

The logo for ACEC (American Council of Engineering Companies) features the letters "ACEC" in a bold, serif font. A thin, curved line arches over the top of the letters.

AMERICAN COUNCIL OF ENGINEERING COMPANIES

The logo for the New Hampshire Department of Transportation (DOT) features the words "New Hampshire" in a cursive script above the letters "DOT" in a bold, sans-serif font. The "O" in "DOT" is stylized with a circular cutout.

**ACEC/NHDOT QUALITY
INITIATIVE ROUNDTABLE**

RECOMMENDATIONS REPORT

FOR

**HIGHWAY CONSTRUCTION PLAN
IMPROVEMENTS**

DATE: April 29, 2004



NHDOT & ACEC – NH Technical Transfer Conference



When: Thursday, April 29, 2004; Register at 8:00 a.m.; Program starts at 8:30 a.m.

Where: Grappone Conference Center, Courtyard Marriott, Horseshoe Pond, Concord, NH

How much: \$40 per person (includes lunch)

Time	Topic	Speaker
8:00-8:30 a.m.	Registration, coffee, pastries	
8:30 – 9:00	Welcome	Carol Murray
9:15 – 10:30	Session A: Bridge Roundtable Report	Mark Richardson
9:15 – 10:30	Session B: CADD/D Update	Bill Caswell
10:30 – 10:45	Break, visit vendors in hallway	
10:45– 12:00	Session C: Highway Design Roundtable	Craig Green , Jim Boothroyd, Nickie Hunter, Peter Clary
10:45– 12:00	Session D: Doing Business with the DOT – Consultant Process/DBE	Jim Moore
12:00 – 1:30	Lunch – Presentation-Design & Construction of 7 Mile New Brunswick to Prince Edward Isle Bridge	John W. (Wally) Jordon
1:45 – 3:00	NH DES Presentation <ul style="list-style-type: none"> • DES Overview • New Wetlands Regulations • Site Specific Permitting (DOT/Municipal Projects) • Retention Ponds Classified as Dams • Low Impact Development Strategies 	

Jim Boothroyd, HTA
Peter Clary, HTA
Nicole Hunter, Const.

TABLE OF CONTENTS

- I. Purpose and Methodology
- II. Recommendations

Appendix:

- A. ACEC/NHDOT Quality Initiative Roundtable Survey and Results
- B. Meeting minutes
- C. Sample Drainage Summary Sheet
- D. Sample Intersection Grading Sheet and Draft Conference Report
- E. Sample Profile Sheet

SECTION I

PURPOSE: The Roundtable was formed to provide recommendations to improve the quality and consistency of the contract plans provided to the various users (design, utilities, ROW, environment and construction), and to eliminate redundant information without increasing the cost of producing contract plans. Construction and design user needs have been the primary focus of this subcommittee.

METHODOLOGY: The working sub-committee members are comprised of a mixture of consultant highway designers, NHDOT consultant design reviewers, NHDOT final design engineers, and NHDOT construction contract administrators. The supervisory sub-committee members are members of the **ACEC/NHDOT Quality Initiative Committee** and senior NHDOT staff. This mix of personnel provided a good cross section of varying interests and opinions in order to arrive at reasonable recommendations that may be implemented.

A survey was prepared and distributed to NHDOT Construction Bureau engineers and engineering technicians, NHDOT highway designers, and consultant highway designers. This survey was analyzed and tabulated to help prioritize and guide the sub-committee's meetings in discussing various sections of the plans (cross sections, general plans, traffic control plans, etc.).

The meetings consisted of discussions regarding specific design, project development, and construction related issues as they pertain to the construction plans. The following recommendations are a result of those meetings and are presented as reasonable recommendations for the betterment of the project plans.

SECTION II

RECOMMENDATIONS:

CROSS SECTION RECOMMENDATIONS

1. Provide cross slopes within the traveled way and shoulder transitions.
 - a. Show at least once per plan sheet, if typical.
 - b. Show on every 50-foot (20 meter) station in superelevation transition areas.
2. Eliminate elevation differences (+/-'s) relative to the profile elevation.

Reasoning for Recommendations #1 & #2:

- It would save on construction layout time. The cross slopes are needed in the field in order to calculate grade stake elevations at construction offsets. Very rarely, if ever, are construction grade stakes placed at the offset for the given (+/-) elevation difference. Currently Contractors and NHDOT field personnel spend valuable time recalculating the cross slopes from the (+/-) elevations and offset given.
 - It would provide better visual guidance for construction.
 - It would save design time: Slopes can be automated, elevation difference (+/-) generation is primarily a manual drafting effort.
3. Eliminate the table for the superelevation cross slopes at the odd partial stations (+25, +75 Imperial, +10, +30, +50, +70, +90 Metric)

Reasoning for Recommendation #3:

- The odd half stations are of limited value in construction as contractors typically stake projects at 50-foot (20 meter) stations. They are not used for any other purpose.
4. Continue to include cross slopes at drive cross sections
 5. Show traveled lane and shoulder widths.
 - a. Show at least once per cross section sheet, if typical.
 - b. Show on every 50-foot/20-meter station in varying width areas.

Reasoning for Recommendation #5:

- To be consistent from project to project and minimize manual drafting if it isn't automated.
6. Do not show slope roundings.
 - a. The tick mark that is developed based on the typical slope rounding will be determined and still needs to be shown on each section.

- b. Typical showing slope rounding details must be provided with the plans to show what is required of fill and cut slope roundings.
- c. Create a supplemental specification that alerts the Contractor to the fact that the earthwork quantity associated with slope roundings is subsidiary to common excavation and embankment in place.

Reasoning for Recommendation #6:

- Slope rounding must be added to each section manually. If there are many sections this can add up to a considerable amount of drafting time.
 - Construction does not feel the roundings need to be shown on the sections as long as they are shown on the typicals.
 - The tick mark must be included to help identify limits of grading and clearing.
 - The tick mark also will be utilized to identify the slope lines on the general plans, ROW plans, wetland plans, etc.
7. Add proposed guardrail.
- a. The proposed guardrail symbol should be an actual scale cell (symbol) shown on each section above and below ground (based on a 7-foot post).

Reasoning for Recommendation #7:

- This symbol would provide an additional visual aid during the construction of the shoulders. Often times the contractor is using the cross sections and typicals during the construction of the embankments and shoulders. Consequently, the necessary extra shoulder widths in guardrail areas are sometimes missed and rework is required. This results in potential delays and valuable time lost.
 - This symbol, which would be provided by the NHDOT, would also provide an additional visual aid during design and construction to minimize potential conflicts with guardrail posts and underground features.
8. The mainline cross sections shall include cross sections at the side streets when no side street profiles are provided.

Reasoning for Recommendation #8:

- Added detail at side streets will improve the accuracy of the design quantities. These cross sections will also help construction personnel understand the designer's intent.
9. Include full-scale signal mast arm foundations on all relevant sections.

Reasoning for Recommendation #9:

- This would assist in the identification of conflicts during design and in making field revisions.

15. Eliminate the ditch line elevations on the cross sections in typical applications. In atypical applications, sufficient ditch line elevation and offset information should be provided to construct the proposed ditch line. The flow arrows are to remain on the cross sections.

only show it in a flat area

Reasoning for Recommendation #15:

- It eliminates a manual design effort that provides a limited value in construction.
16. The inclusion of individual cross sections to depict stairways and walkways should be determined on a project specific basis.

Reasoning for Recommendation #16:

- These cross sections should be included if the work limits will impact these features and the proposed treatment of these features will be better depicted with an individual cross section.
17. Eliminate the inclusion of shrubs, trees and stumps on the cross sections, except in specific areas where they are to be saved, or where showing them clarifies specific design features.

Reasoning for Recommendation #17:

- Depicting these features on the cross sections provides limited value to the plans.
 - The minor manual drafting effort required to the cross sections to determine if specific shrubs and trees are to be saved is significantly less than including all these features on the cross sections.
18. Standardize the annotation for the existing and proposed underground utilities.

Reasoning for Recommendation #18:

- The NHDOT will develop abbreviation standards to identify existing and proposed underground utilities. The abbreviation should include the type, size and material (i.e. existing 12" ductile iron waterline = 12" ew (di) and proposed 15" SDR35 sewer line = 15" PS (SDR 35)).
- This will improve plan consistency for designers, reviewers, utility coordinators, utility companies, construction administrators, and contractors.

DRAINAGE RECOMMENDATIONS

1. Show all drainage notes in numerical order on a separate plan sheet.
2. Eliminate drainage notes on the general plan and cross sections.
3. Eliminate stationing and offsets on the drainage summaries. Stationing and offsets are to be shown on the drainage notes.
4. Show drainage note numbers on the drainage summary sheet, drainage note sheet, general plans and cross sections. The note numbers should be shown within the hexagon symbol at each location within the plans except for the drainage summary.
5. Provide Construction with an electronic copy of the drainage notes. The software should be compatible with field office software (i.e.: Microsoft Word or Excel). 
6. Increase sizing of column or row width summary sheet table.

