U.S. Department of Transportation
Federal Highway Administration

1200 New Jersey Ave., SE
Washington, D.C. 20590

February 6, 2013

In Reply Refer To:
HSST/B-153B

Mr. Jason Hubbell
The Atlanticum Bridge Corporation
P.O. Box 1644
Fort Walton Beach, FL 32549

Dear Mr. Hubbell:

This letter is in response to your request for the Federal Highway Administration (FHWA) to review a roadside safety system for eligibility for reimbursement under the Federal-aid highway program.

Name of system: NatureRail Quick-Joint / Alternate Wood Species
Type of system: Aesthetic Roadside Barrier
Test Level: NCHRP Report 350 Test Level 2 (TL2)
Original testing conducted by: National Crash Analysis Center (NCAC)
Task Force 13 Designator: SGR46
Date of request: September 26, 2012
Date initially acknowledged: October 2, 2012
Date of final package: January 30, 2013

Decision
The following device is eligible, with details provided in the form which is attached as an integral part of this letter:

- NatureRail Quick-Joint Alternate Wood Species

Based on a review of existing crash test results and the computational analysis submitted by the manufacturer certifying the as submitted device described herein meets the crash test and evaluation criteria of the National Cooperative Highway Research Program (NCHRP) Report 350, the Alternate Wood Species device is eligible for reimbursement under the Federal-aid highway program. Eligibility for reimbursement under the Federal-aid highway program does not establish approval or endorsement by the FHWA for any particular purpose or use.

The FHWA, the Department of Transportation, and the United States Government do not endorse products or services and the issuance of a reimbursement eligibility letter is not an endorsement of any product or service.

FHWA: HSST: WLongstreet: sf: x60087:10/15/12 **WLongstreet: Updated 02/05/13**
File: h://directory folder/HSST/ B153A_NaturalRail Quick-Joint Alternate Wood Species_350.docx
cc: HSST Will Longstreet

Requirements
To be found eligible for Federal-aid funding, roadside safety devices should meet the crash test and evaluation criteria contained in the NCHRP Report 350 or the American Association of State Highway and Transportation Officials' Manual for Assessing Safety Hardware (MASH).

Description
The device and supporting documentation are described in the attached form.

Summary and Standard Provisions
Therefore, the system described and detailed in the attached form is eligible for reimbursement and may be installed under the range of conditions tested.

Please note the following standard provisions that apply to FHWA eligibility letters:

- This letter provides a AASHTO/ARTBA/AGC Task Force 13 designator that should be used for the purpose of the creation of a new and/or the update of existing Task Force 13 drawing for posting on the on-line 'Guide to Standardized Highway Barrier Hardware' currently referenced in AASHTO Roadside Design Guide.
- This finding of eligibility does not cover other structural features of the systems, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may influence system conformance with NCHRP Report 350 criteria will require a new reimbursement eligibility letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals safety problems, or that the system is significantly different from the version that was crash tested, we reserve the right to modify or revoke this letter.
- You are expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the crash test and evaluation criteria of the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of eligibility is designated as number B-153B and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- This letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder. The FHWA does not become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

- The NatureRail Quick-Joint Alternate Wood Species are patented products and considered proprietary. If proprietary systems are specified by a highway agency for use on Federal-aid projects: (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

Sincerely yours,

Michael S. Griffith
Director, Office of Safety Technologies
Office of Safety

Attachments

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of Transportation
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Sincerely yours,

Michael S. Griffith

Michael S. Griffith
Director, Office of Safety Technologies
Office of Safety

Attachments

Request for Federal Aid Reimbursement Eligibility Of Highway Safety Hardware

Submitter	Date of Request:	May 24, 2012	○ New ◉ Resubmission
	Name:	Jason Hubbell	
	Company:	The Atlanticum Bridge Corporation	
	Address:	PO Box 1644, Fort Walton Beach, FL, 32549	
	Country:	United States of America	
	To:	Michael S. Griffith, Director FHWA, Office of Safety Technologies	

I request the following devices be considered eligible for reimbursement under the Federal-aid highway program.

