

## Resume Spesifikasi

### PEMBANGUNAN TEROWONGAN NOTOG BH 1440 (MULTI YEARS 2016-2018)

No	Item Pekerjaan	Jenis	Material	Spesifikasi	Standar	Halaman
1	General Excavation	Slope	Tanah	Panjang slope < 3m	AASHTO T180	SpekTek 02012 - 4
		Backfill	Tanah	Maksimum 90% Dry Density	AASHTO T180	SpekTek 02009 - 3
2	Tunnel Excavation	Displacement	-	-Crown Displacement 20mm -Horizontal Displacement 40mm		SpekTek 04001 - 4
		Pengukuran	-	-Install reflex target setiap interval 10 s/d 20 m -7 titik pengukuran per segmen		SpekTek 04001 - 6
		Mucking	Muck-pile	Disemprot dengan air apabila diperlukan		04001 - 17
		Backfill	Tanah	Maksimum 90% Dry Density	AASHTO T180	SpekTek 02009 - 3
3	Shotcrete	Tipe A	Spray Concrete	-fc' = 18 - tebal = 10 cm - Fine Modulus Agregat = 2.8 - 3.2 - Agregat Maksimum = 10-15 mm - slump 8 ± 2.5 cm	JIS A1101	SepTek 02068 - 12 shop drawing
		Tipe B	Spray Concrete	-fc' = 18 - tebal = 12.5 cm - Fine Modulus Agregat = 2.8 - 3.2 - Agregat Maksimum = 10-15 mm - slump 8 ± 2.5 cm	JIS A1101	SepTek 02068 - 12 shop drawing
		Tipe C	Spray Concrete	-fc' = 18 - tebal = 15 cm - Fine Modulus Agregat = 2.8 - 3.2 - Agregat Maksimum = 10-15 mm - slump 8 ± 2.5 cm	JIS A1101	SepTek 02068 - 12 shop drawing

		Tipe D	Spray Concrete	-fc' = 18 - tebal = 15 cm - Fine Modulus Agregat = 2.8 - 3.2 - Agregat Maksimum = 10-15 mm - slump $8 \pm 2.5$ cm	JIS A1101	SepTek 02068 - 12 shop drawing
4	Rockbolt	Tipe A,B,C,D,E/SP	Steel Bolt	-Ø25mm -Panjang 3 m - fy = 345 MPa	ASTM A36 JIS G 3112-85	SpekTek 04002 - 3 shop drawing
		Filling Forepoling Bolt	Steel Bolt	-Ø25mm -Panjang 3 m - fy = 345 MPa	ASTM A36	shop drawing
		Long Steel Pipe Forepoling Bolt (LSPF)	Steel Pipe	-Ø11,4 cm -Panjang 12,5 m - fy = 345 MPa	SD 345 JIS G 3112	shop drawing
		Grouting for LSPF	Silica-Resin	-Foaming ratio 4-8 times - fc = $3.9 \pm 0.5$ MPa	ASTM C150	SpekTek 04001 - 11
5	Wiremesh	All Wiremesh	Wiremesh M5	-Ø5mm -150 x 150 mm - overlap min 15 cm	JIS G 3551	SpekTek 04001 - 12
6	Steel Support	Tipe B	H Beam Grade SS400	- H-125x125x6.5x9 (Upper Half)	JIS 3101	SpekTek 04001 - 15
		Tipe C	H Beam Grade SS400	- H-125x125x6.5x9 (Upper Half)	JIS 3101	SpekTek 04001 - 15
				- H-125x125x6.5x9 (Lower Half)	JIS 3101	SpekTek 04001 - 15
		Tipe D	H Beam Grade SS400	- H-150x150x7x10 (Upper Half)	JIS 3101	SpekTek 04001 - 15
				- H-150x150x7x10 (Lower Half)	JIS 3101	SpekTek 04001 - 15
		Tipe E/SP	H Beam Grade SS400	- H-150x150x7x10 (Upper Half)	JIS 3101	SpekTek 04001 - 15

				- H-150x150x7x10 (Lower Half)	JIS 3101	SpekTek 04001 - 15
		Steel lagging	Plain/profile sheet	tebal min 5 mm	JIS A 5528	SpekTek 04001 - 25
8	Lining Concrete	Tipe A,B,C	Beton Bertulang	- fc 21 - Tebal = 30 cm slump $8 \pm 2.5$ cm - Portland Cement Type 1	JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
		Tipe D	Beton Bertulang	- fc 21 - Tebal = 35 cm slump $8 \pm 2.5$ cm - Portland Cement Type 1	JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
		Tipe E (SP-N1)	Beton Bertulang	- fc 24 - Tebal = 70 cm slump $8 \pm 2.5$ cm - Portland Cement Type 1	JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
		Tipe E (SP-N2)	Beton Bertulang	- fc 24 - Tebal = 65 cm - slump $8 \pm 2.5$ cm - Portland Cement Type 1	JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
9	Refuge Concrete (Medium Type)	lining concrete	Beton Bertulang	- fc' = 21 N/mm <sup>2</sup> interval refuge niche = 100 m - tebal 250 mm	JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27
		shotcrete	spray concrete	- fc 18 N/mm <sup>2</sup> tebal 100 mm	JIS A1101	SepTek 02068 - 12 SD TU-01-014
		wiremesh	Wiremesh M5	-Ø5mm -150 x 150 mm overlap min 15 cm	JIS G 3551	SpekTek 04001 - 12
10	Refuge Concrete (Small Type)	lining concrete	Beton Bertulang	- fc' = 21 N/mm <sup>2</sup> interval refuge niche = 20 m - tebal 250 mm	JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27