Reasoning for Recommendations #1 thru #6:

- The design three-way check work effort would be reduced as the stations and offsets would only be within the drainage notes.
- The design check work effort would be reduced as the summary and notes can be written into the same file (e.g.: excel) and changes and checks may be made in that file without having to access a separate CADD file to double check the accuracy of drainage notes on the general plans.
- The electronic copy of the drainage notes would save time in the field by allowing construction personnel to print out the notes on labels for incorporation into the field books. Currently drainage notes are typically copied by hand or cut and taped from the plans to the field books.
- Consistent placement and set-up of the summary and notes will increase the familiarity with and thus the efficiency of plan use during construction.
- The larger summary sheet table would provide room for as-built information.

GENERAL PLAN RECOMMENDATIONS

1. Do not show the alignment curve data on the general plans (However, leave the PC and PT locations and station annotation on the General Plans). The preferred location would be the pavement layout plans (Leave all alignment curve data on General Plans for small bridge projects).

Reasoning for Recommendation #1:

- The general plans are typically very cluttered and showing this alignment curve data on the pavement layout plans would improve clarity.

2. Add proposed guardrail symbols and note numbers.

Reasoning for Recommendation #2:

- This will provide an additional visual aid during design and construction to identify any conflicts and have a more complete plan to address field revisions.
3. The addition of proposed landscaping features to the general plans versus being shown on separate landscaping plans should be determined on a project specific basis.

Reasoning for Recommendation #3:

- If the general plans have available space to include these features, it would allow for the elimination of additional landscaping plan sheets.
4. Include the underground utilities and utility poles on the general plans and other specialty plans (drainage and utility plans, and signal plans) where the existing and proposed drainage are also shown.

Whenever drainage is shown, underground utilities should be also.

Reasoning for Recommendation #4:

- This will provide an additional visual aid during design and construction to help identify any potential conflicts and have a more complete plan to address field revisions.

TRAFFIC CONTROL PLAN RECOMMENDATIONS

1. The review of the TCP has resulted in the development of a TCP Intent Statement to help determine the requirements of the TCP for any given project. The following is that statement:

The requirements of traffic control plans and traffic control design must be discussed prior to public involvement. It is imperative that construction personnel be involved in decisions/discussions from concept through completion of the traffic control plans. Traffic control concepts and design should be a joint task between Highway Design (Consultant), Bridge Design (if a bridge is involved), Construction, Utilities, Traffic, Environment, Right-of-Way, Materials and Research, and Maintenance Bureaus. Public input (e.g. City/ Town officials) should also be considered.

The detail required on the traffic control plans should account for how the work may be completed within the time frame (work hours) allowed by the contract, while ensuring the safety of the traveling public, pedestrians, and construction workers. The design must be developed to a point where an accurate estimate of item quantities can be determined. The need for separate traffic control plans, temporary traffic signals, typical sections, and

cross sections in the contract plans shall be contingent on the complexity of the traffic control, and the result of coordination between Design/Consultant and the various Bureaus.

The inherent nature of construction allows multiple solutions to each traffic control situation. Traffic control alternatives, other than those designed on the traffic control plans, may be better suited to different contractors. As a result, if the Contractor feels improvements can be made to the Traffic Control Plan, a written proposal may be submitted with any necessary plans for consideration and approval.

2. Include the Design Consultants in the major project development meetings and in the development of the Prosecution of Work (POW) and Traffic Control Documents on a case by case basis.

Reasoning for Recommendation #2:

- First hand knowledge of the issues related to the TCP and POW would provide for better communication and a greater knowledge base in continuing the advancement of the project.
- The Special Statewide Highway Design Contracts have the Consultants prepare and present the entire project at these meetings. The presentations include the TCP plans, and the POW and Traffic Control Documents. As the projects administered through the Consultant Design Section are typically larger projects where the TCP is typically more complex, their inclusion at these meetings and the development of the POW and traffic control documents is advisable for both design and presentation purposes.

PAVEMENT LAYOUT, SIGNING, LIGHTING, AND CURBING PLAN RECOMMENDATIONS

1. Include the starting and ending stations for non-standard pavement markings (i.e. intersections, gore areas, toll facilities, etc.).

Reasoning for Recommendation #1:

- This will minimize confusion and subsequent revisions required during design and construction.
2. Show alignment curve data and survey points on the pavement layout plans only.

Reasoning for Recommendation #2:

- Placement of this information on the pavement layout plan will provide the necessary information for project layout while improving clarity on the general plans.

3. Relocate the guardrail symbols and note numbers to the general plans.

Reasoning for Recommendation #3:

- This will provide an additional visual aid during design and construction to identify any conflicts and have a more complete plan to address field revisions.

INTERSECTION GRADING PLAN RECOMMENDATIONS

1. The Committee agrees with the Draft Memo, dated 10/24/02, regarding the intersection grading plans. See copy of memo and sample plans in Appendix D.

TRAFFIC SIGNAL PLAN RECOMMENDATIONS

1. Include the existing and proposed drainage (grayed out) and the permanent striping including the symbols, words, and stop bars on the traffic signal plans. Do not include lane widths.

Reasoning for Recommendation # 1:

- This will provide an additional visual aid during design and construction to identify any conflicts and have a more complete plan to address field revisions and provide layout operations.

PROFILE RECOMMENDATIONS

1. Include a straight-line graphic on the profiles to illustrate the superelevation along the roadway and include depths of structural box material. See Appendix E for sample profile

Reasoning for Recommendation # 1:

- This would provide the only elevation view that would give the designer, construction administrator, contractors and other personnel a quick "snapshot" of the entire project.

MISCELLANEOUS RECOMMENDATIONS

1. Include minimum bridge clearances in the Prosecution of Work for those projects which do not have bridge plans showing clearances within project limits.

Reasoning for Recommendation # 1:

- This will help bring the clearance requirements to the attention of the Contractor and the Contract Administrator and help avoid confusion and error. This is particularly of concern when an existing bridge is not being worked on but the roadway underneath is.
2. The NHDOT will publish its typical special details on the web.

Reasoning for Recommendation # 2:

- This should avoid rework and unnecessary additional work when incorporating special details into projects.
-

Report prepared by:

Working Roundtable members:

Nickie Hunter (NHDOT) Co-Chairperson
Peter Clary (HTA) Co-Chairperson
Michael Hazlett (NHDOT)
Phillip Kendall (Louis Berger)
Michael Long (McFarland Johnson)
Cecil Luckern (SEA)
Denise Markow (NHDOT)
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Peter Rondinone (CLD)
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Denis Switzer (NHDOT)
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Supervisory Roundtable members:

Bill Cass (NHDOT)
Jim Boothroyd (HTA)
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ACEC/NHDOT QUALITY INITIATIVE ROUNDTABLE
SURVEY
JANUARY 31, 2003

The following is a survey written by Denis and Nickie for the Construction Bureau to gather information on the project plans. This information has been received and tabulated.

However, before we handed out the results we thought it would be helpful if you could complete the survey as well and provide any relevant comments. If you could return the survey before the end of next week we can then compare the results and present a comparison at the next meeting.

Please send your responses to Denis or drop them off at the Construction Bureau.

Denis Switzer
179 Mitchell Road
Nottingham, NH
03290

If you have any questions please call Nickie or Denis at 926-8005.

Please check off whether you are a DOT Engineer or a Consultant Engineer.

_____ DOT

_____ Consultant

Thanks, Denis and Nickie ☺

The following survey has been written for the Construction Bureau. It is made up of 15 questions. The intent of the survey is to get input on what bureau personnel believes is or is not needed on a set of plans to build a quality project. This survey is done in an effort to reduce in-house and consultant design costs and to produce a more efficient set of plans.

1 Do you feel cross sections are needed on ALL jobs? Yes No

1a. If you answered "no" to question #1, which type of jobs do you think could be built without cross sections?

2 Fill slopes that are 4:1 or steeper need to be rounded at the toe. Currently, this slope rounding is shown on the typicals and on the cross sections. Embankment-In-Place is a Final (F) pay item and it is important to get the quantity right. However, the slope rounding process can be time consuming for draftpeople as the rounding must be done on each individual section.

From a construction point of view, do you think it is necessary to have the rounding shown on the cross sections? Yes No

3 Often times road slopes and superelevations are shown on the cross sections. This also can be a time consuming process for draftpeople. It has been suggested that having this information (normal crown, begin superelevation, full superelevation, end superelevation, etc.) on one sheet in a table format instead of on each section would not only save draftpeople time, but that it would be more helpful during construction since slopes are often pulled off the cross sections and retabulated into a field book.

Do you agree with this statement? Yes No

Comments:

The next 4 questions will be used to help tabulate the answers you have given on the previous pages.