Help

System Type	Submission Type	Device Name / Variant	Testing Criterion	Test Level
'B': Barriers (Roadside, Media	◉ Physical Crash Testing ○ FEA & V&V Analysis	NatureRail Quick-Joint / Alternate Wood Species	NCHRP Report 350	TL2

By submitting this request for review and evaluation by the Federal Highway Administration, I certify that the product(s) was (were) tested in conformity with the NCHRP Report 350 (Report 350) and that the evaluation results meet the appropriate evaluation criteria in the Report 350.

Identification of the individual or organization responsible for the product:

Contact Name:	Jason Hubbell	Same as Submitter ☒
Company Name:	The Atlanticum Bridge Corporation	Same as Submitter ☒
Address:	PO Box 1644, Fort Walton Beach, FL, 32549	Same as Submitter ☒
Country:	United States of America	Same as Submitter ☒

PRODUCT DESCRIPTION

Modification to Existing Hardware Non-Significant - Effect is positive or Inconsequential
The NatureRail Quick-Joint aesthetic wood/steel guardrail system, as specified by FHWA Acceptance Letter HSST/B-153A, was tested with a wood species called Norway Spruce. The NatureRail Quick-Joint brought a modification to the splice and post which improved installation time and dynamic deflection over the original system (see FHWA Acceptance Letter HSSD/B-153). The original product, as specified in Letter HSSD/B-153, was also tested using Norway Spruce. The original NatureRail product was successfully tested 6 times and was available in 3 different post spacing distances. The NatureRail Quick-Joint, as specified in Letter HSST/B-153A, was tested 4 times and is available in 2 different post spacing distances. This is a request to allow the use of alternate wood species with the NatureRail Quick-Joint. A review (see attached letter) by the testing facility, TSR Engineering, showed that the wood used in the NatureRail Quick-Joint is inconsequential to the functionality of the system. To quote the letter from TSR Engineering: "The considerable part of the impact force will be transmitted by a horizontal steel tension belt in connection with steel posts." Further, the testing facility stated that replacing the Norway Spruce, which was used during testing, with Southern Yellow Pine would have no impact to the functionality of the system. As per our attached letter we are requesting that all wood which falls in the range of Norway Spruce to Southern Yellow Pine be eligible for use with the NatureRail Quick-Joint aesthetic guardrail system.

CRASH TESTING

A brief description of each crash test and its result:

Required Test Number	Narrative Description	Evaluation Results
2-10 (820C)	EN 1317-1 & 2 TB11 = 900kg at 100km/h with an impact angle of 20 degrees. Two TB11 tests were actually successfully completed on the NatureRail Quick-Joint system. Please refer to FHWA Acceptance Letter HSST/B-153A dated October 6, 2011. In addition, the original system as, outlined by FHWA Acceptance Letter HSSD/B-153 dated January 17, 2007, successfully passed 3 TB11 tests. As we are requesting eligibility for use of an alternate species of wood as what was used in the testing we are requesting a waiver on additional testing as the test facility, TSR Engineering, reviewed the use of alternate species of wood, specifically Southern Yellow Pine, and determined that "From the technical point of view, the wood cover has no relevant influence on the system behaviour and the test results." The full letter from TSR Engineering is attached.	WAIVER REQUES
S2-10 (700C)		
2-11 (2000P)	EN 1317-1 & 2 TB32 = 1500kg at 110km/h with an impact angle of 20 degrees. Two TB32 tests were actually successfully completed on the NatureRail Quick-Joint system. Please refer to FHWA Acceptance Letter HSST/B-153A dated October 6, 2011. In addition, the original system as, outlined by FHWA Acceptance Letter HSSD/B-153 dated January 17, 2007, successfully passed 3 TB32 tests. As we are requesting eligibility for use of an alternate species of wood as what was used in the testing we are requesting a waiver on additional testing as the test facility, TSR Engineering, reviewed the use of alternate species of wood, specifically Southern Yellow Pine, and determined that "From the technical point of view, the wood cover has no relevant influence on the system behaviour and the test results." The full letter from TSR Engineering is attached.	WAIVER REQUES
2-20 (820C)		
S2-20 (700C)		
2-21 (2000P)		

Full Scale Crash Testing was done in compliance with MASH by the following accredited crash test laboratory (cite the laboratory's accreditation status as noted in the crash test reports.):

