

DIVISION 8 INCIDENTALS

SECTION 800 MOBILIZATION

800-1 DESCRIPTION

This work consists of preparatory work and operations to mobilize personnel, materials and equipment to the project site.

800-2 MEASUREMENT AND PAYMENT

Mobilization will be paid as contract lump sum price.

Partial payments for *Mobilization* will be made with the first and second partial pay estimates paid on the contract and will be made at the rate of 50% lump sum price on each of these partial pay estimates, provided the amount bid for *Mobilization* does not exceed 5% of the total amount bid for the contract. Where the amount bid for *Mobilization* exceeds 5% of the total amount bid for the contract, 2.5% of the total amount bid will be paid on each of the first 2 partial pay estimates. That portion exceeding 5% will be paid on the last partial pay estimate.

As an exception to the above, where the work covered by the contract is limited exclusively to the resurfacing of an existing pavement, payment of the entire lump sum price for *Mobilization* will be made with the first partial pay estimate paid on the contract, provided the amount bid does not exceed 5% of the total amount bid for the contract. Where the amount bid for *Mobilization* exceeds 5% of the total amount bid for the contract, 5% of the total amount bid will be paid on the first partial pay estimate. That portion exceeding 5% will be paid on the last partial pay estimate.

Such price and payment includes, but is not limited to, the movement of personnel, equipment, supplies and incidentals to the project site, for the establishment of offices, buildings and other facilities necessary for work on the project; the removal and disbandment of those personnel, equipment, supplies, incidentals or other facilities that were established for the prosecution of work on the project; and for all other work and operations that shall be performed for costs incurred before beginning work on the various items on the project site.

Payment will be made under:

Pay Item	Pay Unit
Mobilization	Lump Sum

SECTION 801 CONSTRUCTION STAKES, LINES AND GRADE

801-1 DESCRIPTION

When required by the contract, provide all construction layout, surveying, stakeout, supplemental surveying and engineering necessary for the proper control of construction operations in accordance with this section and the *Manual for Construction Layout*. Provide a stakeout of areas where an environmental permit is required before performing any construction in or adjacent to these areas. Stake out limits of the permitted work areas according to the approved permit drawings. Provide clear delineation by use of highly visible flagging. Insure construction limits do not exceed approved permitted work areas. Immediately notify the Engineer of any variations of the stakeout limits when compared to the approved permit drawings.

Section 801

1 The *Manual for Construction Layout* and the *Guidelines for Drainage Studies and Hydraulic*
2 *Design* may be obtained from the Contract Standards and Development Unit.

3 **801-2 CONSTRUCTION METHODS**

4 **(A) General**

5 Furnish personnel who are under the direct supervision of an engineer or land surveyor
6 licensed by the State of North Carolina in conformance with NCGS § 89C.

7 Furnish personnel who are experienced in highway construction surveying and are
8 capable of accurately establishing all line and grade points necessary to complete the
9 work in accordance with the plan dimensions within the precision established in the
10 *Manual for Construction Layout*. Consult the Engineer for clarifications of the plans.

11 Perform work in safe manner and conform to Article 107-21. Perform all flagging
12 operations in accordance with Section 1150.

13 The Contractor may elect to use global positioning system (GPS) surveying, either static
14 or kinematic. Perform GPS surveys with same or higher order of accuracy as
15 conventional surveys detailed in the *Manual for Construction Layout*. Department
16 projects use a localized coordinate system developed by the Location and Surveys Unit
17 specifically for each individual project. Obtain the control information that the Location
18 and Surveys Unit used in establishing the localized coordinate system, specifically the
19 rotation, scaling, translation and coordinates for the azimuth pairs. Newly developed
20 GPS procedures and techniques that do not conform with this section may be used, if
21 approved.

22 Investigate the plan horizontal alignment, vertical profile and superelevation of existing
23 facilities that tie to proposed roadways. Investigate 100 ft beyond all paving limits and
24 revise grades as needed to establish smooth transitions to the existing facilities.