11 How many years of experience do you have with the D.O.T. and/or private consultant(s)?
_____ 0-1 _____ 2-5 _____ 6-10 _____ 11-15 _____ Over 15

12 How many years of experience do you have with the Construction Bureau?
_____ 0-1 _____ 2-5 _____ 6-10 _____ 11-15 _____ Over 15

13 What is your current job title? _____

14 Please indicate the approximate percentage of time that you have spent working on the following types of projects.

_____	Bridges	
_____	Roads	
_____	Buildings (including demo's.)	
_____	Paving/Resurfacing	
_____	Signals	
_____	Guardrail	
_____	Signs	
_____	Landscaping	
_____	Electrical/Mechanical	
_____	Other..	_____
_____		_____
<u>100%</u>		

15 This survey has primarily looked at ways to save time and money during the design phase. If you have any suggestions or concerns regarding plan quality please write them below. Also, feel free to include any general comments as well.

THANK YOU !!!!



YES					NO				
2-5	6-10	11-15	>15	TOTAL	2-5	6-10	11-15	>15	TOTAL
0	1	1	5	7	2	5	4	12	23
0%	17%	20%	29%	23%	100%	83%	80%	71%	77%

1. Do you feel cross sections are needed on all jobs?

1a. If you answered "no" to question #1, which type of jobs do you think could be built without cross sections?

- * Resurfacing
- * Guardrail
- * Signs
- * Simple Box Widening
- * Resurfacing and Safety Improvement Projects.
- * Building Demo's
- * Projects without excavation, fills, or ledge cuts.

1b. Comments..

- * Critical areas need sections.
- * X-sections are helpful in superelevations and 4R projects.
- * Required for earthwork.
- * NYDOT doesn't use cross sections. Info is included on profile and 20 scale grading plan with contours.
- * Maine DOT uses cross sections with lane widths, superelevations, etc. included on them.

2. Fill slopes that are 4:1 or steeper need to be rounded at the toe. Currently, this slope rounding is shown on the typical and on the cross sections. Embankment-in-Place (F) is a final pay item and it is important to get the quantity right. However, the slope rounding process can be time consuming for draftspeople as the rounding must be done on each individual section.

From a construction point of view, do you think it is necessary to have the rounding shown on the plans?

2a. Comments..

- * Slope rounding not requ'd if explained on quantity sheets for review by contractor.
- * Use note to direct contractor to typical.

YES					NO				
2-5	6-10	11-15	>15	TOTAL	2-5	6-10	11-15	>15	TOTAL
0	0	1	4	5	2	6	4	13	25
0%	0%	20%	24%	17%	100%	100%	80%	76%	83%

ACEC/NHDOT QUALITY INITIATIVE ROUNDTABLE
 CONSTRUCTION BUREAU SURVEY
 JANUARY 2003

3. Often times road slopes and superelevations are shown on the cross sections. This also can be a time consuming process for draftspeople. It has been suggested that having this information (normal crown, begin superlevation, full superlevation, and superlevation, etc.) on one sheet in a table format instead of on each section would not only save draftspeople time, but that it would be more helpful during construction since slopes are often pulled off the cross sections and retabulated into a field book.

Do you agree with this statement?

YES			NO			YES & NO					
2-5	6-10	11-15	TOTAL	2-5	6-10	11-15	TOTAL	2-5	6-10	11-15	TOTAL
1	5	2	18	0%	1	2	9	50%	0%	1	3
50%	83%	40%	60%	0%	17%	40%	30%	50%	0%	20%	10%
		>15				>15					
		10				6					
		6				35%					
		1				1					
		20%				6%					

3a. Comments..

- * Info. on table would be handy for field work.
- * Notations on x-sections where changes occur is useful.
- * Slopes on x-sections in superel. areas is very useful.
- * Slopes not needed on x-sections in normal crown area.
- * CL&EP elevations still need to be shown to calc. cross slopes.
- * Cross sections good for visualization.
- * A picture is worth a thousand words.
- * Most contractors use x-sections as their main resource.
- * The more info. on the x-sections the better.
- * Show start and end superlevation stations if not on a 50 station.
- * Show varying lane widths and slopes on x-sections.
- * Leave normal sections on typical.
- * Either is ok as long as info is provided.
- * Accurate x-sections contribute to the greatest opportunity for an accurately built project.
- * Without x-sections contractor is more likely to err in layout.
- * X-sections may cost more in design, but will lead to lower costs in the field.
- * Need both table and x-sections.
- * The table is useful for fine grading and paving.
- * The grade foreman building the fill needs accurate and complete x-sections to work from.
- * Sometimes drawing x-section slopes brings out errors.

ACEC/NHDOT QUALITY INITIATIVE ROUNDTABLE
 CONSTRUCTION BUREAU SURVEY
 JANUARY 2003

4. Traffic Control Plans are designed to help ensure that a project is buildable. Often times designers spend a considerable amount of time developing and detailing TCPs only to have them changed in the field.

Do you feel TCPs need to be included in the plans?

YES				NO				YES & NO						
2-5	6-10	11-15	>15	TOTAL	2-5	6-10	11-15	>15	TOTAL	2-5	6-10	11-15	>15	TOTAL
2	4	4	14	24	0%	1	0%	3	4	0%	1	1	0%	2
100%	67%	80%	82%	80%	0%	17%	0%	18%	13%	0%	17%	20%	0%	7%

4a. Comments..

- * TCP useful resource whether it is followed to the "T" or not.
- * TCP's are not always needed (ie: resurfacing projects), but a project that requires a detour or alternating one-way traffic for an extended period of time is absolutely necessary.
- * Construction input during design phase may be very helpful.
- * TCP shows a way to build the project.
- * If TCP is clearly written out in contract, then minimal detail is needed on the plans.
- * Provide a basic TCP plan only. Do enough to get quantities. Make sure detour & shifts are doable.
- * If TCP is made, then it should be included.
- * Good to delineate Department's intent, provide this in contract to help avoid extra work costs.
- * Narratives on TCPs require the contractor to anticipate constructing as noted.
- * Put all quantities for TCP in a summary table, separately.
- * Avoid construction sequencing in the TCP if possible.
- * NYDOT includes a TCP with their plans.
- * Maine DOT does not include TCP, see MDOT specification.

4b. Examples of inadequate traffic control plans...

- * TCP showed a "typical" phase x-section for traffic that needed to be shifted from side to side. Unfortunately, the TCP did not show any details for the transition or approach areas. As a result, temporary items such as grinding, temp. striping, and the need to shut down a truck lane were not included in the contract.
- * TCP showed only a plan view. This showed widening of the travel way by only a few feet. However, the new road grade was elevated 10' higher than old ground. New typical used was a 2:1 that buried existing lanes. Road had to be closed for one week to switch to new alignment. Good x-sections would have shown this prior to bid.

5. General Plan Comments..

- a. Less than 10 drainage notes, show on general plan.
- b. Greater than 10 drainage notes, show on separate sheet.
- c. Drainage note numbers needed on general plan; however, DR notes could be listed on another page.
- d. Drainage summary is a great reference, but drainage notes are best on the general plan
- e. Show drainage notes and runs on its own drainage plan.
- f. Show proposed water and sewer lines.
- g. Show horizontal curve data on pavement layout plan.
- h. Show guardrail and curbing on pavement layout plan.
- i. Guardrail could be shown on pavement layout plan if general plan is too busy.
- j. Show R.O.W. commitments - ie: construction & slope easements.
- k. Show parcel information on the R.O.W. plan.
- l. Parcel information is needed on the general plan and on the R.O.W. plan.
- m. R.O.W. limits could be shown on its own plan with parcel information, stationing, and property lines.
- n. Put landscaping on its own plan. Don't clutter general plan with something that is usually changed.

- r. NYDOT
 - * Landscaping is shown on a planting plan.
 - * R.O.W. is shown on the grading plan (general plan).
 - * Drainage shown on grading plan (general plan) and profile plan.
- s. Maine DOT
 - * R.O.W. plan is attached to back of plans.
 - * No R.O.W. or parcel info. listed anywhere else.
 - * Landscaping included on general plan if minor.
 - * Landscaping included on separate plan if major.

6. Profile Comments..

- a. Show normal crown, tangent runoff, superel. runoff, and full superlevation stations on x-sections or typicals.
- b. Show minimum clearance requirements on the profile (example: if going under or over a bridge).
- c. NYDOT
* Profile also shows superelevations and slopes.

7. Intersection Grading Plan Comments..

- a. Plans with contours are useful if intersection is not straight forward.
- b. Sometimes too much info. is confusing, but contours are useful for understanding drainage intent.
- c. Show catch basins, drop inlets, and manholes.
- d. Show traffic signals.
- e. Show wheelchair ramps.

