



North Raleigh Model Railroad Club

Standards and Recommended Practices

Module Certification & Grading

Standard

Issue 3

June 3, 2010

Questions, comments, corrections and suggestions should be addressed to the NRMRC Standards Committee at wallisjm@att.net

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Introduction

An objective of the North Raleigh Model Railroad Club is to encourage the construction of modules which are technically compliant with both NTRAK Standards and the Club's Standards & Recommended Practices so as to be fully interchangeable with other NTRAK modules at Train Shows. As well, the Club encourages the scenic completion of modules to a high degree of realism and professionalism so they will stand out and hold their own when compared with other highly-regarded modules from other individuals and Clubs. To this end, the Club carries out **Certification** and **Grading** of member- and club-owned modules. The end result is the assignment of a **Class** level to each module. See the section on Module Classes, below.

The North Raleigh Model Railroad Club began the **certification** of modules in 1992. It is intended that all modules (new, repaired or renovated), whether member, club or visitor-owned, undergo certification before being included in a Club Show or Operating Session. In addition, all modules must be re-certified every five years. Certification is based on requirements set out in the NTRAK Manual plus NRMRC **Club Standards and Recommended Practices**. The Club Secretary maintains a list of certified modules. Please refer to the section on Certification

Requirements for the certification requirements, instructions and forms.

In addition to the technical requirements of Certification, modules are graded to reflect their degree of scenic completeness and realism, and their ability to hold their own among world-class and/or award-winning modules in national and regional train shows. This grading is to encourage members to build, re-build, improve and complete high-quality modules that will be desired modules in shows. Please refer to the section on Grading Requirements for the grading requirements, instructions and forms. The Club Secretary maintains a list of module grades.

The **certification testing and grading of modules** is the responsibility of the Standards Committee. For **certification testing** the Committee may test as a body or may designate at least two (2) Members to perform the tests. **Module Grading** will, as far as possible, be performed by "outside" judges, who may be members from other model railroad clubs (any scale). A member of the NRMRC Standards Committee will accompany outside judges while they are judging NRMRC club and/or member modules. The intent in doing grading in this manner is to remove any bias toward specific modules and/or members.

The criteria for grading modules has been developed from an article written by Bob Gatland of Long Island NTRAK in November 1993.

Module Classes

Module Class is based on a combination of the results of Module Certification Testing and Module Grading, carried out as defined

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in the Certification Requirements and Grading Requirements section of this publication.

Following **Certification** testing a module will be awarded one of three classifications.

Certified	Meets all requirements & passed all tests
Certified with Exception	Meets all requirements and passed all tests, but has some unique but acceptable variance due to some special feature.
Not-certified	Did not meet all requirements and/or pass all tests

Following **Grading** a module will be awarded one of two grades:

Grade 1	Scores 100 points or higher on scale based on grading requirements, with a pass mark (>50%) in each rule category.
Grade 2	Scores less than 100 points on scale based on grading requirements, or does not achieve a pass mark in each rule category

The results of Certification Testing and Module Grading will be combined to determine the **Module Class**, according to the following table:

Class	Meaning/Requirements
1	Competitive with "best" modules <ul style="list-style-type: none"> Meets all NTRAK and NRMRC technical standards and recommended practices. The module is "certified" or "certified with exception." Scores 100 points or higher based on grading requirements with a pass mark (>50%) in each rule category — Grade 1 module.
2	Meets technical standards, but scenicking non-competitive. <ul style="list-style-type: none"> Meets all NTRAK and NRMRC technical standards and recommended practices. The module is "certified" or "certified with exception." Scores less than 100 points on scale based on grading requirements, or does not achieve a pass mark in each rule category — Grade 2 module.
3	Does not meet technical standards, Scenicking can be competitive or non-competitive. <ul style="list-style-type: none"> Does not meet all NTRAK and NRMRC technical standards and recommended practices. The module is "not certified." Grading score does not matter or count.

The results of Certification and Grading will be recorded on the Module Certification and Module Grading checklists. The results

will be combined on the Module Classification Sheet which will be the vehicle to determine the module's Class.

As well as the sheet part of this publication, a printable Module Classification Sheet is available. The form is a PDF file and can be opened and printed from the web, or downloaded to your computer. To open the file from the web, left-click on the link below. To save the file to your computer, right-click on the link below, then click "Save As" in the dialog box that appears, select the location to store the file and then click OK.