25 Tie existing driveways to proposed facilities within the limits detailed in the plans and
26 within the gradients detailed in the *Roadway Standard Drawings*.

27 The Engineer reserves the right to check, correct where necessary or require any layout
28 work to be revised. The Engineer will perform checks to ensure the roadway, structure
29 and incidental items are surveyed in accordance with the plans and the *Manual for*
30 *Construction Layout*.

31 The Department's review of the Contractor's work in no way relieves the Contractor of
32 responsibility for conformance with the contract. Failure by the Engineer or inspector to
33 point out unsatisfactory work, from lack of discovery or for any other reason, in no way
34 prevents later rejection or corrections to the unsatisfactory work, when discovered. No
35 claims will be allowed for losses suffered due to any necessary removals or repairs
36 resulting from the unsatisfactory work.

37 When requested by the Engineer, check the accuracy of the stakeout. Correct all
38 inaccuracies in the construction stakeout before performing the affected work.

39 When the Contractor proposes an alteration to the plans to rectify a construction stakeout
40 error, submit alterations to the Engineer for review and approval. Include design
41 calculations and drawings sealed by an engineer licensed by the State of North Carolina
42 along with a narrative describing justification for the alteration.

1 When surveying is required, which in the Contractor's opinion could not have been
 2 reasonably anticipated and is not customary or inherent to the construction industry,
 3 notify the Engineer in writing before beginning such surveying. After investigation, the
 4 following will occur:

5 (1) When the Engineer determines that the surveying could not have been anticipated or
 6 is not customary or inherent to the construction industry, the Contractor will be
 7 notified in writing that the work is considered supplemental and measurement and
 8 payment will be made in accordance with Article 801-3.

9 (2) When the Engineer determines that the surveying could have been anticipated or is
 10 customary or inherent to the construction industry, he will notify the Contractor, in
 11 writing, of his determination. If the Contractor intends to file a claim for additional
 12 compensation by reason of such surveying, notify the Engineer in writing of such
 13 intent before beginning any of the alleged supplemental surveying. Strictly adhere to
 14 Subarticle 104-8(B).

15 **(B) Records**

16 Submit proposed method for setting up survey books or electronic data files to the
 17 Engineer before beginning work to assure clarity and adequacy.

18 Promptly make available to the Engineer all requested survey records.

19 Provide updates to the Engineer monthly of the electronic and/or manuscript survey
 20 records. Submit remaining records upon completion of the work. Attest the work was
 21 performed in accordance with the contract by providing all receivable information signed
 22 by an engineer or land surveyor licensed by the State of North Carolina and in
 23 responsible charge.

24 **(C) Horizontal and Vertical Control**

25 The Department will furnish and set horizontal baseline control on approximate 1,000 ft
 26 intervals and vertical control on approximate 2,500 ft intervals within the project limits.
 27 Obtain a copy of the electronic survey control files from the Engineer.

28 Clearing limits may be established during original traverse of baseline control provided
 29 the accuracy ratio does not exceed 1 ft per 5,000 ft of perimeter and all Department
 30 established baseline control is protected and preserved during clearing operations. Before
 31 performing any additional construction layout, verify the horizontal baseline control by
 32 a closed traverse survey or alternate approved method. The accuracy ratio shall not
 33 exceed an error of closure of 1 ft per 20,000 ft of perimeter. Verify the vertical control
 34 by performing a closed loop survey using differential leveling. For the error of closure,
 35 do not exceed 0.05 ft times the square root of the miles:

$$36 \quad \text{Error of Closure} \leq 0.05 \text{ ft} \sqrt{(x) \text{ miles}} .$$

37 Notify the Engineer of any discrepancies in either the horizontal or vertical control.
 38 Reference, outside of the proposed construction limits and evenly distributed throughout
 39 the project limits, a minimum of 50% of the Department's horizontal and vertical control.
 40 Provide reference information to the Engineer.

41 If GPS is used, occupy the azimuth pairs with the base station during verification of
 42 baseline control, otherwise, occupy baseline. Verify remaining baseline control using a
 43 Rover. Submit coordinate data showing differences between supplied baseline
 44 coordinates and field obtained GPS coordinates. Include report detailing the use of
 45 preliminary input data, specifically rotation, scaling and translation.