8. Traffic Signal Plan Comments..

- a. None

9. Pavement Layout, Signing, Marking, Lighting, and Curbing Plan:

- a. Show begin and end points for striping and curb tapers.
- b. Give an RPM typical.
- c. Driveway widths, walkway and sidewalk info. would be helpful on the general plan if space permits.
- d. Maine DOT
* Info. generally shown on general plan unless it is a complex job.

10. Cross Section Comments..

- a. Traffic control shifts, temporary barrier, temporary curb would be more useful on a separate detailed phasing plan.
- b. Don't include TCP items on the x-sections.
- c. Put TCP info. on TCP and TCP x-sections only.
- d. Drainage note numbers and notes are ok on general plan only.
- e. Show clearing limits on R.O.W. plan only.
- f. Show clearing limits on general plan only.
- g. Put clearing limits on a table listing station and offset.
- h. Show walkway and stairway stations on general plan only.
- i. Show structures and houses on general plan only (although showing on x-sections may aid in the design).
- j. Shrubs and trees are ok on landscaping plan only.
- k. Show existing shrubs and trees on the general plan only.
- l. Show **critical** driveways, walkways, houses, or trees.
- m. Show road slopes, drive slopes, and cut & fill slopes on a table.
- n. Show driveways, sideroads, and walkways on separate sideroad plans.
- o. If driveway is straightforward, info. on general plan and driveway typical is enough.
- p. In general, the more clear information available on x-sections the better.
- q. It is helpful to have information in the same place (on the x-sections), even though much of it is repeat information.
- r. Does showing information on the x-sections help avoid oversights in the design phase?
- s. Showing guardrail on the x-sections is very helpful for remembering where shoulder widths are going to change and where hand digging may be required to avoid underground utilities.
- t. Maine DOT
 - * Drainage notes are included on the general plan and summary table only.
 - * R.O.W. limits are not shown.
 - * Guardrail is not shown.
 - * Temporary traffic control devices are not shown.

ACEC/NHDOT QUALITY INITIATIVE ROUNDTABLE
CONSTRUCTION BUREAU SURVEY
JANUARY 2003

General Comments..

- a. Please don't reduce the amount of information provided. Trying to figure out the design is the last thing I want to worry about in the field.
- b. Extra detail (even if it seems redundant) can save a lot of time and money in the field. Contractors and construction personnel want to be able to "see" the designers intent (for example by looking at the general plan and the cross sections). Tables are very useful, but visualization is often more useful and necessary.
- c. Can more checks be made to see that the notes on the plans are consistent with other plan sheets, specifications, and contract provisions - often times they are in conflict with each other.
- d. Seems most plan issues I've seen can be traced to not enough time provided to review quantities or plans. Often this results in extra work or extra monies due the contractor. This cost is even higher since contractors do not competitively bid on "extra work."
- e. A well designed & detailed plan will save money and time during the construction phase.
- f. Do not use straight line or linear foot plans. Tie into stations of previous jobs if possible.
- h. What about having CADD files available on computer in the field?
- i. DOT question - Can we get English standards on English jobs. Conversions done in the field are time consuming (especially if you don't have a calculator or the conversion factor on you).
- j. Don't round any quantity when it is a final pay item. Round only to the nearest whole number.
- k. It takes time on each job to relearn where everything is in the plans (sometimes I never do :-)). If there was a standard for **plan order** this would make using the plans easier.
- l. No hand drafted sections. The line weights between old and new ground are too similar.
- m. Could use better cross referencing, sometimes I have to look at 3 pages to find 1 answer.
- n. DOT issue - Use construction winter assignments to review plans prior to advertising.
- o. Good plans build good projects.

B



**Meeting
Notes**

Attendees: Darren Blood (Parsons),
Jim Boothroyd (HTA),
Bill Cass (NHDOT),
Pete Clary (HTA),
Keith Cota (NHDOT),
Michael Hazlett (NHDOT),
Nickie Hunter (NHDOT),
Phillip Kendall (Louis Berger)
Michael Long (MJ),
Cecil Luckern (SEA),
Denise Markow (NHDOT),
Jennifer Mercer (VHB),
Peter Rondinone (CLD),
Peter Salo (NHDOT),
Denis Switzer (NHDOT)

Date/Time: December 6, 2002/9:00am

Project No.: N/A

Place: SEA Consultants

Re: ACEC/NH-NHDOT Quality Initiative
Roundtable

Notes taken by: J. Mercer

The purpose of this meeting was to organize and discuss the objectives of the QI Roundtable subcommittee and to set future agenda items. The following topics were discussed.

Subcommittee Goal. The major goal of the group is to better define what is cost effectively needed on a set of construction plans. We need to find a balance between contractors saying, "We need more information," and the consultants saying, "We put too much information on these plans." The intent is to then take these results to the ACEC/NH-NHDOT QI Committee (via Bill Cass and Jim Boothroyd) for discussion in hopes that the Department will implement the necessary changes. The overall goal of the committee is to improve the quality of the plans and reduce costs.

Project Ownership/Cost Recovery. The concern from the construction department was that consultants are not taking ownership of the project once construction starts. They have found that there is no support from the consultants when design errors were made and had to be dealt with in the field. They have also found that cost recovery of these errors was difficult. Some of the consultants disagreed about not having ownership of the project, but agreed that it would be difficult to recover costs if the consultant was not notified of the problem so they could be a part of the solution.

NHDOT Reviewers. The concern of the consultants is the inconsistencies among the reviewers at the DOT as well as the too detailed approach that most take. The intent should be for the reviewer to make sure the plans look like the Standard DOT set and that the project is constructible and to leave the details and design up to the consultants. There needs to be a distinction between a reviewer's preference comment and a design requirement comment. It was pointed out that communication is very important and if the consultant finds that a reviewer is hindering the process by making unreasonable review comments, then it's up to the consultant to communicate this to the appropriate people.

Cross Sections. A large portion of the meeting was spent discussing the necessity of including cross sections in a set of construction plans. It was determined that while they are vital on most projects, there may be some smaller projects where they can be eliminated. The scope of the project will determine if they are necessary and can potentially be written out there.

The content of the sections was also discussed at length with the most prominent issue being the annotation of the sections. A lot of this can be automated through software like MxRoads (for example the lane dimensions), which is extremely cost effective. It is the manual annotations that are time consuming and therefore costly to the consultant with not a lot of benefit to the contractor. It was noted that superelevation tables on a separate sheet are very beneficial to the contractor and easily tabulated by the consultants.

Consultants were asked if they are going on-line to NHDOT's site and using the macros. Many said that they were.

Traffic Control Plans. While only briefly discussed, it was the consensus that these plans are very important to the construction set, but that maybe the consultant are being required to get more detailed than necessary. The frustration of spending weeks on TCP only to have the contractor throw it away was a big complaint among the consultants.

Project Size/Complexity. Projects range in size from small to large and some are more complex than others. There was some discussion about tailoring the design presentation to the project type.

Future Meetings. A possible format for future meeting discussions would be to break down a typical full set of construction plans, one sheet at a time to determine what information is necessary and what may not be cost effective to have on there. A demonstration of how processes are done would be beneficial in helping to better understand the work effort involved in requested revisions.

The next meeting date was set for January 17, 2002, 9:00 to 10:30 at NHDOT in the Highway Design Conference Room. Pete Clary (HTA) and Nickie Hunter (NHDOT) volunteered to co-chair the subcommittee. It was determined that everyone would take turns scribing and hosting the meetings.

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

Date: February 5, 2003

DATE OF MEETING: January 31, 2003

LOCATION OF MEETING: NHDOT/Highway Design Conference Room

ATTENDED BY: Department of Transportation

Nickie Hunter
Denis Switzer
Keith Cota
Michael Hazlett
Denise Markow
Peter Salo

Consultants

Pete Clary (HTA)
Michael Long (MJ)
Phil Kendall (LBG)
Peter Rondinone (CLD)
Jim Boothroyd (HTA)
Karen O'Rourke (Parsons)
Jen Mercer (VHB)

MEETING MINUTES:

I. Review Meeting Minutes

The December 6, 2002 meeting minutes were reviewed and approved, as written.

II. Meeting Minute Distribution

As standard practice, it was decided to omit a letterhead on meeting minutes and also to send the minutes to Pete Clary for distribution to Consultants.

III. Construction School Survey

D. Switzer distributed a survey that was conducted as part of the Department's Bureau of Construction School. The survey is intended to elicit input relative to contract plan content in an effort to reduce in-house and Consultant design costs and to produce a more efficient set of plans. All subcommittee members were requested to complete the survey and submit to D. Switzer (or the Bureau of Construction) by Friday, February 7, 2003. The results will be presented and reviewed at the next ACEC/NH – NHDOT Quality Initiative Roundtable meeting. D. Switzer indicated that he would attempt to e-mail the results to the subcommittee members in advance of the next meeting for review purposes.