Printable Module Classification Sheet
<http://trainweb.org/nrmrc/pubs/modclasscheck.pdf>

Certification Requirements

It is intended that all modules (new, repaired or renovated), whether member-, club- or visitor-owned, undergo certification before being included in a Club Show or Operating Session. In addition, all modules must be re-certified every five years. This section provides the agreed upon Check List by which modules will be tested for certification; the pass mark is 100%. It is based on requirements set out in the NTRAK Manual and Club Standards. The Club Secretary will maintain a list of certified modules.

The Standards Committee is responsible to carry out certification testing. The Committee may test as a body or may designate at least two (2) Members to perform the tests. Following testing a module will be awarded one of three classifications:

- **Certified:** Meets all requirements and passed all tests
- **Certified with Exception:** Meets all requirements and passed all tests, but has some unique but acceptable variance due to some special feature.
- **Not-certified:** Did not meet all requirements and/or pass all tests.

For modules not receiving certification a full explanation of the reasons for denying Certification must be given to the owner. Modules denied Certification may not be incorporated into a Club Show or Operating Session layout, unless specifically authorized by the Show Superintendent.

Visiting modules meeting NTRAK standards but not Club standards, such as skyboard height, may be certified for use in Shows.

Module certification will normally be carried out at the start of set up for Shows; modules to be certified must be present within 15 minutes of the designated time for starting set up for the Show, as published on the Club's web site, stated at the Club Business Meeting prior to the Show, or via email using the Club's email list on Yahoogroups. If a large number of modules are to be

certified, a special session devoted to certification may be scheduled separate from a Show.

Certification of a module is mandatory before it will be permitted into a Club layout at a Train Show or an operating session.

Mechanical Certification

Mechanical certification covers the basic construction of the modules. Conformance ensures ease of set-up and sturdiness during Club Shows and Operating Sessions. Table 1 provides the check list.

Track Certification

Track condition is vital to the successful, reliable and smooth operation of trains over the module. Conformance ensures operating ease and pleasure for all. Table 2 provides the check list.

Electrical Certification

Second only to track in assuring reliable, trouble-free operation, electrical conformance to the required standards is also required for safety reasons, and because electrical problems can be extremely difficult to track down and fix once the module is installed and connected into the layout.

NTRAK/Common Wiring: This covers all wiring associated with the 3 NTRAK main lines and other tracks (red, yellow, blue, alternate blue, orange, green) plus the white and brown power feed lines in the module, i.e. the "Public" wiring. Table 3 provides the Check List.

Private Wiring: This is of concern only to the extent it can interfere with operation of the NTRAK main lines. For any module where Private Wiring can control the NTRAK main lines, a circuit diagram of the wiring must be attached to the rear of the Skyboard for trouble shooting, if necessary, especially when the owner is not present. Table 4 provides the Check List.

Scenery Certification

The intent here is not to judge scenicking on modules (see section on Grading Requirements), but to ensure a minimum standard is met in terms of minimally acceptable completeness, no damage, consistency, etc. Table 5 provides the Check List.

Instructions for Certification Check List

Following are instructions for completing the Module Certification Check List. When complete, copies of the check list should be given to the module owner and the Club Secretary. The module owner can use the form as proof of Certification or as a list of items that need to be corrected. The Club Secretary will use the form for updating the list of certified modules. The original will be retained by the Standards Committee as record of the Certification.

- Check each item on the check list sequentially in the order listed.

- For compliance simply place a check mark in the appropriate box on the form.
- For total absence of an item, simply write "no" or "n/a" as appropriate in the appropriate box on the form.
- For non-compliance, enter a number (sequential numbers for more than one item of non-compliance) in the appropriate box on the form, and, using the same number as reference, write an explanation of the non-compliance in the "Notes" section (Section 6) on the form. This provides a full explanation to the module owner of the item(s) of non-compliance.

As well as the sheet part of this publication a printable Module Certification Checklist form is available. The form is a pdf file and can be opened and printed from the web, or downloaded to your computer. The Module Certification Checklist form should print on two pages. To open the file from the web, left-click on the link below. To save the file to your computer, right-click on the link below, then click "Save As" in the dialog box that appears, select the location to store the file and then click OK.

Printable Module Certification Checklist form
<http://trainweb.org/nrmrc/pubs/modcertcheck.pdf>

Grading Requirements

In addition to the technical requirements of Certification, modules will be graded to reflect their degree of scenic completeness and realism, and their ability to hold their own among world-class and/or award-winning modules in national and regional train shows. The purpose of grading is to encourage members to build, re-build, improve and complete high-quality modules that will be desired modules in shows.

