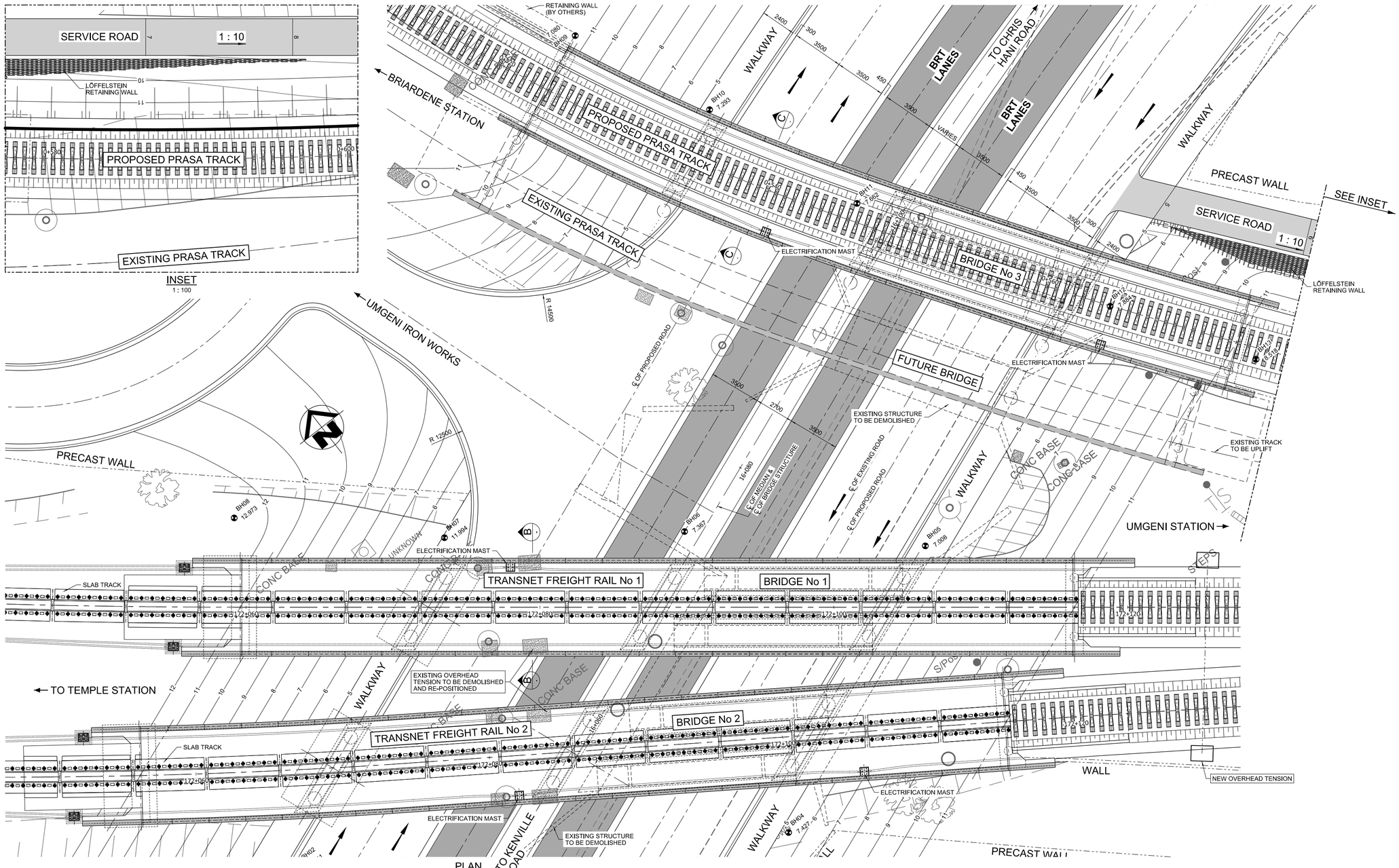
INSET
1 : 100



PLAN
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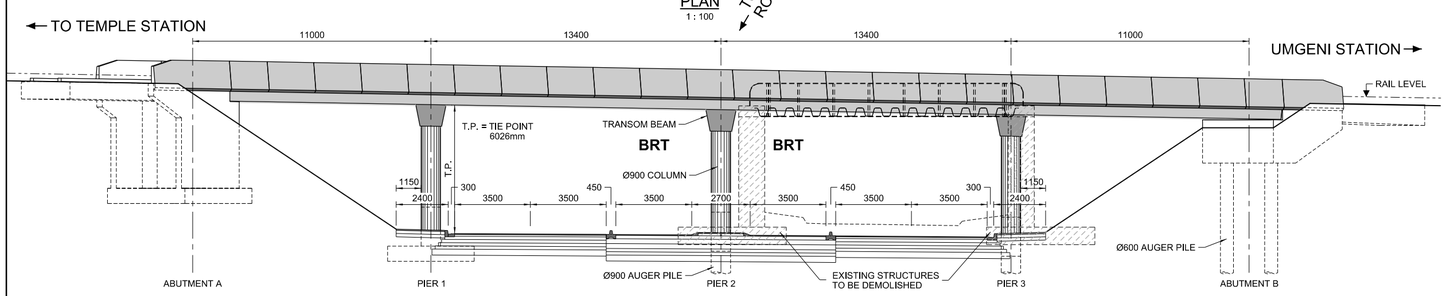
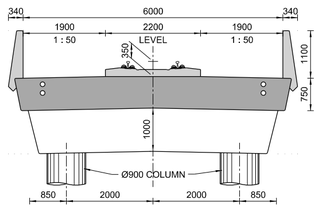
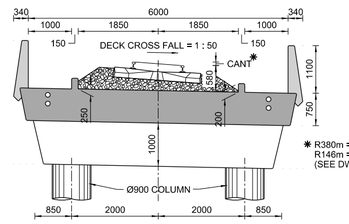


ELEVATION AT BRIDGE 1 (TFR LINE 1)
PERPENDICULAR TO ROAD (AT CHN 16060)
1 : 100



SECTION B
1 : 50



✱ R380m = 60mm CANT
R146m = 80mm CANT
(SEE DWG 1300042-T-4107)

SECTION C
1 : 50

SCALE BAR 1:1

DESIGN DATA

1. DESCRIPTION OF STRUCTURE

THE BRIDGE COMPRISES A CONTINUOUS, PARTIALY COMPISITE DECK WITH PAD ABUTMENT AND PIERS ON PILED FOUNDATIONS.

2. DESIGN CRITERIA

2.1 DESIGN CODES
TMH7 PARTS 1, 2 (1981 AS AMENDED 1988) AND 3 (1989): CODE OF PRACTICE FOR THE DESIGN OF HIGHWAY BRIDGES AND CULVERTS IN SOUTH AFRICA.

2.2 LOADING STATEMENT

2.2.1 UNIT WEIGHTS OF MATERIALS:
EARTH FILL ..... 19,0 kN/m
MASS CONCRETE ..... 24,5 kN/m