IV. Breakdown of Plan Reviews for Future Meetings

Significant discussion took place regarding the subcommittee's approach for plan review. The Consultant Design Section currently utilizes a series of checklists for individual plan submissions. The checklists will be provided to Pete Clary (via e-mail) to distribute to the Committee and to aid in the plan review process. D. Switzer indicated that the results of the Construction School Survey may also serve to provide direction relative to plan content review. It was noted that the construction aspect is only one element of the design process, and that the intent of the subcommittee is to streamline the design process to obtain an improved final product for all users. This will require input from other Department Bureaus (e.g. ROW, Environment) and outside agencies (e.g. FHWA, municipalities) relative to plan set revisions.

Another issue that was discussed involved the redundancy of content between Highway and Bridge plans. Although a separate subcommittee is reviewing the content of Bridge plans, it was suggested that this subcommittee address the redundancy issue and provide recommendations for improvement. It was noted that the redundancy was beneficial to the subcontractors who often only have the bridge plans and therefore do not always have the information that they may need.

D. Switzer distributed sets of representative ½ scale construction plans for review by the subcommittee members. It was decided that all members would work from the same plan set and make comparisons based upon individual, past projects. It is anticipated that the subcommittee will focus first on plan components including cross sections, drainage notes, TCP plans, and typical sections. Members should be prepared to discuss areas of potential changes with their recommended action.

V. Next Meeting Date

The next meeting was scheduled for February 21, 2003 at 10:00 AM, tentatively at the offices of McFarland-Johnson, with the following anticipated agenda:

1. Construction School Survey Results and Discussion
2. Begin Plan Review
 - a. Cross Sections

Submitted by,
Peter Salo, P.E.
Consultant Design Supervisor

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

DATE: March 3, 2003
DATE OF MEETING: February 21, 2003
LOCATION OF MEETING: McFarland-Johnson, Inc. Offices
Concord

ATTENDED BY:

<u>Department of Transportation</u>	<u>Consultants</u>
Denise Markow	Darren Blood (Parsons)
Peter Salo	Peter Rondinone (CLD)
Michael Hazlett	Phil Kendall (LBG)
Denis Switzer	Peter Clary (HTA)
Nickie Hunter	Cecil Luckern (SEA)
	Jennifer Mercer (VHB)
	Jim Boothroyd (HTA)
	Mike Long (MJ)
	Gene McCarthy (MJ)

MEETING MINUTES:

I. Review Meeting Minutes

The January 31, 2003 meeting minutes were approved as written.

II. Construction and Design Survey

D. Switzer and N. Hunter distributed the construction and design responses to the QIR Survey. N. Hunter described the format of the matrix they prepared. Each page has one of the questions and has the construction responses on the left and the design responses on the right. Specific comments received are also listed.

J. Boothroyd asked if the survey could be made available for the upcoming ACEC breakfast meeting. There were no objections to making the survey available.

The idea of having contractor's participate in the survey was discussed. It was agreed that it would be beneficial but that it would also be difficult to implement. The idea was tabled for the time being.

The question was raised as to how the committee should determine its' recommendations. Should the survey be used to identify potential revisions or should the committee review the existing NHDOT checklists. It was decided that the survey would be used and that the recommendations will focus on revisions to the existing checklists.

N. Hunter then directed the committee to Question 10 on the survey dealing with Cross Sections. She explained that for this meeting this was the question for discussion. They prepared a more detailed matrix listing elements of a cross section and how the survey respondents rated the importance of each. Recommendations were determined if the total of the "Absolutely Necessary" and "Helpful" ratings totaled 80%. Also, the "Absolutely Necessary" portion must be the majority. D. Switzer distributed their Cross Section Recommendations.

A proposal was made to change where drainage notes are presented. A copy of a Drainage Summary was distributed where the entire drainage note was placed in the description. The proposal is to only show the drainage notes on the Drainage Summary and not on the General Plans. It was decided that there would likely be more sheets but that it would save a great deal of time. The committee as a whole thinks it is a good idea, but additional input, if any, would be collected at the next meeting.

The specifics of the Cross Section Recommendations were then discussed. Most committee members agreed that showing the slope rounding on the cross sections is generally not necessary except in special cases. The tick mark showing the extent of the rounding should be shown. The slope limits on the General Plans should show the extent of the rounded slope. Clearing lines are required on the General Plans. The additional quantity for the slope rounding would be a line item on the earthwork summary.

The NHDOT Construction personnel stated that existing and proposed poles are needed on the cross sections.

C. Luckern suggested eliminating the minor grid on the cross sections. D. Markow stated that she has a project where this has already been done. She stated that the NHDOT is preparing new cross section sheets that will eliminate some of the grid. After consulting with several sources following the meeting it was determined that the minor grid would be retained.

The NHDOT personnel stated that they would discuss the recommendations with their supervisors and give the committee feedback. Before implementing any of the recommendations, they must go through a review by NHDOT.

P. Clary stated that the format for future meetings will be to review the survey results of a specific item. D. Switzer and N. Hunter stated that they would distribute the detailed matrix for upcoming meetings beforehand.

III. Discussion for Next Meeting

Finish reviewing the Cross Section Recommendations. Committee members are urged to review the recommendations and come to the next meeting ready to discuss. The General Plan survey results and recommendations will also be discussed at the next meeting, time permitting.

IV. Next Meeting Date

The next meeting was scheduled for March 7, 2003 at 10:00 a.m. at the NHDOT offices.

Submitted by,
Gene McCarthy, P.E.
McFarland-Johnson, Inc.

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

DATE OF MEETING: March 7, 2003

LOCATION OF MEETING: D.O.T. – Highway Design Conference Room

ATTENDED BY:	<u>Department of Transportation</u>	<u>Consultants</u>
	Denise Markow	Darren Blood (Parsons)
	Peter Salo	Peter Rondinone (CLD)
	Michael Hazlett	Pete Clary (HTA)
	Denis Switzer	Michael Long (MJ)
	Nickie Hunter	Senan Murdock (VHB)

MEETING MINUTES:

- I. Review Meeting Minutes
 - a. Amendments were made to the meeting minutes for February 21, 2003.
 - i. 2nd page, 3rd paragraph: Amend the second sentence to read: "Most committee members agreed that **showing** slope rounding is..."
 - ii. 2nd page, 3rd paragraph: Delete the word **only** in the 5th sentence so that it reads, "Clearing lines are required on the General Plans."
 - b. P. Clary will amend the minutes as outlined above and will redistribute them via e-mail.

- II. General Discussion
 - a. D. Markow passed on direction received from DOT Consultant Design Chief Keith Cota.
 - i. Make recommendations that the committee is confident the D.O.T. will accept.
 - ii. Provide back-up information or justification for all recommendations.
 - b. M. Hazlett reminded the committee to consider all end users (i.e.: R.O.W., Environment, etc.) when formulating recommendations.
 - c. D. Switzer dropped off a copy of the survey results with the D.O.T. front office for the Commissioner's review prior to the next ACEC/NHDOT breakfast meeting.
 - d. P. Clary is going to write up a sample format to present the final recommendations. These recommendations will be recorded as they are made.

- III. Drainage Summary Review and Recommendations
 - a. D. Markow reported that the drainage summary recommendation that included the drainage note #'s, notes, and summary information on one table was not well received by D.O.T. Consultant Design leaders. The concern was the number of additional plan pages this would require.
 - b. D. Switzer mentioned that it would be beneficial for senior NHDOT committee members to be present during the discussion of ideas. This would provide needed direction and input for determining whether or not a recommendation

- e. Ditchline elevations are not need on sections. Flow arrows are needed.
- f. Existing ep and tw labels are needed on sections.
- g. Wetland labels are needed on sections.
- h. Walkway and stair stations – Need to be determined on a project by project basis. Only include them if they fall within limits of work.
- i. Structures and houses – Need to be determined on a project by project basis.
- j. Shrubs and trees – Not needed on sections.
- k. Clearing limits – Not needed on sections.
- l. Annotation will be needed for existing and proposed drainage structures.
- m. Annotation will be needed for existing and proposed underground utilities, but should be minimized in content and standardized into the symbols sheets. The Department will inquire with the Design Utilities Section on the type of annotation and symbology they would recommend.

IV. Next Meeting

- a. **8:00 AM** Thursday April 3, 2003 at NHDOT
- b. Topic of discussion – General plans.

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

Date: April 24, 2003

DATE OF MEETING: April 3, 2003

LOCATION OF MEETING: NHDOT/Highway Design Conference Room

ATTENDED BY:

Dept. of Transportation

Nickie Hunter
Denis Switzer
Michael Hazlett
Denise Markow
Peter Salo

Consultants

Pete Clary (HTA)
Phil Kendall (LBG)
Peter Rondinone (CLD)
Darren Blood (Parsons)
Jen Mercer (VHB)

MEETING MINUTES:

I. Review Meeting Minutes

a. The March 20, 2003 meeting minutes were reviewed and amended as follows:

- i. Section II-a, amend the word geotect to read as geotechnical.
- ii. Section II-b; add a period after the letter "P." before " the name Clary.
- iii. Section III-d, which references earthwork quantities, is to remain as originally written.
- iv. Section III-m; add the sentence "The Department will inquire with the Design Utilities Section on the type of annotation and symbology they would recommend."

b. P. Clary will amend the minutes as outlined above and will redistribute them via e-mail.