The criteria for grading modules has been developed from an article written by Don Gatland of Long Island NTRAK in November 1993. The requirements and point scores for Module Grading are listed in the section below.

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Module Grading will, as far as possible, be performed by members from other model railroad clubs (any scale) in conjunction with at least one member of the NRMRC Standards Committee. The intent in doing grading in this manner is to remove any bias toward specific modules and/or members.

Following Grading a module will be awarded one of two grades:

- Grade 1: Scores 100 points or higher on scale based on grading requirements, with a pass mark (>50%) in each rule category
- Grade 2: Scores less than 100 points on scale based on grading requirements, or does not achieve a pass mark in each rule category.

The following requirements and point scores have been established for what constitutes an outstanding module, and will be used in the NRMRC's Grading Scheme:

Rule	Description	Points
1	A Theme There must be a unified theme that brings the scene together. For example, a module built around all the aspects of a cattle farm and the barns, fields, fences, terrain and foliage that are appropriate for it. A collection of buildings helter skelter won't do the trick.	10
2	No Weak Spot There can be no weak points or areas of omission. Did you paint the skyboard solid blue or stick on a Walther's background complete with wrinkles? Is the exposed benchwork neatly painted? Did you handle problem areas such as the intersection of the skyboard with the tabletop well? Are there any areas where the scenery isn't quite up to snuff? Does the highway really look like a road?	10
3	99.9% Finished The module must actually be finished (almost doesn't count). Have you added lighting, figures, lines on roads, chrome paint to cars, barrels, debris, enough trees, underbrush? It is understood that a railway is never truly finished, but it should be state of the art.	20
4	Logical Scenery The scene must look plausible. Does your four-lane highway suddenly become a dead end street? Does the roaring river spill into a tiny pond with no visible or suggested outlet? Are all of the structures, figures and accessories appropriate to the scene? Are all elements of the scene appropriate and suggestive of a particular	10
5	Weather It Virtually everything needs weathering. Starting with the ties, rails and ballast, and continuing across the module, bright colors must be toned down. Weathering brings the elements together. An occasional bright spot should be justified by its newness.	10
6	Focal Points There should be mini-scenes that attract our attention and praise. For example, watermelons in the garden and a tractor in the midst of cutting a crop. Find some focal points that will attract the attention of the viewers and then go full out with the details. Bridges often serve as focal points. Exciting scenes include items such as a building on fire with all kinds of fire fighting equipment; the scene of a traffic accident involving a bear (ursa major) and a car surrounded by a collection of rescue equipment. Animation can be a major plus here, if done within the context of the overall scene.	15
7	Get Vertical! Flat tables never make it. Try to recall a truly outstanding module that was built on a sheet of plywood and looked it. Do mountains rise sharply out of plywood plains? Winning modules have plenty of vertical separation. A highway ducking under or climbing over the tracks can add immensely to the effect of a scene. Over the years there have been some great modules where the trains ran well above the lowest areas of the scenery. Two favorites were built on the same theme of a railroad following a river gorge around a sweeping turn. They were both done on inside corners with transition modules on the ends.	15
8	Tree Details Trees have to be realistic. Did you plant your forest with bumpy chenille? Or did you take the time to spray the trees a more realistic color, shape them, and add ground foam? Are your other trees clumps of lichen or semi-transparent with visible major branches?	10
9	Be Creative Be innovative. Does your talent break new ground? Are you taking us where man has never gone before? If so, you may come up with a winner. For example, there is an attention getting model that features level upon level of tracks going all the way down to the floor.	10
10	Show Us Your Stuff Show us that you have talent. Is there any scratch building, kit-bashing, tree growing, rock casting or other not-out-of-the-box modeling evident on the module? Would you deserve to win a prize if you purchased a huge, custom-built factory building and placed it on the module?	10

When judging, the judges will be required to record detailed comments about the module being judged on the provided form, indicating the strong points of the module in each category, as well as those areas which fail to meet the spirit of the requirements and for which improvement is needed.

As well as the sheet part of this publication a printable Module Grading Checklist form is available. The form is a PDF file and can be opened and printed from the web, or downloaded to your computer. The Module Grading Checklist form should print on three pages. To open the file from the web, left-click on the link below. To save the file to your computer, right-click on the link below, then click "Save As" in the dialog box that appears, select the location to store the file and then click OK.

