far as the line marked "Temporary Construction Easement" with personnel, material, and equipment

for the purpose of demolishing and removing an existing steel stair structure and foundations and regrading the area; as may be required; said right to terminate upon completion of said work.

AND ALSO the right to enter upon remaining lands of the owner for the purpose of constructing and maintaining temporary erosion control facilities and appurtenances as far as the line marked "Line of Temporary Erosion Control" for use during the construction of the channel, culvert and highway, as shown on the aforesaid map. Said right to terminate when the new channel, culvert, and highway are completed and open to traffic; at which time, the land will be graded and seeded; all other items, including trees, shrubs, etc., will not be restored.

h) SAMPLE CLAUSES:

The following sample clauses are to be utilized to clarify rights of acquisition and/or as directed by the County Engineer:

PARCEL DE-2, consisting of the right to construct and maintain a highway, bridge, wingwall, footings, slopes and appurtenances across the party of the first part as shown on the aforesaid map at about Station 65+75 (Base Line Stationing).

AND ALSO the right to construct and maintain a bridge, retaining wall, utilities, and appurtenances at the location shown on the aforesaid map.

PARCEL DE-17B, consisting of the right at about Station 2077+20 (Base Line Stationing), to construct and maintain twin box concrete culverts, slopes, an open ditch of grouted rip-rap, stone rip-rap, silt fencing, temporary pedestrian bridge and sidewalk and appurtenances as shown on the aforesaid map.

AND ALSO the temporary right to construct and maintain a temporary utility pole, aerial electric, telephone and television cables, temporary pedestrian walkway, slopes, rip-rap and appurtenances within the limits marked "Construction Easement Line", as shown on the aforesaid map. Said right to terminate when the proposed completed utilities are in use and when the new culvert and highway are completed and open to traffic.

AND ALSO the right to construct and maintain a culvert, wingwalls, footings, stone slope protection, slope and appurtenances as shown on the aforesaid map.

PARCEL DE-9B, consisting of the right at about Station 15+90 (Base Line Washington Street Stationing), to construct and maintain a roadway, bridge, guide rail, and appurtenances, as shown on the aforesaid map.

AN ALSO the right to construct and maintain a retaining wall, footing, abutment, bridge footing and appurtenances as shown on the aforesaid map.

DRIVEWAY CLAUSE; IF REQUIRED. THE FOLLOWING CLAUSE WILL BE INCLUDED IN AGREEMENTS FOR ALL PARCELS INVOLVING A GRADING RIGHT NEAR AN EXISTING DRIVEWAY. THE GRADING AREA NEED NOT BE SHOWN. THE GRADING AREA WILL ONLY BE SHOWN ON THE PROPERTY PARCEL MAP IN EXTREME SITUATIONS:

AND ALSO the right; if required; to enter upon the remaining lands of the owner with personnel, material, and equipment for the purpose of constructing reconstructing, paving, and/or grading the area of the existing driveway. Said right to terminate upon completion of the work and the driveway is open to traffic.

i) SUBJECT TO CLAUSES

SUBJECT TO existing storm sewers, water mains, utility poles, gas mains and easements of record, if any.

SUBJECT, HOWEVER, to the sight easement of the Township of Bernards at the location shown.

SUBJECT, HOWEVER, to the easement of the Township of Branchburg Sewerage Authority and all other public utility easements, recorded or unrecorded affecting the here-in described premises.

D. FINAL DOCUMENTATION: (Upon submittal and approval of DRAFT PLANS)

1. 1 set -Black ink on mylar (matte film) final drawings
   Signed **original** signatures by both NJ Licensed Professional Surveyor and Engineer
2. 4 sets – prints:
   Signed **original** signatures and sealed by both NJ Licensed Professional Surveyor and Engineer
3. Deed descriptions per Somerset County format (see samples)
4. Digital submission of all plans – see Section XI
5. On projects involving major Right of Way acquisition (6 or more parcels), the proposal should allow for corrections, additions deletions or revisions to the final Property Parcel Maps and legal descriptions since changes may occur during property negotiations. **A second set of all final documents should be anticipated.**

X. SCOPE OF WORK FIELD SURVEY WORK FOR ROADWAY DESIGN

Control

All field data will be controlled by a Horizontal and Vertical Control Network encompassing the entire project limits. Said control shall be tied to the New Jersey State Plane Coordinate System, NAD1983 and benchmarks to the corresponding vertical datum NAVD1988.

Horizontal control may be established utilizing conventional surveying with electronic total stations or by utilizing Global Positioning System (GPS) satellite receivers. The horizontal and vertical control shall be based on a minimum of two (2) existing Geodetic Monuments by conventional electronic total stations or three (3) existing Geodetic Monuments when established by GPS methodology. Existing NAD1927 and NGVD1929 Datum control monuments may be projected/converted to the NAD83 and NAVD88 datum using the current version of Federal CORPSCON and or VERTCON software. (Use of other software products must be approved as equal or better by the Somerset County Survey staff.)