II. General Discussion

a. Phil Kendall questioned the development of a Microstation cell for the guardrail object that is to be placed on the cross sections. The DOT will create the cell, place it in the official library and make it available to the consultant via the NHDOT website.

- b. The committee was again reminded that, when providing recommendations to the Department, it's important to provide back-up information or justification along with the recommendations.
- c. Subsequent to the meeting, Denise Markow met with Chuck Schmidt, Chief of Design Services, concerning the need for detailed annotation of existing and underground utilities. Sample plans were reviewed and the following recommendation is made as a result of this meeting:
- In the description, either the word, "existing" or "proposed" may be truncated and the letter "E" or "P" may be used. For example, 12" existing underground gas may be written as 12" eug.
 - In all cases, the size of the utility, assuming that it is given, must be included in the description. For example, 8" proposed water line can be written as 8" PW or 20" existing waterline may be written as 20" ew.
 - In all cases, the type of material of the utility, assuming that it is given, must be included in the description. This information is essential to both the utility companies and the contractors in the field. For example, a 10" existing vitrified clay sewer line could shown as a 10" es(v.c).
 - This type and size information many times helps the utility companies decide on whether to replace existing systems based on proximity to new construction.

III. General Plan Review/Recommendations

The results from the construction survey pertaining to General Plan preparation were discussed and the following issues were determined:

- a. Curve data is to be shown in only one location preferably on the pavement layout plans.
- b. Pole locations for overhead utilities will continue to be shown on general plans. It is also necessary to maintain the annotation. It is not necessary to show the overhead wires on the plans. The only exception to this would be transmission lines.
- c. Nearby structures should stay shown on the general plans.
- d. It is the recommendation of the committee that guardrail note number/symbol typically be shown on the general plans.
- e. CAROW Access Points are listed on the "checklists" as needed information to be placed on the general plans. (Subsequent to the meeting, Denise Markow met with Victoria Chase & Bill Janelle, and it was decided that this CAROW information is to remain). This is useful they do not always get the ROW plans and it reduces the number of plans that a contract administrator must reference for information.
- f. ROW parcel information (numbers, property names, boundary names) is also to remain as currently shown on the general plans.

- g. Landscaping is a project specific concern.
- h. Underground utilities need to be shown wherever existing and proposed drainage is shown on the plans.

IV. Mike Hazlett exhibited a set of sample cross sections created at 10 scale with a .4m (16") grid. The consensus of the group seemed that they were much easier to read and should be a recommendation for metric projects. Mike also distributed a sample index for the group to review and proved feedback at the next meeting.

IV. Next Meeting Date

The next meeting is scheduled for Thursday, March 24, 2003 at 8:00 AM, at the offices of Parsons Transportation Group, with the following anticipated agenda:

- a. Construction School Survey Results and Discussion of Traffic Control Plan Recommendations

Submitted by,
Denise Markow
Consultant Design Supervisor

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

Date: May 9, 2003

DATE OF MEETING: April 24, 2003

LOCATION OF MEETING: Parsons, Concord, NH

ATTENDED BY:

Dept. of Transportation

Nickie Hunter
Denis Switzer
Michael Hazlett
Peter Salo

Consultants

Pete Clary (HTA)
Jen Mercer (VHB)
Gene McCarthy (MJ)
Darren Blood (Parsons)
Phil Kendall (LBG)

MEETING MINUTES:

I. Review Meeting Minutes

- a. The April 3, 2003 meeting minutes were reviewed and amended as follows:
 - i. Attended By:, Remove Jen Mercer's name from under the Dept. of Transportation list.
 - ii. Section II-c (1st bullet); amend the truncated description for 12" existing underground gas to read as 12" eug.
 - iii. Section III-d; replace "guardrail notes" with "guardrail note number/symbol".
 - iv. Section III-f; add the word "currently" before the word "shown".
 - v. Section IV; add "and should be a recommendation for metric projects" to the end of the second sentence.
- b. P. Clary will amend the minutes as outlined above and will redistribute them via e-mail.

II. General Discussion

- a. Peter Salo mentioned that the Department of Transportation was conducting a training class on Traffic Control Plans (TCP) to help aid the younger engineers within the department. The class will go through several examples, review the information in the Design Manual, and stress the need for TCP's to be looked at early on in the design process.
- b. Darren Blood requested that the consultants be allowed to attend this and other Department training sessions in the future.

- c. The question "What information does construction need on the TCP's for them to be buildable?" was asked and the reply was "It depends on the contractor". It was agreed that where the room is tight for a detour more detail is needed and when there is plenty of room for the detour less detail is needed.

III. Traffic Control Plan Recommendations

- a. The results from the construction survey pertaining to Traffic Control Plan were reviewed and no issues were raised.
- b. The committee agreed that there could not be one checklist for the development of TCP's that would cover all types of projects therefore each project would need to be looked at individually.
- c. The committee recommended that a "Mission Statement" be developed to help determine the requirements for the TCP's for any given project. The statement should emphasize:
 - i. The detail on TCP's should be enough to determine quantities.
 - ii. The controls/limits for the TCP's be included in the Scope of Work.
 - iii. Construction Bureau should review the TCP's as early as possible.
 - iv. Consultant to be invited to the Departments 60% & 90% review meetings.
 - v. Consultant review of the Prosecution of Work.

- IV. Darren Blood agreed to write a Draft Mission Statement to describe the intent of Traffic Control Plans and distribute it via email for review by the committee to provide feedback at the next meeting.

IV. Next Meeting Date

The next meeting is scheduled for Wednesday, May 7, 2003 at 9:30 AM, at the Department of Transportation, with the following anticipated agenda:

- a. Construction School Survey Results and Discussion of Pavement Layout, Signing, Lighting & Curbing Plan Recommendations

Submitted by,
Phillip Kendall
The Louis Berger Group, Inc.

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

DATE OF MEETING: May 7, 2003

LOCATION OF MEETING: D.O.T. – Highway Design Conference Room

ATTENDED BY:	<u>Department of Transportation</u>	<u>Consultants</u>
	Denise Markow	Darren Blood (Parsons)
	Peter Salo	Peter Rondinone (CLD)
	Michael Hazlett	Jennifer Mercer (VHB)
	Denis Switzer	Michael Long (MJ)
	Nickie Hunter	Phil Kendall

MEETING MINUTES:

- I. Review Meeting Minutes
 - a. Amendments were made to the meeting minutes for April 24, 2003.
 - i. 2nd page, 1st paragraph: Amend the first sentence to read: "What information does construction need..."
 - ii. 2nd page, section 4, 1st paragraph: Change the word June to May.
 - b. P. Kendall will amend the minutes as outlined above and will redistribute them via e-mail.
- II. General Discussion
 - a. Committee reviewed the TCP Mission statement. Darren Blood will revise per the committee's discussion as it was recorded and redistribute the statement for inclusion in the recommendations prepared by this committee.
 - b. N. Hunter commented that consultants should review the prosecution of work and provide input.
 - c. M. Hazlett commented that all people from the "project team" are invited to all major meetings.
 - d. D. Markow commented that the TCP should be finalized @ the slope/drain submission and coordinate the TCP @ 60% meeting.
 - e. P. Kendall mentioned that not all the pertinent information is available by the 60% meeting.
- III. Pavement Layout, Signing, Lighting and Curbing Plan Recommendations (PVMT LO plan)
 - a. N. Hunter likes what is on this plan section, D. Switzer agreed. Would like to see beginning and end stations for striping. Particularly for intersections. Need to have RPM spacing on the plans. Make a note to have temporary RPM's subsidiary to item 619 and 632. Could make change to supplemental specification.
 - b. D. Blood commented that all non-standard pavement striping should show begin and end stations.
 - c. D. Markow mentioned to add curve data to PVMT LO plans and to show survey S points on this plan.

- d. Show guardrail on the gen'l plan and not on the PVMT LO plan.
- e. Discussed the need to have adequate quantities for temporary striping. Projects seem to run over when there is temporary striping.

IV. Next Meeting

- a. **8:30 AM** Thursday June 5, 2003 at MJ.
- b. Will discuss the Traffic Signal, Intersection grading plan at next meeting.