Laboratory Name:		
Laboratory Contact:	TSR Engineering GmbH	Same as Submitter ☐
Address:	Roswiesenstrasse 179; 8051; Zurich	Same as Submitter ☐
Country:	Switzerland	Same as Submitter ☐
Accreditation Certificate Number and Date:	ISO/IEC 17025 Accredited Accreditation Number: STS 372	

ATTACHMENTS

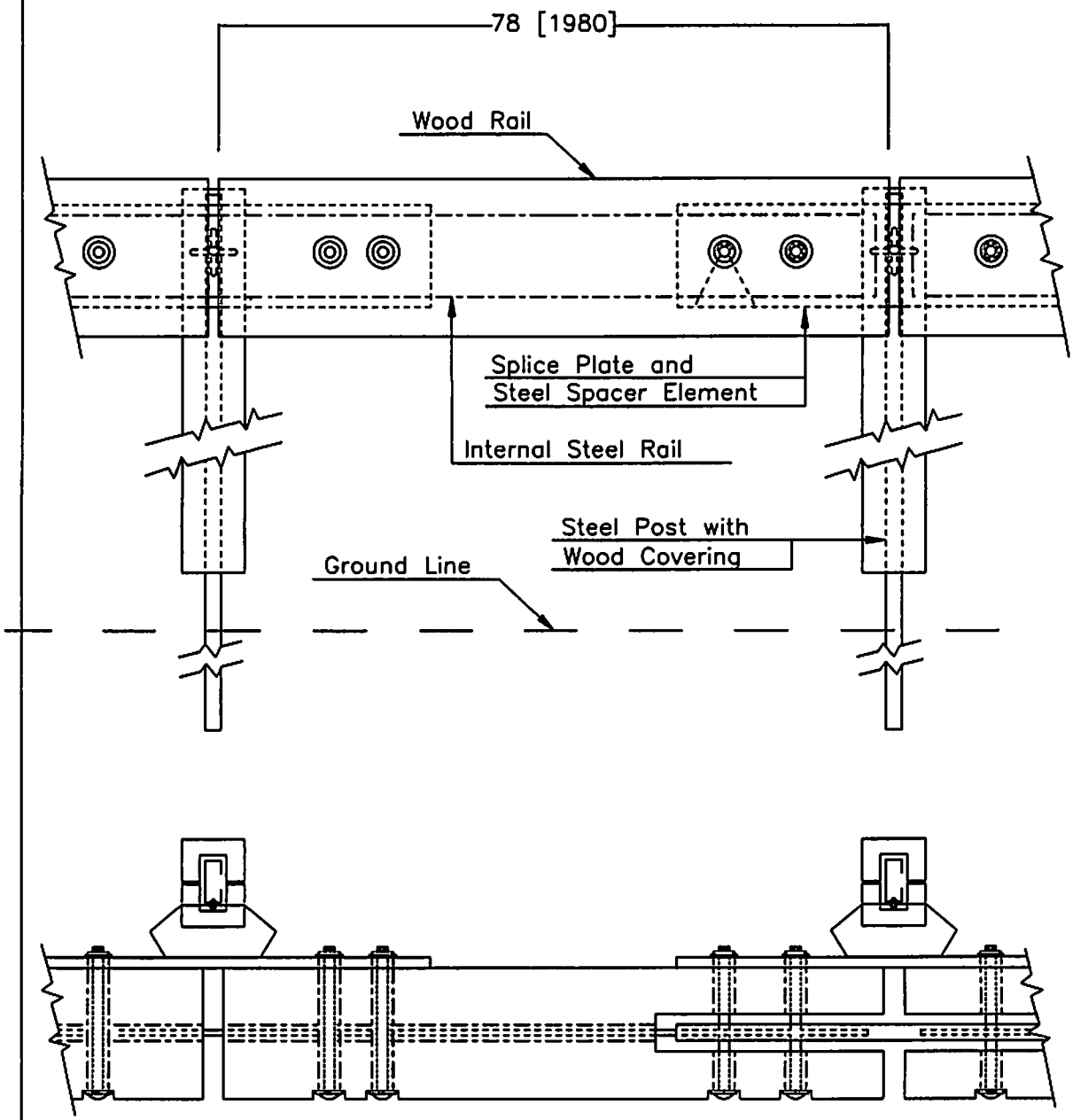
Attach to this form:

1) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.
2) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [Hardware Guide Drawing Standards]. For proprietary products, a single isometric line drawing is

usually acceptable to illustrate the product, with detailed specifications, intended use, and contact information provided on the reverse. Additional drawings (not in TF-13 format) showing details that are key to understanding the performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

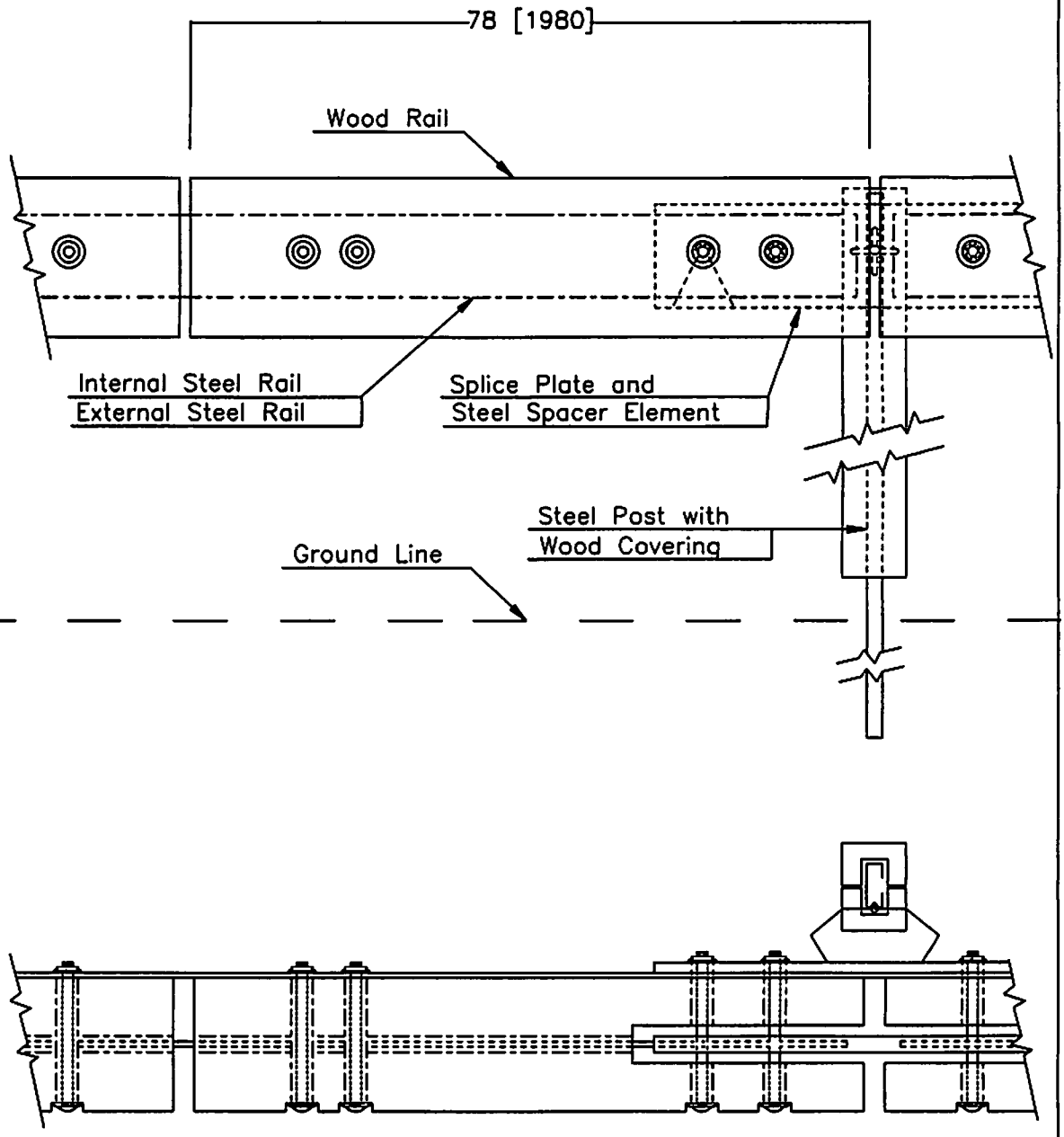
Eligibility Letter		AASHTO TF13	
Number	Date	Designator	Key Words
B-153B	February 01, 2013	SGR46	Aesthetic guardrail, TL2 timber rail, timber posts, steel back