Section 801

1 Using the horizontal and vertical control established by the Department, provide
2 surveying necessary to construct all roadway, structure and miscellaneous items as
3 detailed in the plans. Perform staking in accordance with the *Manual for Construction*
4 *Layout*. Layout the work and provide all measurements that may be required for the
5 execution of the construction in conformity with the contract.

6 (D) Right of Way, Control of Access and Easements

7 The Department will establish the location of all proposed right-of-way markers, control-
8 of-access markers and permanent drainage easements.

9 Reference the location of all proposed markers and permanent drainage easements.
10 Restore right-of-way and control-of-access monument positions after completion of
11 construction. Set a right-of-way or control-of-access monument cap on an 18" long
12 #5 reinforcing bar and a carsonite witness stake unless concrete right-of-way and control-
13 of-access markers are specified in the contract. The Department will provide the
14 monument cap and witness stake. Re-establish location of permanent drainage easements
15 after completion of construction and install an 18" long #5 reinforcing bar for
16 monumentation.

17 Validate the position of the markers and permanent drainage easement locations with
18 those detailed in the plans. Report any discrepancies to the Engineer.

19 (E) Cross sections for Earthwork Quantities

20 The Engineer may elect to obtain cross sections either by hand or aerial methods. If the
21 Engineer elects to obtain cross sections by aerial methods, furnish materials and install
22 photogrammetric control panels in accordance with the *Manual for Construction Layout*
23 or as otherwise directed.

24 (1) Borrow Pits

25 Establish a baseline alignment or establish horizontal and vertical control on
26 approximate 1,000 ft intervals within each borrow pit, as necessary, to allow the
27 Engineer to obtain measurement of quantities for payment. Stake these alignments
28 just before field cross sections are taken by the Engineer for original, intermediate
29 and final cross sections.

30 (2) Roadway

31 Unless otherwise directed, stakeout the survey lines for original and final cross
32 sections. The stakeout of the survey lines will consist of surveying and staking all
33 alignments within the plans on 50 ft intervals, including all cardinal points. When
34 the alignments are inaccessible, install offset alignments. Begin the staking of these
35 alignments within 48 hours of the Engineer's notice to proceed. Upon the
36 completion of the entire project, with the exception of the survey line for final cross
37 sections, and upon request by the Contractor, the project may be accepted for
38 maintenance by the Department, excluding the survey line.

39 (F) Drainage and Utility Construction Systems

40 (1) General

41 Where underground conflicts are suspected, contact utility owners and locate all
42 utilities horizontally and vertically. Consider the utilities' locations and elevations in
43 the layout of the drainage systems and utility construction systems. Utilities may
44 exist that are not depicted in the plans.

1 Submit 2 copies of all layout drawings for drainage systems and utility construction
2 systems to the Engineer for his review and approval. The Engineer will note the
3 review and approval by adding an appropriate note to the drawings along with the
4 date and his signature. The Engineer will retain a copy of the drawings and a copy
5 will be returned to the Contractor.

6 (2) Drainage Systems

7 Provide construction layout of drainage systems, as depicted in the plans and in
8 accordance with the *Guidelines for Drainage Studies and Hydraulic Design*.
9 Consider the locations and elevations of all existing and proposed utilities, proposed
10 utility construction and existing and proposed drainage systems, in the layout of the
11 drainage system. Modifications of the drainage plan may be necessary to properly
12 collect and transport water. Advise the Engineer if modifications are needed to
13 achieve the original design functionality and the intent of the drainage plans, such as
14 adjusting the location of a drainage structure, adding a drainage structure and
15 increasing or decreasing pipe lengths. The Engineer will review any major
16 modifications.