REINFORCED CONCRETE ..... 25,1 kN/m
STRESSED CONCRETE ..... 25,5 kN/m

2.2.2 SUPERIMPOSED DEAD LOAD
TRACK SLAB ..... 15,0 kN/m
BALLASTED TRACK ..... 23,0 kN/m
PARAPETS ..... 20,0 kN/m

2.2.3 HORIZONTAL EARTH PRESSURE
YIELDING ELEMENTS ..... Ka= 0,33
UNYIELDING ELEMENTS ..... Ko= 0,5
ANGLE OF INTERNAL FRICTION ..... ϕ= 30° DEG
WALL FRICTION..... d= 0° DEG AND 30° DEG TO MAXIMIZE BOTH OVERTURNING AND DOWNDRAG

2.2.4 LIVE LOAD
PRIMARY: NR RAIL LOADING
SECONDARY: TRACTION ..... 20 kN/m
BRAKING .....15 kN/m

2.2.5 DEFECTION TABLE

	DEAD LOAD ONLY (SHORT TERM)	DEAD & LIVE LOAD (LONG TERM)
INTERNAL SPANS	22,02mm	30,76mm
JACK SPANS	5,56mm	12,82mm

3. STRUCTURAL ANALYSIS AND PARAMETERS

3.1 METHOD OF ANALYSIS
THE BRIDGE HAS BEEN DESIGNED USING ELASTIC ANALYSIS AND THE LIMIT STATE APPROACH IN ACCORDANCE WITH TMH7. DECK ANALYSIS IS BY PROKON 3-D PLATE MODEL.