		shotcrete	spray concrete	- fc 18 N/mm2 tebal 100 mm	-	JIS A1101	SepTek 02068 - 12 SD TU-01-014
		wiremesh	Wiremesh M5	-Ø5mm -150 x 150 mm overlap min 15 cm	-	JIS G 3551	SpekTek 04001 - 12
10	Invert Concrete	Tipe A,B,C,D	Beton Bertulang	- fc 21 N/mm2 - Tebal = 45 cm - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
		Tipe E (SP-N1)	Beton Bertulang	- fc 24 N/mm2 - Tebal = 70 cm - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
		Tipe E (SP-N2)	Beton Bertulang	- fc 24 N/mm2 - Tebal = 65 cm - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27 shop drawing
11	Roadbed Concrete	Alas Track Kereta	Beton Bertulang	- fc 24 N/mm2 - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27
		Tie rebar	Steel	Ø25 mm @1500			SD TU-01-020
12	Center Passage	Center Line Terowongan	Beton Bertulang	- fc 21 N/mm2 - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27
13	Cable Boxes	Saluran Utilitas ME	Beton Bertulang	- fc 21 N/mm2 - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27
14	Portal Concrete	Muka Terowongan	Beton Bertulang	- fc 24 N/mm2 - Portland Cement Type 1		JIS R5210 A1121 JIS A 1103	SpekTek 04001 - 27
15	Steel Reinforcing Bar	Tulangan Beton	Baja Tulangan	- SD345 (fy 345 N/mm2) - SR235 (fy 235 N/mm2)		JIS G 3112	SpekTek 02070 - 3
16	Waterproofing	Tipe A,B,C,D,E/SP	Waterproof Sheet	-EVA Polymer tebal 0.8 mm -Polypropylene tebal 3 mm		JIS K6773 JIS K6252	SpekTek 04001 - 12

17	Sistem drainase	Center drainage	- leveling concrete	fc' 15 N/mm2	JIS R5210 A1121 JIS A 1103	SpekTek 02016 - 2
			- crushed stone	diameter 10 - 30 mm		SpekTek 04001 - 28
			- HDPE pipe	- Ø300 mm - tebal 30 mm		SD TU-01-023
		Crossing Drainage	- leveling concrete	fc' 15 N/mm2	JIS R5210 A1121 JIS A 1103	SpekTek 02016 - 2
			- crushed stone	diameter 10 - 30 mm		SpekTek 04001 - 28
			-HDPE pipe	-Ø100 mm - tebal 10 mm		SD TU-01-023
		Drainage pit	- leveling concrete	fc' 15 N/mm2	JIS R5210 A1121 JIS A 1103	SpekTek 02016 - 2
			- steel grating	850 x 850 x 25		SD TU-01-023
			- centre pipe	- Ø300 mm - tebal 30 mm		SD TU-01-023
			-ladder	- 4Ø19		SD TU-01-023
		Longitudinal Side Drainage	- saluran air samping roadbed	- lebar 20cm x tinggi 25 cm	Not Mentioned	Shop Drawing
		18	Tunnel Outside Works	- Structure Concrete Retaining Wall	- Beton Bertulang	fc' = 24 N/mm2
- Lean Type Retaining Wall				fc' = 21 N/mm2		shop drawing
- foundation	replacing concrete			fc' = 18 N/mm2		RAB
- reinforcing steel	reinforcing steel			fy = 345 N/mm2	G3112	RAB
19	Ground work	Granular back fill	Tanah	90% maksimum dry density	AASHTO T-180	SpekTek 02014 - 2

		Slope protection	concrete and open channel	$f_c' = 21 \text{ N/mm}^2$	ACI	SpekTek 02032 - 2
			leveling concrete	$f_c' = 15 \text{ N/mm}^2$	JIS R5210 A1121 JIS A 1103	SpekTek 02032 - 2
			Vegetable soil bag	10 bag/m <sup>2</sup>		SD TU-01-040
			main anchor	- $\varnothing 19 \text{ mm}$ L = 800 mm		SD TU-01-040
			drip concrete	$f_c' 21 \text{ N/mm}^2$		SD TU-01-040
		soil cement	semen	Design Compressive Strength 1 N/mm <sup>2</sup> => semen = 100 kg / 1 m <sup>3</sup> tanah	JIS R5210	SpekTek 04001 - 13
20	Pemeliharaan terowongan eksisting	Pembersihan tunnel lining				SD
		Steel fence				
		pengecatan dan dekorasi pada dinding portal				
21						