17 Provide layout drawing of the drainage system including calculations of flow line
18 elevations for all drainage structures; pipe invert elevations, both inlet and outlet of
19 the drainage structure; grade of each pipe within the drainage system; elevation of
20 any existing facility connection, such as stream or pipe; if necessary; headwall
21 location, if depicted in the plans; and locations and elevations of any existing or
22 proposed utilities to the Engineer for review and approval at least 7 days before
23 beginning work on the drainage system. Modification of the submitted drainage
24 layout drawing by the Engineer will not eliminate the Contractor's liability for the
25 accuracy of the information submitted. Any restaking or additional staking required
26 to conform with the approved drainage layout drawing is incidental to the work.

27 (3) Utility Construction

28 Provide utility construction layout as detailed in the contract. Consider the locations
29 and elevations of all existing and proposed utilities, proposed utility construction and
30 existing and proposed drainage systems in the layout of the utility construction.
31 Advise the Engineer if modifications to the utility construction plans are necessary.
32 The Engineer will review any major modifications.

33 Provide layout drawing of the utility construction system including elevations of any
34 existing utilities, drainage systems and/or proposed drainage systems to the Engineer
35 for review and approval at least 7 days before beginning work on the utility
36 construction system. Modification of the submitted utility construction layout
37 drawing by the Engineer will not eliminate the Contractor's liability for the accuracy
38 of the information submitted. Any restaking or additional staking required to
39 conform with the approved utility layout drawing is incidental to the work.

40 (G) Structures

41 Provide surveying and calculations necessary to construct structures in accordance with
42 the plans. Provide staking in accordance with the *Manual for Construction Layout*.
43 Establish horizontal alignment of entire structure. Set at least one benchmark adjacent to
44 the structure site that will be retained throughout the structure construction. The
45 Engineer will furnish the finished construction elevations for use in determining the
46 required construction elevations for bridges. Provide method for computing buildups
47 over beams, screed grades and overhang form elevations to the Engineer for review
48 before staking these items to assure clarity and adequacy.

Section 801

1 Submit 2 copies of structure layout drawings to the Engineer for his review and approval.
2 The Engineer will independently verify and accept the structure layout before the
3 structure construction may begin. The Engineer will note the review and approval by
4 adding an appropriate note to the drawings along with the date and his signature. The
5 Engineer will retain a copy of the drawings and a copy will be returned to the Contractor.

6 If structure phasing or damaged stakes require significant resurveying during the life of
7 the structure, provide revised layout drawing for the Engineer's verification and
8 acceptance.

9 (H) Signs

10 Stake horizontal locations of all overhead and Type A and B ground-mounted signs for
11 Engineer's verification before obtaining S-dimensions. Measure or calculate overhead
12 and ground-mounted sign S-dimensions in accordance with the plans and the *Manual for*
13 *Construction Layout*. Perform investigation of proposed sign locations and notify the
14 Engineer of any obstructions, either existing or proposed, that may interfere with the
15 proposed sign installation. Provide an 11" x 17" drawing depicting the theoretical
16 finished section at each proposed overhead sign assembly location. Include within the
17 submittal the roadway, shoulder and slope gradients. Include the proposed finish
18 elevations of the edges of pavement, each lane line and the ground at each proposed sign
19 footing location. Set a slope stake at each proposed overhead sign location to ensure the
20 slopes are constructed as calculated and detailed in the above submittal. Submit sign
21 information to the Engineer. Stake horizontal locations of all ground mounted and barrier
22 mounted signs.

23 801-3 MEASUREMENT AND PAYMENT

24 *Construction Surveying* will be paid at the contract lump sum price for the work detailed in
25 this section.

26 Partial payments will be made on each particular payment estimate based upon the percentage
27 complete of *Construction Surveying* as determined by the Engineer. The Contractor shall
28 submit a certified statement each month indicating the percentage of *Construction Surveying*
29 work completed. The Engineer will determine if the amount indicated is reasonably correct
30 and the Engineer will pay accordingly on the next partial pay estimate.

31 Establishment of baseline alignments within each borrow pit is incidental to *Construction*
32 *Surveying*.

33 *Supplemental Field Surveying* will be measured and paid as the actual number of hours the
34 Contractor's survey crew is actively engaged in performing the following:

35 (A) Investigative surveying, in excess of 100 ft of horizontal alignment, vertical profile and
36 superelevation of existing facilities that tie to proposed roadways.