NatureRail–QJ–2m Wood/Steel Guardrail

SGR46

SHEET NO.	DATE:
1 of 4	11/01/2012

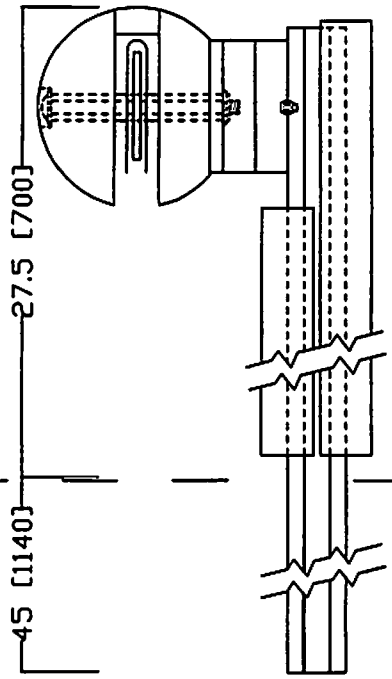


NatureRail–QJ–4m Wood/Steel Guardrail

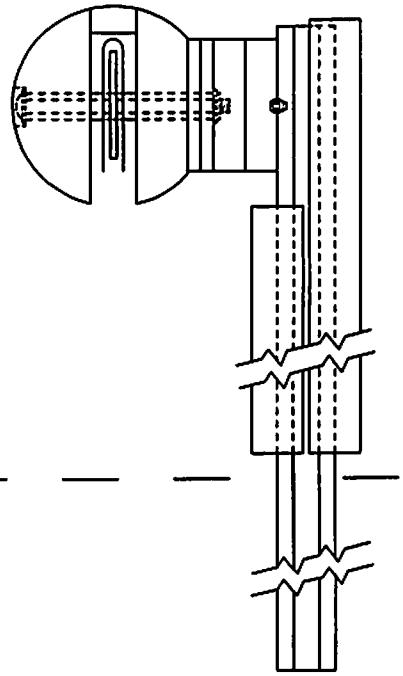
SGR46

SHEET NO.	DATE:
2 of 4	11/01/2012

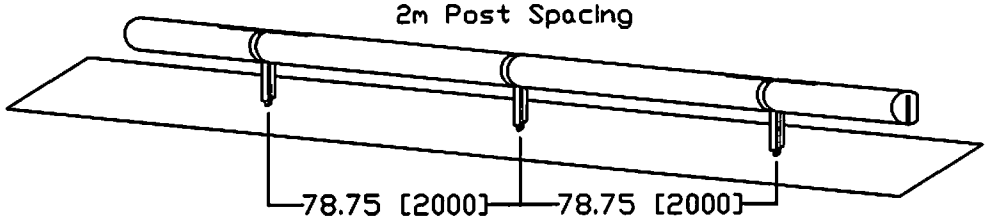
NatureRail Quick-Joint
2m Post Spacing



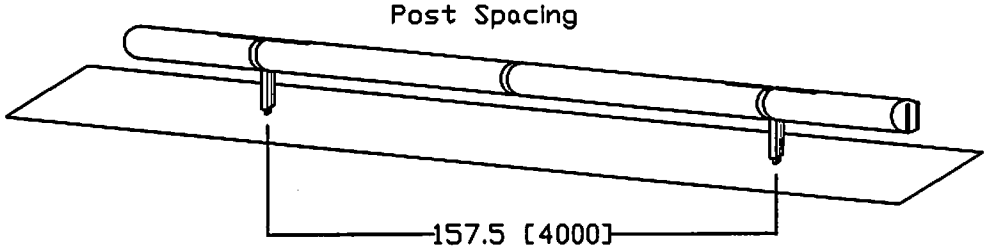
NatureRail Quick-Joint 4m
Post Spacing



NatureRail Quick-Joint
2m Post Spacing



NatureRail Quick-Joint 4m
Post Spacing



NatureRail–QJ Wood/Steel Guardrail

SGR46

SHEET NO.	DATE:
3 of 4	11/01/2012

INTENDED USE

NatureRail Quick-Joint™ (NR-QJ) is an aesthetic guardrail composed of wood and steel elements. The wooden elements mask the steel elements to provide the end user with a guardrail system that is visually more appealing than typical grey or powder coated steel guardrail. Therefore, the NR-QJ system should be used in locations or nearby locations where standard guardrail would detract from the installation location such as parks, monuments, scenic roadways, heritage sites, touristic areas, historic locales, or any other location where landscape beauty would be important. NR-QJ is a FHWA TL2 approved system and should be used at installations where a maximum deflection 55 inches [1400mm] is acceptable.

COMPONENTS

Effective Unit Length = 157.5 inches [4000mm]

PART #	PART DESCRIPTION	Quantity 4m spacing	Quantity 2m spacing
NR-RS004040	M10 BOLT AND NUT - NRQJ	1	2
NR-RS004060	WASHER FOR M10 BOLT - NRQJ	2	4
NR-RS029930	M16 BOLT AND NUT - NRQJ	8	8
NR-RS029940	WASHER FOR M16 BOLT - NRQJ	8	8
NR-SP151201	C100 POST 1.8M (5FT 10IN) - NRQJ	1	2
NR-SP151202	INNER STEEL RAIL - NRQJ	1	1
NR-SP151204	SPLICE PLATE - NRQJ	1	1
NR-SP151220	WOOD RAIL LEFT - NRQJ	1	1