All observations shall be conducted to meet or exceed the specifications for **Second Order Class II** control as established by the Federal Geodetic Control Committee (FGCC). Final horizontal positions will be calculated, checked and adjusted with all final values being on the State Plane

Coordinate System based on the North American Datum, 1983. The vertical control shall be calculated, checked and adjusted with all final values being on the North American Vertical Datum, 1988. Horizontal and Vertical Control shall be set to meet or exceed **Second Order Class II** accuracies as defined by the FGCC. A survey control report shall be provided documenting the above procedures and conditions have been met.

Benchmarks are to be established throughout the project site (not in the roadway). Benchmarks are to be spaced not more than 400' apart. *The vertical benchmarks are to be established using a level, not a Total Station Instrument.* The Surveyor should follow good survey practices by regularly shooting back into the control points and not sighting points further than 500' away so as to maintain good vertical data on all collected points. The County is to be provided a copy of the field book data. A table showing benchmark number, elevation, station and offset, and description shall be provided to the engineer.

Right of Way

Property corners are to be located for the establishment of the road right of way. Front property corners will be located along roadway from 200' before the beginning of project, 200' past the end of project, and 250' up all side streets. In the case of intersection improvements front property corners will be located along roads for a distance of 500' from the intersection. Back property corners will be provided in the case of right of way acquisition as directed by the engineer.

Location of Existing Features

All existing features as shown on the attached description list (plus any key features not shown) are to be located. Location of all existing features will extend from 200' before the beginning of project, 200' past the end of project, 50' from the edge of pavement on each side, and 250' up all side streets. All trees and shrubs are to be located unless stated otherwise by the engineer.

The field personnel should continually tie the location data into the benchmark/control points so as to insure the elevation precision of all collected points.

On projects that the Engineer determines will require property acquisition the Surveyor will be required to locate all buildings on the affected properties.

The Surveyor shall provide digital photographs (.jpeg format) along the entire survey project area. Photographs should be of key features such as building/house sites, driveways, ditches/streams, and road intersections. Fieldbook sketches shall be provided and should also show photo locations.

Cross Sections

Cross sections will be provided from 200' before the beginning of project, 200' past the end of project, and 250' up all side streets. Cross sections will extend 50' from the centerline on each side of the road with shots at all changes in grade. Cross section shots shall not to be spaced more than 20' apart.

Sections will be taken at 50' stations along the main road, 25' stations along the side streets, and at all driveways. Driveway sections are to extend to 75' from centerline. The field personnel should continually tie the location data into the benchmark/control points so as to insure the elevation precision of all collected points.

Centerline

After reviewing the Existing Feature and Cross Section data, the Engineer will provide the Surveyor a centerline for the proposed roadway. The engineer will provide the surveyor with coordinates for centerline beginning and end, PCs, PIs, and PTs for layout in the field. The Surveyor will establish the centerline on the project site by placement of PKs at every 50' station on the main road and 25' on side streets.
Upon establishment of the centerline in the field, swing ties will be documented at the following points: beginning and ending station, PC, PT, & PI of each curve, centerline intersections, and a point on the centerline of each side street.

Intersections
Cross Sections along the main road are to be taken at 25' stations through major intersections. Also shots along the gutter where side streets meet the main road should be taken at the projected side street centerline and 25' left and right. Existing curb return elevations are to be taken at 10' intervals starting at the PC on the main road and ending at the PT on the side street. Curb return elevations are to include the top of curb and the gutter elevations.

Signalized Intersections
Location of traffic signal appurtenances including poles, junction boxes, detection loops, and pavement markings shall be included. Descriptions of pavement markings should include color and width. Elevations to be provided as stated above.

Utilities
The Surveyor should call for mark out of all underground facilities within the project limits one week prior to the start of field data collection. All utility paint markouts are to be located and included in the data collection. All utility boxes, valves, chambers, or other facility are to be located. At signalized intersections the height and location of overhead wires are to be provided. Sanitary sewer information to be provided according to format described for location of existing drainage.

Existing Drainage
A detailed location of the existing drainage system will be submitted in field note form. The following is to be provided:

- Station and offset from centerline to existing structures.
- Type of structure, type of casting, size and type of pipes entering structure.
- Inverts on all pipes.
- Elevations on rim and curb piece (where applies) of all structures.
- Location, elevations, and inverts on headwalls and flared end sections.
- Any outlet protection including rip-rap, gabions, or concrete pads.
- Field note sketches shall show the layout of the drainage system.

Traffic Safety
The Surveyor shall follow work zone safety requirements as found in the MUTCD where applicable.

XI. FORMAT FOR DIGITAL SUBMISSIONS

As of February, 2001 the Somerset County Engineering Division requires digital files to be provided for all documents are part of Somerset County infrastructure construction documents. Digital

documents shall be presented as part of the final contract submission prior to the bid advertisement date. This final data shall be submitted on Compact Disk or DVD disks.

