



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:

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Enquiries: Mr. Mxolisi Makhaye

TIRS – Office of the DDG

**TO: DIRECTOR: CONSTRUCTION: MRS. P.F SIBIYA
CHIEF DIRECTOR: EMPANGENI REGION: MR. L.X.K. MTAMBO
CHIEF DIRECTOR: DURBAN REGION: MR. J.S. MBHELE
CHIEF DIRECTOR: PIETERMARITZBURG REGION: MRS. B.N. NTOMBELA
CHIEF DIRECTOR: LADYSMITH REGION: MS. B.N.P NOGWANYA**

SUBJECT: TIRS APPROVAL OF ALL STRUCTURES

Kindly be advised that the procedure for Structural Design acceptance by the Department has been changed. This is to ensure that all structural designs submitted to the Department are of the highest standard and comply with all Regulatory, Statutory and Departmental requirements (in terms of the KZN Provincial Road Act No. 4 of 2001).

Going forward: ALL Structural Designs of Box Culverts, Bridges (River, Pedestrian, Rail and Road grade separations), Retaining walls, Gantries for all regions and head office will be submitted to the Engineering Services - Structural Design Sub-Directorate for written and signed approval by the **Chief Engineer: Structural Design: Mr. Kyle Raman.**

For clarity of the approval procedure, please refer to the attached TIRS: Structural Design Approval Policy (Ref: TES/2012/PDA1).

In order to improve efficiency within the Department, all consultants must make an appointment with Chief Engineer: Structural Design to discuss structural designs for Preliminary approval. Detailed designs must be submitted electronically. This will ensure that time is not wasted on communication.

Your cooperation in this regard is appreciated.

Regards,

Signed by: Sibuciso Simphwe Nkosi
Signed at: 2021-03-08 20:58:49 +02:00
Reason: I approve this document

08/03/21

Mr. S.S. Nkosi

Date

DDG: TIRS



KWAZULU-NATAL PROVINCE

TRANSPORT
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DIRECTORATE:

TIRS – Structures Sub Directorate

224 Prince Alfred Street
Pietermaritzburg, 3201

Tel: 033 355 8600 Fax: 033 355 8600

Email: kyle.raman@kzntransport.gov.za

Enquiries: Mr. Kyle Raman
Reference: TES/2012/PDA1
Date: 01/12/2020

STRUCTURES SUB-DIRECTORATE: STRUCTURES DESIGN APPROVAL PROCEDURE AS OF 1 DECEMBER 2020

ATTENTION: TIRS CHIEF DIRECTORS, DIRECTORS, CHIEF ENGINEERS, COST CENTRE AND AREA OFFICE MANAGERS, AND CONSULTANTS

1. INTRODUCTION

The KZN Department of Transport, hereafter referred to as “The Department” has adopted and enforced a new approval procedure for all structures designed and built on the Departments Road network. All previous design, approval, and procedural practices relating to the Structures Sub-Directorate (Previously referred to as the “Bridge Office”) will cease to be practiced as of 1 December 2020.

2. ADVISORY

The Department does not carry the responsibility nor the capacity to conduct “design checks” for each consultant’s designs. It is thus expected that all designs submitted with “Checked by” on the drawings title block to means exactly that – it has been checked for design accuracy and departmental standards verified. If **gross errors** are found on a structural design, it will be immediately returned to the consultant for amendment and re-submission. It is therefore requested that designers respect the Department’s time and submit verified and checked designs and drawings to speed up the approval process.

3. MINIMUM QUALIFICATION AND REGISTRATION REQUIREMENTS

The following requirements must be satisfied for all structures designed on the Departments road network. Such requirements are based on the educational limits of individuals coupled with the Engineering Council of South Africa’s competency limits as described in (R-02-STA-PE/PT/PCE/PN). All registration categories will be verified on each individual approval application. These requirements will in no way be overruled or disregarded.