NR-SP151221	WOOD RAIL RIGHT - NRQJ	1	1
NR-SP151222	WOOD POST FRONT - NRQJ	1	2
NR-SP151223	WOOD POST BACK - NRQJ	1	2
NR-SP151402	EXTERNAL STEEL RAIL - NRQJ	1	0
NR-SP151403	SPACER ELEMENT - NRQJ	1	2
NR-VM000093	ADHESIVE - NRQJ	2	4

APPROVALS

FHWA Acceptance Letter B-153, 01/17/07
FHWA Acceptance Letter B-153A, 10/06/11
FHWA Acceptance Letter B-153B

CONTACT INFORMATION

Gregory Industries, Inc.
Highway Product Sales
4100 13th Street, SW
Canton, OH 44710
Phone: (330) 477-4800

The Atlanticum Bridge Corporation
PO Box 1644
Fort Walton Beach, FL 32549
Phone: (315) 849-2797

NatureRail-QJ Wood/Steel Guardrail

SGR46

SHEET NO.	DATE
4 of 4	

The Atlanticum Bridge Corp.

TSR Engineering GmbH
Beratende Ingenieure ETH
Geotechnik Strassenbau

Akkreditierte Prüfstelle für passive Schutzeinrichtungen STS 372

Dr. Mazyar SHOJAATI, dipl. Ing. ETH
Tel. +41 43 321 66 00
Fax +41 43 321 66 02
e-mail: shojaati@tsr-engineering.ch
www.tsr-engineering.ch

SGGT GmbH
Herr W. Klein
Bahnhofstrasse 35

D – 66564 Ottweiler

Zurich, June 25. 2012

System Nature Rail Quick Joint, assessment of equality of different wood types

Dear Mr. Klein

We hereby, confirm the receipt of your enquiry regarding the equality of wood types other than those, which had been used for the impact tests of the system "Nature Rail Quick Joint".
The test item "Nature Rail Quick Joint" has been tested with wood cover from Norwegian spruce (annex 1).
The considerable part of the impact force will be transmitted by a horizontal steel tension belt in connection with steel posts. From the technical point of view, the wood cover has no relevant influence on the system behaviour and the test results.
Concerning the technical behaviour of the tested item, the wood types listed in annex 2 are to assess as equal.