37 (B) Surveying specifically for the relocation of utility conflicts.

38 (C) Investigation of a previous stakeout when such stakeout is found to be correct.

39 (D) Surveying that the Engineer has deemed could not have been anticipated or is not
40 customary or inherent to the construction industry.

41 (E) The stakeout of the roadway survey alignments for intermediate cross sections when
42 deemed necessary by the Engineer.

43 If the Engineer determines intermediate cross sections are not necessary for computing partial
44 payments, the intermediate stakeout of the survey line is incidental to the work.

45 *Supplemental Surveying Office Calculations* will be measured and paid as the actual number
46 of hours the Contractor's survey personnel is actively engaged in performing office
47 calculations specifically associated with Subarticles 801-3(A) through 801-3(E).

1 *Supplemental Surveying Office Calculations* will be paid at the stated price of \$60.00 per
 2 hour. *Supplemental Field Surveying* will be paid at the stated price of \$110.00 per hour. The
 3 payment includes furnishing personnel, all surveying equipment, stakes, layout drawings,
 4 calculations, stakeout records and any materials and equipment necessary to perform the
 5 surveying and engineering work.

6 If the Engineer directs that the accuracy of the original stakeout be checked and the stakeout
 7 is found to be in error, perform the work required to check and correct the stakeout at no cost
 8 to the Department.

9 *Exploratory Excavation* required to locate a utility will be paid in accordance with
 10 Article 104-7.

11 *Work Zone Signs (Portable)* will be paid in accordance with Article 1110-4.

12 *Flaggers* will be paid by either the hour or day in accordance with Article 1150-4.

13 Any payments for *Supplemental Field Surveying* or *Supplemental Surveying Office*
 14 *Calculations* required by this section will be paid on the appropriate partial payment estimate.

15 Payment will be made under:

Pay Item	Pay Unit
Construction Surveying	Lump Sum
Supplemental Field Surveying	Hour
Supplemental Surveying Office Calculations	Hour

16

SECTION 802

17

DISPOSAL OF WASTE AND DEBRIS

18

802-1 DESCRIPTION

19 The work consists of the disposal of waste and debris including, but not limited to, furnishing
 20 any waste areas; providing and implementing a Development, Use and Reclamation Plan; any
 21 right of access to waste areas; disposing of waste and debris; dressing and shaping of waste
 22 areas; furnishing and spreading earth material over debris, rock, broken pavement and
 23 masonry; clearing and grubbing of waste areas; hauling waste and debris to waste areas or
 24 permitted landfills; assessment for wetlands and endangered species; obtaining required
 25 permits or certifications; and any tipping fees required for disposal in permitted landfills.

26 Define “waste” as all excavated materials that are not used in the construction of the project,
 27 including overburden from borrow sources and soil-type base course sources.

28 Define “debris” as all undesirable material encountered on the project.

29

802-2 GENERAL REQUIREMENTS

30 Follow the most recent reclamation procedures found on the Department’s website for all
 31 waste sites. Before the removal of any waste from any project, obtain certification from the
 32 State Historic Preservation Officer of the State Department of Cultural Resources certifying
 33 that the deposition of the waste material to the proposed waste area will have no effect on any
 34 known district, site building, structure or object, architectural or archaeological, that is
 35 included, or eligible for inclusion, in the National Register of Historic Places. Furnish a copy
 36 of this certification to the Engineer before performing any work in the proposed waste site.

37 Provide an area and dispose of waste and debris outside of the right of way, unless otherwise
 38 allowed by written request. Limit the materials placed in non-permitted disposal areas to
 39 clean soil, rock, concrete, brick, other inert materials and bituminous asphalt when placed at
 40 least 4 ft above the water table. Mixtures of soil and vegetation, that are primarily soil, may
 41 be placed in non-permitted disposal areas. Place all other debris in sites permitted by the
 42 Solid Waste Management Division of NCDENR, unless otherwise approved.