Printable Module Grading Checklist

<http://trainweb.org/nrmrc/pubs/modgradecheck.pdf>

Checklists

Attached to this publication are the following checklists; these can also be downloaded separately as indicated throughout the publication;

- Module Classification Sheet
 - Module Certification Checklist
 - Module Grading Checklist
-

North Raleigh Model Railroad Club Module Classification Sheet

Module Name: _____ Module Size: _____
 Module Owner: _____ Date Module Built: _____

Certification result: _____ (From Module Certification Checklist)

Grading result: _____ (From Module Grading Checklist)

Class assigned: _____ (Based on Table below.)

Class	Meaning	Requirements
1	Competitive with "best" modules.	Meets all NTRAK and NRMRC technical standards and recommended practices. The module is "certified" or "certified with exception." Scores 100 points or higher based on grading requirements, with a pass mark (>50%) in each rule category -- Grade 1 module.
2	Meets technical standards, but scenicking is non-competitive.	Meets all NTRAK and NRMRC technical standards and recommended practices. The module is "certified" or "certified with exception." Scores less than 100 points on scale based on grading requirements, or does not achieve a pass mark in each rule category -- Grade 2 module.
3	Does not meet technical standards. Scenicking can be competitive or non-competitive.	Does not meet all NTRAK and NRMRC technical standards and recommended practices. The module is "not certified." Grading score does not matter nor count.

Date: _____ **Classified by:** _____

Instructions

- Complete each item as required, above. All spaces should be filled in.
- When complete, attach the original of the Module Certification Checklist and the Module Grading Checklist to the original of this form. This original will be retained by the Standards Committee as record of the Module Classification.
- A copy of the all forms should be given to the module owner and the Club Secretary. The module owner can then use the form as proof of Classification, Certification and Grading. The Club Secretary will use the form for updating the list of certified modules.

North Raleigh Model Railroad Club Module Certification Checklist

Module Name: _____ Module Size: _____
 Module Owner: _____ Date Module Built: _____

1. Mechanical Certification

Item	OK	Item	OK
Module physical dimensions correct		Solid/sturdy legs	
Module frame square (horiz/vert)		Legs correct length/adjustable feet	
Appropriate materials used to build		Legs securely attached to module	
Good construction practice used		Skyboard dimensions in standard	
Module frame/legs painted correct shade		Skyboard painted/correct shade	

2. Track Certification

Item	OK	Item	OK
Type/brand of track used		Track spacing from module skyboard	
Brand/size of turnouts used		Spacing between tracks	
Insulating blocks at crossovers		Track spacing from module ends	
Insulating blocks at Private tracks		Curved track radius	
Electrical gaps 4 rails at turnout frogs		Track gauge — public tracks	
Track ballasted		Track clearances — NMRA	
Flangeways clear of ballast		Track clearances — NTRAK high/wide	

3. NTRAK/Common Wiring Certification

Item	Red	Yellow	Blue	Orange	Green	Other	White	Brown	LocoNet
Wiring present									
Wiring meets minimum gauge									
Wiring connected to track							n/a	n/a	n/a
Wiring connected to connectors									
Connectors at correct module ends									
Connectors color coded									n/a
Wires firmly fastened to underside of module									
Polarity correct at track							n/a	n/a	n/a
Polarity correct at both connectors									
Continuity check OK									
General appearance of wiring									
No exposed wiring/connections									
All connection soldered/screwed									

Note that any 120VAC wiring is prohibited on any module. Presence of 120VAC wiring is a Module Certification failure.

4. Private Wiring Certification

Item	OK
Wiring diagram attached to rear of skyboard	
Local control of NTRAK main lines	
Local control operates correctly	

5. Scenery Certification

Item	OK	Item	OK
No bare plywood		Scenery consistent with theme of module	
No scenery damaged		Buildings consistent with theme of module	
No buildings damaged		Scenery material does not interfere with operation	
Building construction complete		Scenery material anchored to module, cannot move onto tracks	

6. Notes

Classification: _____

Inspection by: _____

Inspection date: _____

Instructions

- Check each item on the check list sequentially in the order listed.
- For compliance simply place a check mark (✓) in the appropriate box on the form.
- For total absence of an item, simply write "no" or "n/a" in the appropriate box on the form.
- For non-compliance, enter a number (sequential numbers for more than one item of non-compliance) in the appropriate box on the form, and, using the same number as reference, write an explanation of the non-compliance in the "Notes" section (Section 6) on the form. This provides a full explanation to the module owner of the item(s) of non-compliance.
- When complete, copies of the check list should be given to the module owner and the Club Secretary. The module owner can then use the form as proof of Certification or as a list of items that need to be corrected. The Club Secretary will use the form for updating the list of certified modules. The original will be retained by the Standards Committee as record of the Certification.