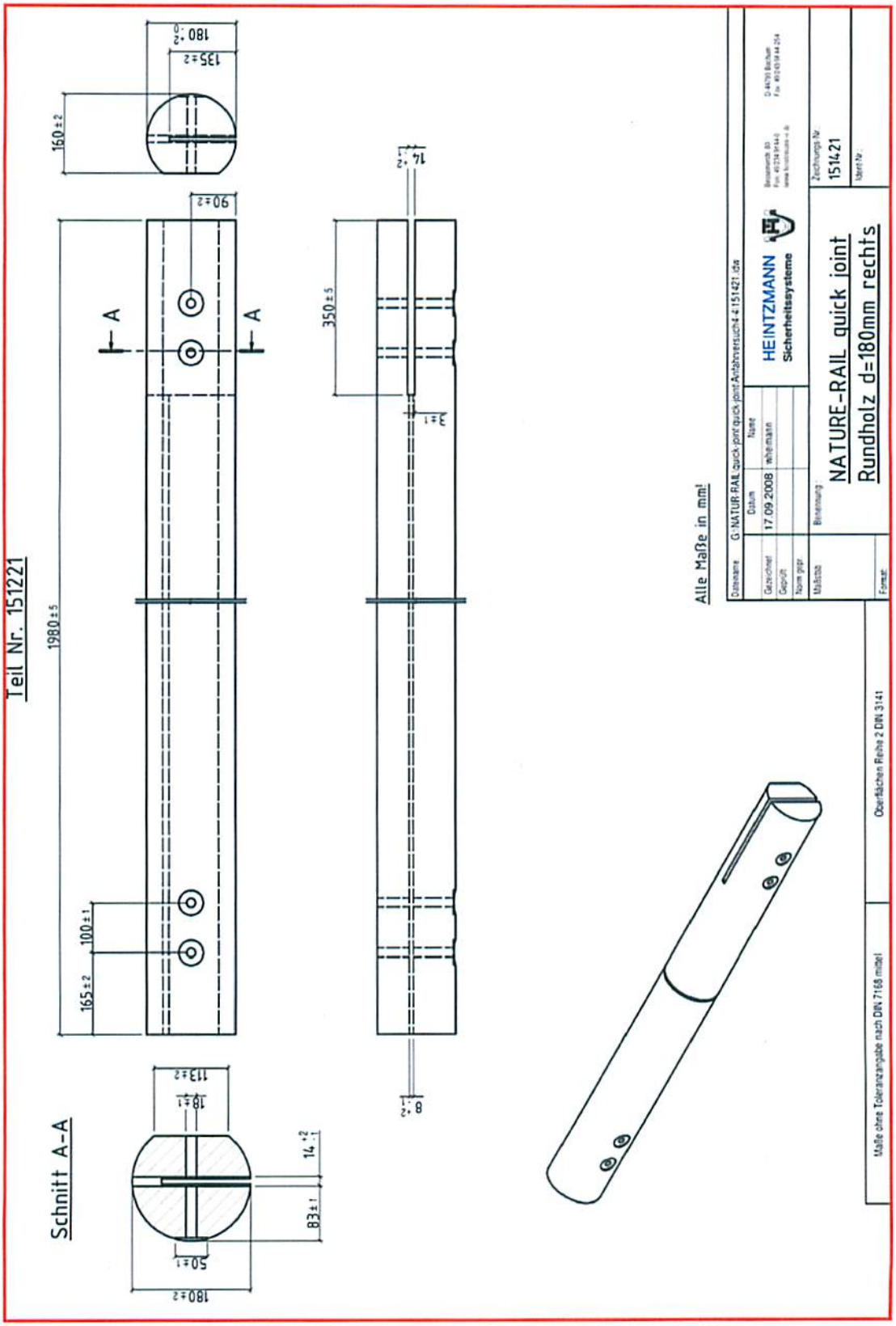
Yours sincerely
TSR Engineering GmbH

M. Shojaati

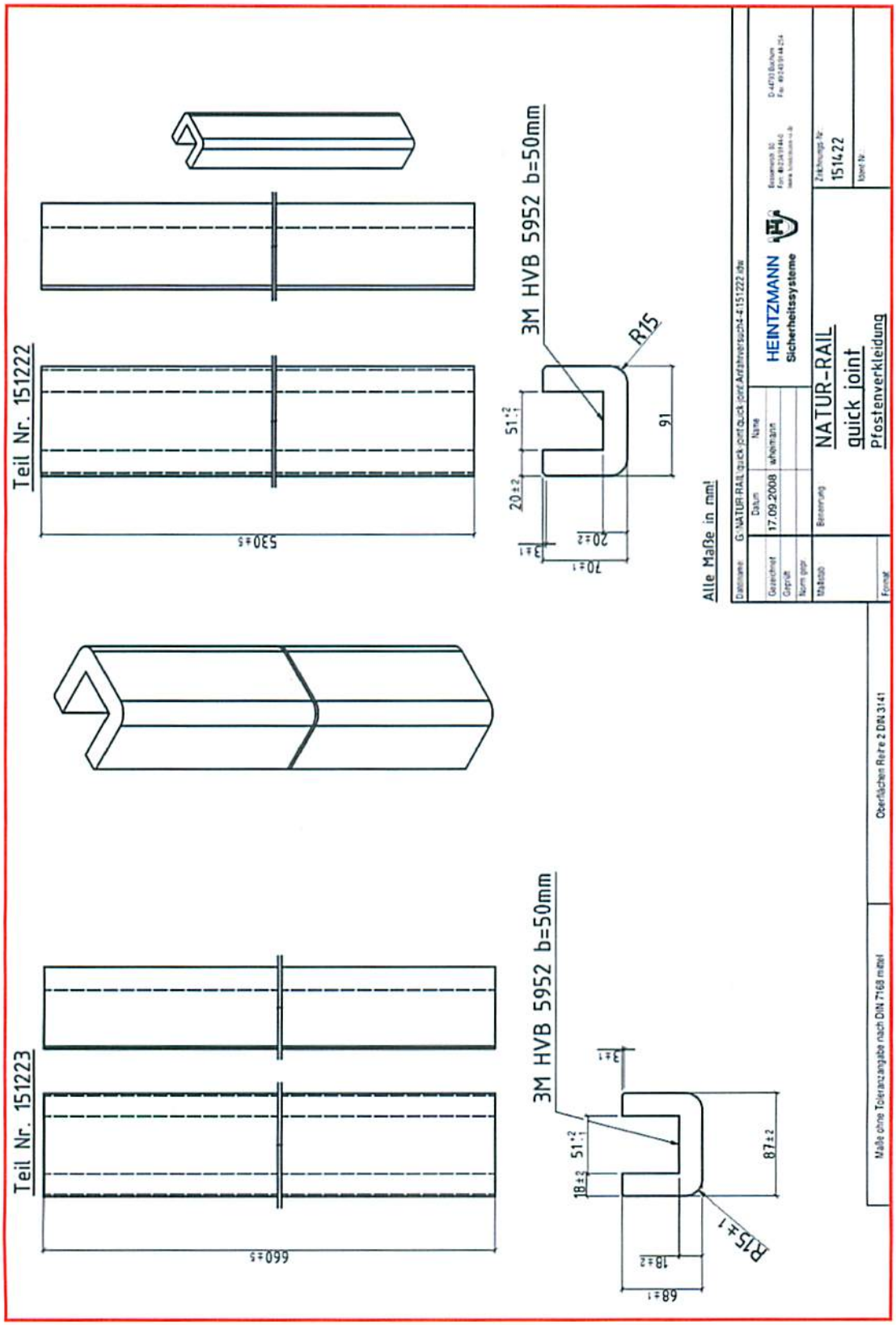
Dr. M. Shojaati

Annex: mentioned

Annex 1: Wood cover



Roswiesenstrasse 179 Telefon +41 (0)43 321 66 00 www.tsr-engineering.ch



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Annex 2: Wood types

Common Species Names	*Modulus of Rupture*	*Modulus of Elasticity*
Loblolly	~ 50 N/mm^2	~ 9'700 N/mm^2
Longleaf	~ 59 N/mm^2	~ 11'000 N/mm^2
Shortleaf	~ 51 N/mm^2	~ 9'600 N/mm^2
Slash	~ 60 N/mm^2	~ 10'500 N/mm^2
Norwegian Spruce	**~ 14 N/mm^2**	**~ 7'000 N/mm^2**

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