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

Structure Types and Applicable Personnel Minimum Requirements:

Regulated by the competency standards set out by the Engineering Council of South Africa

- 1) Bridges – River Bridges, Grade Separations, Viaducts, Pedestrian Bridges with Continuous Spans, Integral Abutments, Any Post Tensioned Structures, Regardless of the Material will be:
 - i) Designed by: Any Candidate Civil Engineer, Technologist or Technician.
 - ii) Checked by: ECSA Professionally Registered Civil Engineer or Civil Engineering Technologist (BTech/ BEng-Tech in Structures) with a minimum of 10 years' experience. Persons must exceed requirements in (i)
 - iii) Drawn by: Draughtsman with N4/N5 in draughting, or: Any ECSA Civil Engineering approved Candidate or Professional registration categories.
 - iv) Checked by: Person(s) who checked designs in (ii)

- 2) Major Culverts (Structure with Opening > 3.4 m2) – Box Culverts, Cattle Creeps, Agricultural Underpasses will be:
 - i) Designed by: Any Candidate Civil Engineer, Technologist or Technician.
 - ii) Checked by: ECSA Professionally Registered Civil Engineer or Civil Engineering Technologist (BTech/ BEng-Tech in Structures) with a minimum of 10 years' experience. Persons must exceed requirements in (i)
 - iii) Drawn by: Draughtsman with N4/N5 in draughting, or: Any ECSA Civil Engineering approved Candidate or Professional registration categories.
 - iv) Checked by: Person(s) who checked designs in (ii)

- 3) Earth Retaining Structures (Above 2m in height if masonry) – Cantilever Retaining Walls, Mass Concrete Walls, Mass Stabilized Earth Walls (Or similar),
 - i) Same conditions as (1), however, the following must be included:
 - For Mechanically Stabilized Earth walls, Mass gravity retaining walls or any earth retaining structure/system – must be checked and approved by a specialist Professional Geotechnical Engineer (Pr.Eng)

- 4) Gantries (Sign, electronic information board, lighting)
 - i) Same conditions as (1)



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

4. APPROVAL OF DESIGNS AND DRAWINGS

As of 1 July 2020, any approval and signature for any structural drawing, for any structure as described in (3), will be completed by: **MR. KYLE L RAMAN assisted by MR. MXOLISI NTSHANGASE (KZN DOT IDMS)**

5. SUBMISSIONS

Submission of designs for approval

All Structural designs must be addressed to the: Chief Engineer: Structures, TIRS, KZN Department of Transport Head Office.

i) Bridges (As described in (3))

Conceptual Design – The following must be submitted electronically:

- Conceptual Bridge Report with:
 - Departmental Order attached
 - Project Background
 - Site Visit Information (With images)
 - Approach Road Alignment Approval from Department's Geometrics Department
 - Hydrological and Hydraulic information (With hydraulic analysis output attached)
 - Types of Structures/Arrangements considered (a minimum of three options with cost implications)
 - Loading Information (TMH7 and/or other applicable)
 - Structure Safety (Vehicles and Pedestrian Considerations)
 - Justification of structural components chosen and member sizes
 - Estimate of Bearing Conditions (in absence of Geotechnical Investigation Report)
 - Social/Community Engagement and Requirements
 - Status of Survey, Geotechnical Investigation, Environmental Authorization and WULA
 - Environmental and Material Sustainability Considerations
 - Job and Skills Creation for Local Community and Woman/Youth
 - Additional Engineering Thought Processes and construction considerations
 - Recommended Structure
- Preliminary General Arrangements of 3 considered options in PDF format (PDF File must be outputted directly from AutoCAD – must be high resolution). Refer to Structures Drawing Standards.

Detailed Design – The following must be submitted:

- Construction drawings (Signed by Consultant):



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

- General Arrangement
 - Site Plan
 - Setting Out Details (With all necessary co-ordinates)
 - All Concrete Details (Including all levels and necessary dimensions)
 - Reinforcement Details
 - Miscellaneous Details
 - Bending Schedules
 - Structural Steel Details (If applicable)
 - Remedial Procedure Details for Rehabilitation (If applicable)
 - List of Drawings
- Detailed Design Report:
The following must be included:
 - Structural details of chosen option (from Conceptual Design)
 - Modifications made from Concept to Detailed design
 - Design codes and standards used
 - Loading used
 - Results from analysis of deck (grillage/frame/finite element analysis output)
 - Structure size efficiency
 - Structural fixity
 - Concrete cover requirements/Structural Steel protection
 - Geotechnical information
 - Flood level accommodated (If applicable)
 - Detailed Hydrological and Hydraulic Data
 - Detailed Geotechnical Investigation Report (Boreholes only for bridges)
 - Accommodation for settlement and differential settlement (If applicable)
 - Municipal, traditional, provincial and other authorities consulted during design process
 - Final Road Design approved by Chief Engineer: Geometrics (to be Attached)
 - Vehicular and pedestrian safety on and approaching structure
 - Clearance information for Grade Separations
 - Environmental considerations and sustainable materials used
 - Members or parts of structure identified for local labour/CPG