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

DATE OF MEETING: June 5, 2003

LOCATION OF MEETING: McFarland-Johnson, Inc

ATTENDED BY:	<u>Department of Transportation</u>	<u>Consultants</u>
	Denise Markow	Darren Blood (Parsons)
	Peter Salo	Jennifer Mercer (VHB)
	Michael Hazlett	Pete Clary (HTA)
	Denis Switzer	Michael Long (MJ)
	Nickie Hunter	Tony Puntin (LBG)

MEETING MINUTES:

- I. Review Meeting Minutes
 - a. Amendments were made to the meeting minutes for May 7, 2003 as follows.
 - i. Revise attendance list to remove P. Clary and S. Murdock and add J. Mercer and P. Kendall
 - ii. Revise Section I.a.ii. to refer to 6th paragraph instead of section 4, 1st paragraph.
 - iii. Make minor spelling corrections (i.e. stripping vs. striping)
 - iv. Remove Section II.b.
 - v. Add the word "temporary" in Section III.a, line 3 in front of RPM's.
 - vi. Change ...non-standard "details"... to ...non-standard "pavement striping"... in Section III.b.
 - vii. Change "no" to "not" in Section III.d.
 - b. D. Switzer will amend the minutes as outlined above and will redistribute them via e-mail.
- II. Discussion of Intersection Grading Plans
 - a. Committee reviewed the Conference Report dated 10/24/03. The group was generally in agreement with the points addressed in the memorandum.
 - b. The discussion of what should be shown on the grading plans mainly concerned whether contours should be shown. It was apparent that it might be more appropriate to show only spot elevations. In general, the group agreed that the recommendations from construction were all appropriate to show on the plans.
 - c. Peter Salo agreed to send a copy of a grading plan done recently that contained only spot elevations. The discussion will be completed after reviewing the plan at the next meeting.
- III. Traffic Signal Plans
 - a. The list of items to show on the plans was reviewed. N. Hunter said that construction generally likes to have all the items on the list. It would also be appropriate to show drainage and utilities (existing and proposed) "grayed out".
 - b. Traffic striping should also be shown, but some in the group pointed out that the text associated with the striping (lane widths, etc.) would needlessly clutter the

drawing. It was agreed that the widths could be left off. The arrows should be shown.

- c. D. Markow asked if the detector loops are placed in the field as shown on the plan. Denis and Nickie responded that, in general, they are. Showing the striping on the plans in relation to the loops is a help to construction.
- d. It was asked whether or not temporary signal plans need to have the same level of detail. The answer was no. These plans should be detailed only as needed. Darren agreed to update the TCP Intent Statement to include Temporary Signal Plans.

IV. Profiles

- a. The five items listed as necessary to have on profiles were all agreed to.
- b. The major discussion item was showing superelevation and how to do it. N. Hunter and D. Switzer were in favor of showing a banking diagram. After much discussion, it was agreed that a line diagram could be shown on the profile (something like what MJ does on their profiles). M. Long agreed to provide a PDF file for review by the group of a typical profile with the super info shown prior to the next meeting.
- c. In addition, it was decided that if the begin and end super info was shown on the profiles that it need not be shown on the cross sections. This refers to the begin and end station info only. The actual super at a section would still be shown.
- d. Showing bridges and bridge underclearances was discussed. It was suggested that the required underclearance be shown in the Prosecution of Work. The bridge should be shown on the profile in some manner. The level of detail is not critical, but the NHDOT resident should be aware of what is required.

V. Updating Standard Details and Standard Special Provisions

- a. A short discussion ensued concerning the updating of standard information. It was suggested that, as much as possible, the Department update this information on the Department website. It is difficult for the Consultants to know that something has changed. Currently, the changes are delivered through the Consultant Review Section people and not through any formalized process. Some items do not reach the designers as they are not aware that a change was made.

VI. Next Meeting

- a. **8:00 AM**, Thursday July 24, 2003 at NHDOT.
- b. Will finalize discussions on Intersection Grading Plans and Profiles and discussion of the final product of the Committee should occur at the next meeting.

ACEC/NH – NHDOT QUALITY INITIATIVE ROUNDTABLE

DATE OF MEETING: July 31, 2003

LOCATION OF MEETING: D.O.T. – Highway Design Conference Room

ATTENDED BY:

Department of Transportation
Peter Salo
Nickie Hunter
Michael Hazlett

Consultants
Peter Clary (Hoyle Tanner)
Peter Rondinone (CLD)
Jennifer Mercer (VHB)
Michael Long (MJ)
Tony Puntin (Louis Berger)
Darren Blood (Parsons)

MEETING MINUTES:

- I. Meeting Minutes Review
 - a. Accepted as distributed.

- II. Profile Review:
 - a. Committee reviewed and agreed to include the graphic representation of the superelevations as shown on the sample profiles.
 - b. N. Hunter suggested that the limits and types of the structural box be shown on the profile but the committee felt it was covered adequately by the typicals.

- III. Intersection Grading Plan Review:
 - a. A general consensus was reached that the sample as shown was appropriate. An extensive discussion resulted relative to when the intersection grading plan would be necessary. The result was inclusion of an internal NHDOT draft memo dated October 24, 2002 that broadly outlines the circumstances when an intersection-grading plan would typically be required.

- IV. Draft Recommendation Review:
 - a. Numerous minor editorial, format, and grammatical revisions were made throughout the document. Continuity of active voice will be reflected in the document.
 - b. Dual dimensions will be used as appropriate throughout the Report.
 - c. Cross Sections:
 - i. Show the shoulder cross-slopes only in superelevation transition areas.
 - ii. Do not show the beginning and ending of superelevations on the cross-sections as these will be shown on the profile(s).

- iii. Clarify the intent of statement regarding the need for drive cross-sections and showing the slopes on them.
 - iv. Remove the recommendation for additional cross-sections at complex intersections.
 - v. Show shoulder widths in transitions or non-typical areas.
 - vi. Do not estimate a quantity for slope rounding but note in a special provision or supplemental specification that the slope roundings are not computed but are required and the earthwork involved will be subsidiary to the earthwork items. The consensus is that this is a relatively very small quantity that could not be represented by a constant due to the varying of terrain on a project. Additionally it was generally agreed that the cost for the roundings would be less than the cost to generate the quantities involved.
 - vii. Clarify that ditch elevations in all but non-typical, critical situations will not be shown. Under all circumstances provide enough information so that the ditch can be readily built to reflect the intent of the design.
- d. Drainage
- i. Clarify that drainage note description is the station and offset.
 - ii. Do not show hexagon symbol on drainage summary, as it is a manual effort in Excel, which is commonly used software for generating these summaries.
 - iii. Clarify the statement regarding enlarging the drainage summary to indicate increasing the column width or row height to allow for addition of as built data.
- e. Intersection Grading Plan
- i. Recommendations and reasoning will be forwarded to the committee for review and comment.
- f. Profiles
- i. Recommendations and reasoning will be forwarded to the committee for review and comment.
- g. Miscellaneous (new section inserted)
- i. Include any bridge clearances in the Prosecution of Work. Appropriate wording supplied to P. Clary by M. Hazlett in a previous e-mail.
 - ii. The NHDOT will post the generally applicable "special details" on a web page to allow general access by all users to the most current version to help avoid rework in using older versions and avoid developing details already in existence.
- h. P. Clary and N. Hunter will be responsible for revision of the report, to be issued by the end of next week. One week will be allowed for its review and comment by the committee. Dependent on the scope and content of the review comments, P. Clary and N. Hunter will decide if another meeting is necessary to finalize the report.

- V. Next Meeting (if necessary.)
 - a. 8:00 AM Thursday August 28, 2003 at NHDOT.
 - b. Will discuss any revisions to the report of the committee.

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October 24, 2002

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DESIGN

CONFERENCE REPORT

DATE OF CONFERENCE: October 24, 2002

LOCATION OF CONFERENCE: Highway Design Conference Room

ATTENDED BY: Department of Transportation
Craig Green Keith Cota
Ted Kitsis Mike Fudala
Jim Bowles Mike Hazlett

SUBJECT: Grading Plans

DRAFT

NOTES ON CONFERENCE:

This meeting was held at the request of Construction to discuss when Grading Plans for intersection areas should be included as part of the Construction Plans. Several examples of past projects were evaluated that showed intersections with and without Grading Plans. Some of the intersections showed the information by finished grade elevations at centerline/baseline, pavement break points and curb line, at cross section stations and mid-stations while others showed the information by contour lines. For the purpose of final pavement elevations, both Jim and Ted felt that contours are generally not useful for the contractor in the field and do not easily indicate subtle grade changes. Ted mentioned that finished grade spot elevations with station and offset are more useful to the contractor than contours.

Currently, most of the time, Grading Plans are included at curbed intersections, especially where the "minor road" approaches the mainline in a superelevated transition. The determination of whether to include Grading Plans should be made with Construction early in the design process, particularly with consultant projects as this must be identified in the consultant's scope of work and reflected in the fee. For "in house" projects, the decision could be made at the 60% meeting.