3.2 DESIGN PARAMETERS

3.2.1 YOUNG'S MODULUS
CONCRETE (50 MPa) ..... 34 GPa
CONCRETE (40 MPa) ..... 31 GPa
REINFORCING BARS ..... 210 GPa

3.2.2 STRAIN LOADING (WHERE APPLICABLE)
SHRINKAGE ..... 0,200 mm/m
CREEP ..... 0,036 mm/m/MPa
TEMPERATURE RANGE ..... 23 °C
THERMAL EXP. COEEFICIENT..... 0,012 mm/m/°C

3.2.3 PRESTRESSING
STRAND TYPE ..... 15,7mm DIA SUPERSTRAND LOW RELAXATION
CABLE COMPOSITION ..... 2 CABLES 13 STRANDS
STEEL RELAXATION ..... 2.5% OF JACKED FORCE

3.2.4 FRICTION FACTORS:
FRICTION ..... μ = 0,25
WOBBLE ..... k = 0,0025/m
WEDGE SLIP ..... δ = 10 mm
REVERSE FRICTION ..... q = 1.25

4. MATERIALS

4.1 FOUNDING
ABUTMENT FOUNDATION ON SPREAD FOOTINGS IN WEATHERED TILLITE WITH ALLOWABLE BEARING PRESSURE OF 350 kPa

PIERS FOUNDATION ON SPREAD FOOTINGS IN WEATHERED TILLITE WITH ALLOWABLE BEARING PRESSURE OF 350 kPa

4.2 CONCRETE
SCREED LAYERS 15 MPa/19mm
ABUTMENTS 40 MPa/19mm
DECK AND PIERS 40 MPa/19mm
PARAPETS 40 MPa/19mm
PRECAST ELEMENTS 50 MPa/19mm

4,3 REINFORCEMENT
SHALL COMPLY WITH SANS 920 SPECIFICATION
MILD STEEL "R" (fy = 250 MPa)
HIGH TENSILE STEEL "Y" (fy = 450 MPa)

4.4 BEARINGS
ABUTMENT A (TFR LINE ONLY) .....
REST OF ABUTMENTS ..... 3 LAYERS 3 PLAY ROOFING FELT
PIERS ..... CAST MONOLITHICALLY INTO DECK

4.5 MOVEMENT JOINTS
NO MOVEMENT JOINTS ARE PROVIDED.

5. CONSTRUCTION REQUIREMENTS

5.1 CONCRETE COVER
ABUTMENTS AND PIERS ..... 50 mm
DECKS ..... 50 mm
PARAPETS ..... 50 mm
PRECAST ELEMENTS ..... 50 mm

5.2 ARISES
ALL VISIBLE CORNERS TO BE CHAMFERED ..... 20 x 20 mm

5.3 CONCRETE SURFACE FINISHES

FORMED SURFACES:
UNEXPOSED F1
EXPOSED F2
PARAPETS F3

UNFORMED SURFACES:
DECK TOP U1

REV	DESCRIPTION	DATE	REV BY	CHKD
D	DESIGN NOTES ADDED	03/08/2021	LAV	HdW
C	ISSUED FOR APPROVAL	08/11/2020	LAV	HdW
B	DRAWING RE-DRAWN FROM SURVEY AT 2019/02/25	04/03/2019	LAV	HdW
A	ISSUED FOR COMMENT	21/02/2019	LAV	HdW

REVISIONS

DRG. No.	DRAWING TITLE
-	-

REFERENCE DRAWINGS

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DATE: 03/08/2021 Prof. Reg. No: 20160548

APPROVED BY CHECKING ENGINEER: H de WET
SIGNATURE:
DATE: 03/08/2021 Prof. Reg. No: 720570

DRAWN BY: LA VENTER DATE: 03/08/2021

CONSULTANT/SUB CONSULTANT: NAIDU CONSULTING

PROJECT: durban GO!

CLIENT: ETHEKWINI METROPOLITAN MUNICIPALITY — ETHEKWINI MUNICIPALITY

PROJECT TITLE
ETHEKWINI TRANSPORT AUTHORITY
BUS RAPID TRANSPORT NETWORK (BRT) PHASE 1: ROUTE C1A

DISCIPLINE: T

DRAWING DESCRIPTION
SECTION 3 - INANDA ROAD
GENERAL ARRANGEMENT

PHASE: T

AS BUILT PLAN (Full signature)
CLIENT DATE
ENGINEER DATE

SCALE	SHEET
1:100	1 OF 1
CONTRACT No.	PROJECT No.
	1300042

DRAWING No. 1300042-T-4102 REV D

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