The addition of digital documents to the Contract requirements does not in anyway reduce or replace the importance of printed documents. Printed documents remain the documents of record. Due to the importance of printed documents the County requires that premium media be utilized on all submitted documents. Paper documents shall be on a minimum media quality of 20 lb. opaque bond. Final drawings shall be signed in black ink and submitted on a minimum media quality of 3 mil. double matte film.

Regarding interim submissions, digital files maybe submitted on Compact Disk or DVD, if requested by Somerset County Engineering staff. Files maybe submitted via e-mail if coordinated with Somerset County Engineering staff.

Documents

Documents such as specifications, reports, or permit applications (when available) shall be submitted to the County Engineer's Office in both paper and digital form. The digital files shall be submitted as *Microsoft Word 2003* ".doc" format or a compatible earlier version of *Word* as well as scanned copies of final documents. Multi-page tiff files (format CCITT Group 4) should be provided, color exhibits scanned in color, all sheet in order and oriented properly for easy reading. If a report or spec is signed and sealed then the seal should be highlighted with pencil prior to scanning so that the raised seal is apparent in the scanned copy.

On standard documents provided by the Somerset County Engineering Division, all fonts and formatting shall be maintained. On new documents a minimum font size of 12-point is required. In addition all documents shall maintain top and left margins of 1 inch to allow for efficient binding.

Worksheets and Tables

Documents containing tables or computations such as estimates, proposals, and bid tabulations shall be submitted to the County Engineer's Office in both paper and digital form. The digital files shall be submitted as *Microsoft Excel 2003* ".xls" format or a compatible earlier version of Excel.

In proposals, only Somerset County or NJDOT standard pay items shall be use unless otherwise approved by the County Project Engineer. A list of Standard Items is available through the County Engineer's office. This list contains an SCE/NJDOT item code number for each item. These item codes must be utilized in all proposal/estimate spreadsheets in addition to item description, unit, quantity, and unit cost.

Plans

Plans prepared by consultant engineers for County infrastructure construction contracts shall be submitted to the County Engineer's Office on paper, mylar (matte film), and in digital form. Signed mylar plans are the County's document of record for all construction contracts.

Two forms of digital plans shall be submitted for use by the department. The first format is AutoCad Release 2007 ".dwg" format or a compatible earlier version of AutoCad. Department policy does not

allow for the release of digital plans to contractors for construction purposes. Digital files shall be utilized internally for printing, archive, and future rehabilitation work.

The second form is a scanned raster image of the signed and sealed final plans. These files will loaded into the County Document Management System as a true and accurate reproductions of the record plans. Format shall be tiff format CCITT Group 4. Raised seals shall be highlighted with pencil before scanning so that the seal is apparent in the scanned document. Scans shall be full scale and sheets oriented to "landscape" and rotated upright for easy reading. It is preferred that the tiff files for the plan set be contained in one multi-page tiff file but, for larger sets of plans, this may make transfer by disk difficult. Sheets shall be in order in multi-page tiff files. Approval of individual tiff files should be requested of County Engineering Staff.

Digital drawing files shall conform to the Somerset County CADD Standards format criteria. This criteria which covers CADD drawing layers, symbols, text styles, and sheet layout is covered in a separate document.

XII. PROJECT MANAGEMENT

A project manager will be assigned to the project and will be the point of contact for Somerset County Engineering staff. The project manager will be responsible for assuring that all work packages, including those assigned to sub-consultants, are being developed adhering to the scope, budget, and schedule so as to meet the requirements of the project. Work progress will be controlled and coordinated by the project manager to ensure that the various design tasks are progressing consistent with each other. The project manager and design firm shall be responsible for providing the manpower necessary to keep the project on schedule.

At the initiation of the project, the scope of work will be evaluated and the work segregated into major tasks. A schedule plus a budget of man-hours and fees will be prepared based on the major tasks. The project budget will be developed to the major task level and include hours, labor costs, contracted services costs, and direct expense costs. Effort expended and costs incurred will be accumulated from the detail level to the task, phase, and total project level.

Monthly progress reports will be submitted to the County project manager and will include: work completed during the previous month, project issues, an analysis of the schedule status and milestones, and an analysis of the budget status. The progress report will include a table indicating percent completion of the major tasks with totals for the project. The above information will also be required for all sub-consultant work.

The project manager will represent the design team and will be the point of communications with the County. All requests for information or decisions from Somerset County will be in writing. Any correspondence received from the County will be answered within 7 days. Handling of correspondence from other parties will be discussed with the County project engineer to determine how responses will be made. Copies of all correspondence shall be sent to the County project engineer.

Throughout the process, the project manager will schedule a peer review of the design by senior staff of the firm. The review shall insure that the design is being developed to Somerset County standards and meets both State and National engineering guidelines. A quality control certification shall be submitted with the Phase 2, 3, and 4 construction document reviews.

The project manager will arrange for and attend agency meetings, as directed by the County and provided for in the scope of services. Minutes of meetings will be prepared by the project manager and submitted to the County within 7 days following the meeting.