It's important that pavement be shaped correctly and that low points match the new drainage structures. At curbed intersections, especially those that have islands and "slip ramps", Grading Plans are relied upon to achieve the desired result. Generally speaking, the more complex the intersection is, the more important it is to include Grading Plans. It's also important to include spot elevations at all critical points of the intersection to complete the picture and not leave any "gaps" where field fitting would be required or inadvertent high or low spots or poor transitions may result. It was agreed to show the information by finished grade elevations with accompanying station and offset. Jim commented that this had a secondary benefit of

establishing the edges of ramps and islands such that the contractor can lay them out more easily when there is no separate alignment for them.

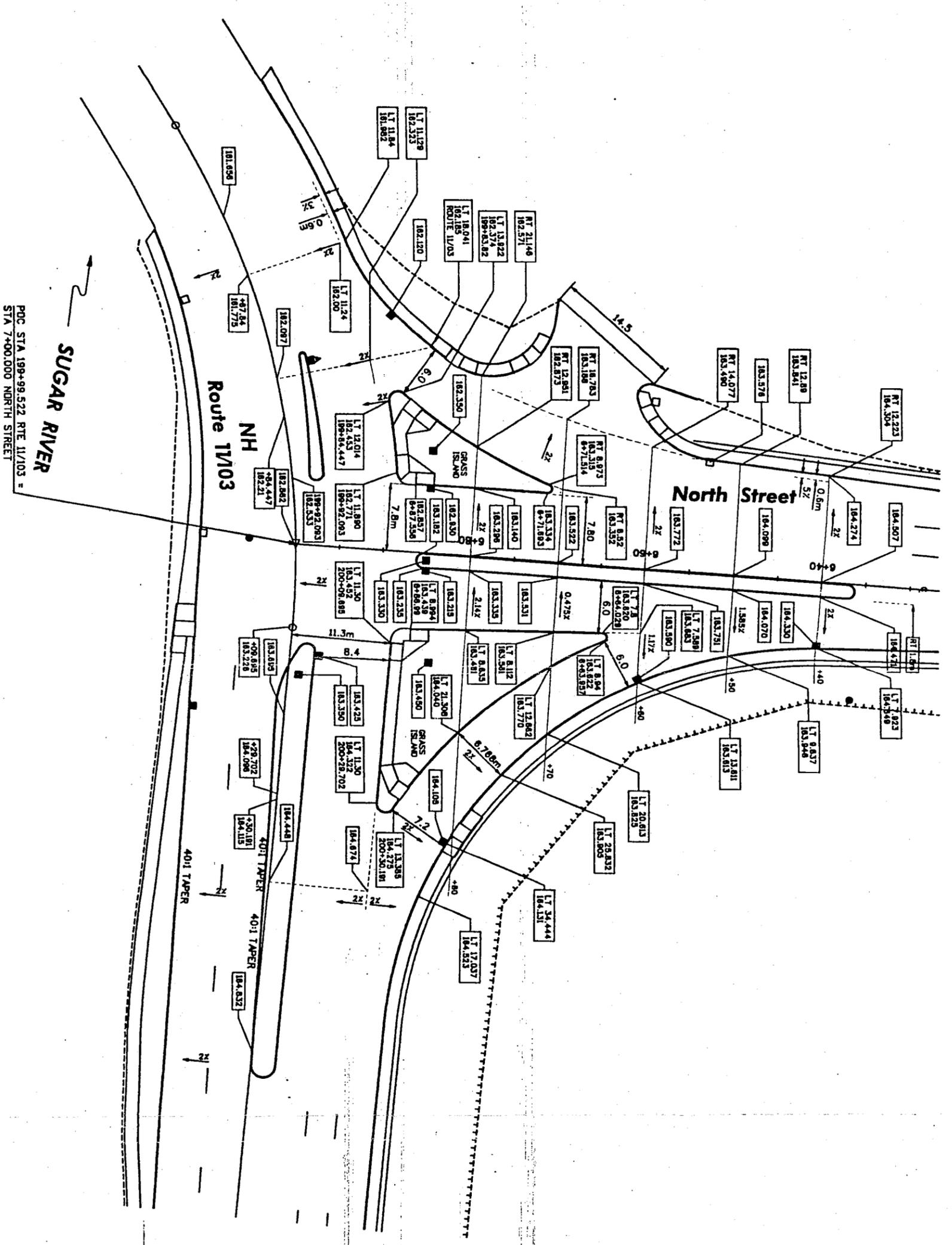
Ted will distribute a copy of an intersection Grading Plan developed for a recent consultant project in Claremont to the District Construction Engineers for comment. Suggested changes and additions will be returned to Craig to serve as an example of what to include for future projects that require Grading Plans. In the interim, it was agreed to review the projects currently under design and decide (with Construction) whether Grading Plans are required and, if practical, to include them in the Construction plans.

Submitted by:

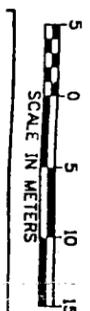
Michael J. Fudala
Chief of Final Design

cc: Attendees
Consultant Design Reviewers
Final Design Teams

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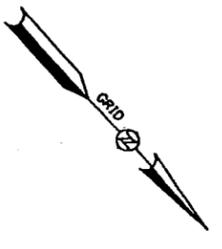


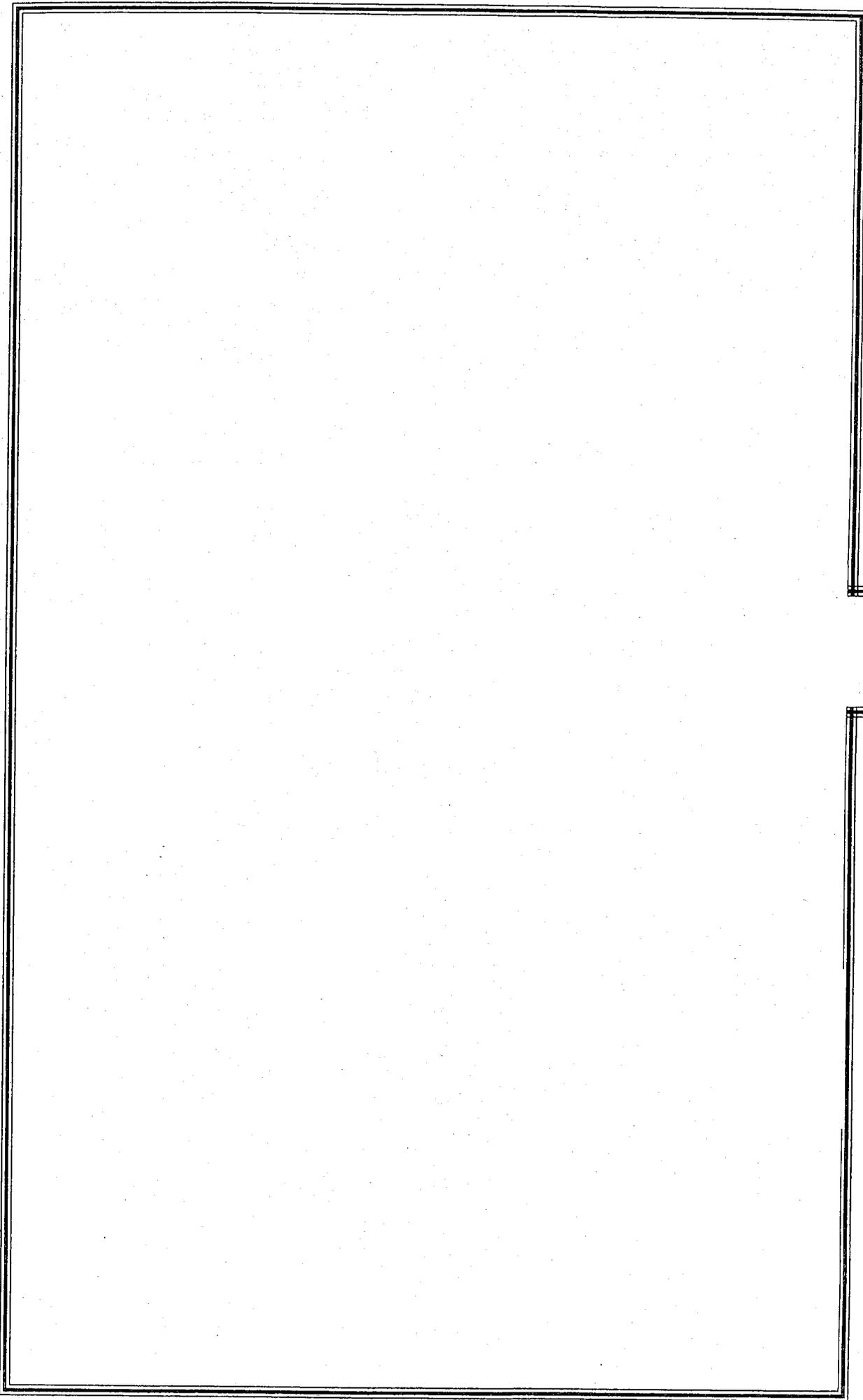
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STA 7+00.000 NORTH STREET



STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN
NORTH STREET

SAMPLE GRADING PLANS





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