North Raleigh Model Railroad Club Module Grading Checklist

Module Name: _____ Module Size: _____
 Module Owner: _____ Date Module Built: _____

Rule 1: A Theme

There must be a unified theme that brings the scene together. For example, a module built around all the aspects of a cattle farm and the barns, fields, fences, terrain and foliage that are appropriate for it. A collection of buildings helter skelter won't do the trick.	Maximum Points 10
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 2: No Weak Spots

There can be no weak points or areas of omission. Did you paint the skyboard solid blue or stick on a Walthers background complete with wrinkles? Is the exposed benchwork neatly painted? Did you handle problem areas such as the intersection of the skyboard with the tabletop well? Are there any areas where the scenery isn't quite up to snuff? Does the highway really look like a road?	Maximum Points 10
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 3: 99.9% Finished

The module must actually be finished (almost doesn't count). Have you added lighting, figures, lines on roads, chrome paint to cars, barrels, debris, enough trees, underbrush? It is understood that a railway is never truly finished, but it should be state of the art.	Maximum Points 20
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 4: Logical Scenery

The scene must look plausible. Does your four-lane highway suddenly become a dead end street? Does the roaring river spill into a tiny pond with no visible or suggested outlet? Are all of the structures, figures and accessories appropriate to the scene? Are all elements of the scene appropriate and suggestive of a particular era?	Maximum Points 10
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 5: Weather It

Virtually everything needs weathering. Starting with the ties, rails and ballast, and continuing across the module, bright colors must be toned down. Weathering brings the elements together. An occasional bright spot should be justified by its newness.	Maximum Points 10
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 6: Focal Points

There should be mini-scenes that attract our attention and praise. For example, watermelons in the garden and a tractor in the midst of cutting a crop. Find some focal points that will attract the attention of the viewers and then go full out with the details. Bridges often serve as focal points. Exciting scenes include items such as a building on fire with all kinds of fire fighting equipment; the scene of a traffic accident involving a bear (ursa major) and a car surrounded by a collection of rescue equipment. Animation can be a major plus here, if done within the context of the overall scene.	Maximum Points 15
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 7: Get Vertical

Flat tables never make it. Try to recall a truly outstanding module that was built on a sheet of plywood and looked it. Do mountains rise sharply out of plywood plains? Winning modules have plenty of vertical separation. A highway ducking under or climbing over the tracks can add immensely to the effect of a scene. Over the years there have been some great modules where the trains ran well above the lowest areas of the scenery. Two favorites were built on the same theme of a railroad following a river gorge around a sweeping turn. They were both done on inside corners with transition modules on the ends.	Maximum Points 15
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 8: Tree Details

Trees have to be realistic. Did you plant your forest with bumpy chenille? Or did you take the time to spray the trees a more realistic color, shape them, and add ground foam? Are your other trees clumps of lichen or semi-transparent with visible major branches?	Maximum Points 10
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 9: Be Creative

Be innovative. Does your talent break new ground? Are you taking us where man has never gone before? If so, you may come up with a winner. For example, there is an attention getting model that features level upon level of tracks going all the way down to the floor.	Maximum Points 15
Judge's Comments: _____ _____ _____	Points Awarded:

Rule 10: Show Us Your Stuff

Show us that you have talent. Is there any scratch building, kit-bashing, tree growing, rock casting or other not-out-of-the-box modeling evident on the module? Would you deserve to win a prize if you purchased a huge, custom-built factory building and placed it on the module?	Maximum Points 10
Judge's Comments: _____ _____ _____	Points Awarded:

General Comments

Total points awarded: _____

Did module score >50% for each rule (Y/N)? _____

Grade awarded: _____

Inspection by: _____

Inspection date: _____

Instructions

- Check each item on the check list sequentially in the order listed.
- Place the numeric score awarded in the appropriate box on the form.
- Comments should be entered in the "Judges Comments" area, and should support the points awarded.
- Where scores less than 50% of a rule are awarded, suggestions for improvement needed should be included.

When complete, the original of the checklist should be given to the Chairman of the Standards Committee, who will then provide copies to the module owner and the Club Secretary. The module owner can then use the form as proof of Grading or as a list of items that need to be corrected. The Club Secretary will use the form for updating the list of graded modules. The original will be retained by the Standards Committee as record of the Grading.