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

- Aesthetic considerations
- Copy of the Structures Bill of Quantities from the Contract document
- Final construction cost (current)

6. GATE APPROVALS

This approval procedure does not and does not intend to replace the Gate Process (1-7) set out by National Treasury Framework for Infrastructure Delivery and Procurement Management (FIDPM). This procedure will apply parallel to the gate approvals. Hence, the signed approval letter issued by the Chief Engineer: Structures/ Acting Official/ Delegated Authority must be attached to the relevant gate form.

7. KZN DEPARTMENT OF TRANSPORT STANDARDS

The KwaZulu-Natal Department of Transport Structures Design and Drawing Standards are currently being revised. This will be communicated to all Directorates, Sub-Directorates, Regions, Cost Centres Consultants and Contractors in due course.

8. TIMELINES

The approval process shall be completed within three (3) weeks of submission, however this is not binding as many factors contribute to the response time. Consultants are expected to time the submission for approval such that it does not delay the design or construction. No additional professional fees will be paid for "delays" arising from approvals.

Designers are therefore requested to send an email to enquire about approval status (if required).

9. LIABILITY

Any approval certifies that the design adheres to the Department of Transport Standard Specifications including adopted SANRAL standards. The approval becomes null and void if any deviation to the proposed design occurs, unless such deviation is approved by the Chief Engineer: Structures or delegated authority.

This approval is for policy adherence and administrative review purposes only and in no way attracts any legal liability or liability of any form arising from any cause.

10. DEVIATIONS DURING CONSTRUCTION

Site variations – Any major variation, involving lengthening of a member or causing the structure to be deeper, major reinforcement deviations from the bending schedule, level changes, post tensioning force/profile changes or redesign of any member on site for any reason, must be checked and approved by the Chief Engineer: Structures.

11. AS BUILT DRAWINGS

Once construction of the project has completed, after the snag list has been rectified, signed "As Built" drawings must be submitted to the Structures Sub - Directorate.



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

12. FINAL NOTES

The Department encourages non-generic designs and innovations. Every structure location is unique with its own set of challenges which may not be limited to technical ones. The social benefit and safety of the community and commuters should be a priority along with ensuring the use of sustainable materials and efficient structural sections. Attention should also be placed on maintenance, as this should be kept to a minimum.

All the above ensures that the KZN Department of Transport creates, establishes and adheres to the most stringent safety, quality and regulatory standards which are based on our unique South African environment.

Written by:

Signed by: Kyle Llewellyn Raman
Signed at: 2021-03-04 14:13:39 +02:00
Reason: I approve this document

Mr. Kyle L Raman Pr Eng

Chief Engineer: Structural Design

Supported By:

Signed by: Nqobile Sibongiseni Zondo
Signed at: 2021-03-04 15:50:23 +02:00
Reason: I approve this document

Mr. Nqobile Zondo Pr Eng

Director (Acting) – Engineering Services

Recommended By:

Signed by: Sibusiso Simphiwe Nkosi
Signed at: 2021-03-08 21:00:42 +02:00
Reason: I approve this document

Mr. S.S. Nkosi

DDG – Transport Infrastructure and Regional Services (TIRS)

STRUCTURES - SUB-DIRECTORATE : STRUCTURES
DESIGNS APPROVAL PROCEDURE AS OF
1 DECEMBER 2020.



KWAZULU-NATAL PROVINCE

TRANSPORT
REPUBLIC OF SOUTH AFRICA

KZN Department of Transport

Approved By:

Ms. Simanga Ngubo 15/4/2021

Head: Transport (Acting): HOD

KZN Department of Transport