EVOLUTION | INSPECTION & TEST PLAN

PROJECT:	
CLIENT NAME:	**CONSTRUCTION PROGRESS:**
CONTRACT NO:	**SPECIFICATION:**

Item No: Task / Activity Description:		Inspection/Test Sequence				Responsible Personnel	Inspection (I), Hold (H), Witness (W), Review (R)	Hold Point Release/Review Comments	
		Frequency	Acceptance Criteria	Inspection/Test Method	Conformance Record			EVO	Client
1. General Preliminaries									
1.1	Job Inspection/Scope of works review	Prior to each separable parts of the works	Site Hazards and job specific requirements		Project Scope/SWMS & Risk Assessment	Supervisor, Crew Foreman Engineer			
1.2	Equipment and vehicles pre-start checks	Daily	As appropriate for items of plant and equipment	Visual and documentation. Test and Tag. Service History	Equipment/Heavy Vehicle Maintenance checklist	Plant Operators			
1.3	Toolbox meetings	Prior to commencement of works on site	Ensure all Site hazards are identified	Physical attendance	Attendance Record/Sign in Record	FHEOM			

EVOLUTION | INSPECTION & TEST PLAN

2. Removal of Existing Expansion Joint									
2.1	Review drawings/Work procedure to determine location of joints, width and alignment of the bridge joint.	Prior to excavation	Correct product is applicable in remediation works	Visual & Physical Inspection	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Civil	**(R) (Review Point)**		
2.2	Mark out sawcut line with marking paint and stringline ensuring widths meets specifications requirements.	After location has been identified	Marking meets the minimum width requirements.	Visual & Physical Inspection	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Civil			
2.3	Sawcut along established marked lines and remove all existing materials within new sawcut allowing substrate and blockout to be established.	After dimensions has been marked out	Sawcut is established to reach the edge of the concrete surface	Visual & Physical Inspection	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Civil			
2.4	The newly established blockout is to be scabbled, grit blasted and air blasted to remove all surface contaminants and deleterious materials	Once materials has been fully excavated	A clean substrate blockout has been established	Visual & Physical Inspection	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Civil	**(H) HOLD POINT** Confirmation of depth and width is within allowance of product specification, if not notify the principal contractor immediately		

EVOLUTION | INSPECTION & TEST PLAN

(GRANOR XJS SYSTEM) 3. Installation of new Expansion Joint System									
3.1	Bridge Air Gap is packed out with a suitable size polystyrene sheet to prevent materials falling into air gap.	Blockout has been fully prepped	Blockout is free from any previous contamination	Visual Inspection	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader	**Witness Point**		
3.2	Silspec 900 PNS has been mixed with its Part A and B and 2 bags of aggregate.	Once airgap has been packed out	Product is to be mixed to a minimum of 3 minutes	Visual Inspection	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader	**Witness Point**		
3.3	Silspec is poured into blockout and pounded	Once Silspec 900 has been adequately mixed	Liquid rises to the surface indicating correct installation.	Visual and Physical application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader	**Witness Point**		
3.4	1-2mm crushed Bauxite is sprinkled onto Silspec 900 for further Anti-Skid resistant	Once silspec has been prepared adequately	Silspec and bauxite has been finished to adjacent surface level	Visual and Physical application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader	**Witness Point**		

3.5	After Silspec 900 is cured, the joint gap work is removed.	After Silspec is fully cured (usually 2 hours)	Form is fully removed	Visual and physical application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.6	Interior faces of the nosing's are prepped by surface grinding and sand blading and grinded to achieve a chamfer between 5 – 10mm to prevent a weak point of failure	Once majority of form is removed	To establish a clean internal face	Visual and physical application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.7	A suitable size backing rod is inserted in the joint gap to allow 15mm clearance from the surface	After all prep works is completed	Backing rod is at least 25% larger than the existing air gap	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.8	The surface and sides of the joint gap is painted and allowed to dry to a tacky state with a suitable primer	After sandblasting and preparing the internal faces	Primer dries to a tacky touch feel	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.9	DC902 is installed on top of the backing rod	After all prep works has been completed	DC902 must be 12mm – 15mm allowing 2 – 3mm step from the surface	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

(APJ Thormajoint) 3. Installation of new Expansion Joint System									
3.1	Joint Gap has been cleaned out and packed with a suitable size Heat Resistant Packing to prevent debris falling into air gap.	After joint concrete has been prepared	Blockout is free of contamination	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.2	Following the packing of the airgap, bridge joint binder is poured into the recess in the airgap to create the watertight seal	After binder has been poured	Airgap is packed with a heat resistant packing and airgap is filled with binder.	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.3	The bridging plate is placed over the expansion joint gap. The plate must extend beyond any spalled edges and must lie flat across the airgap with a minimal height difference between the two concrete members.	After formwork has been prepared	Aluminium plate covers entire airgap	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.4	The joint recess is then tanked out by applying bridge joint binder over all exposed horizontal and vertical faces within the joint.	After bridging plate is placed	Recess blockout is coated with joint binder	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.5	The binder is heated in a thermostatically controlled boiler		Material temperature is		As per Issued for Construction Drawings or	Evolution Team Leader			

	in accordance with the manufacturer's recommendations typically between 170°C and 190°C. The temperature has been checked using a handheld thermometer.	After Joint formwork is removed	within allowed temperature	Visual and physical Application	consultant design or Manufacturers Recommendation				
3.6	Each completed mix is poured into the prepared joint trench to form layers of between 50 – 100 mm. If required, each successive layer shall be compacted fully to ensure that the Thormajoint is at its maximum density.	After binder has been heated correctly.		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.7	Following the final layer of compaction, a final screed is required to waterproof the top layer of the joint and to prevent the ingress of other contaminants.	After mix is poured	Final layer is adjacent to existing surface levels	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.8	The application of Surface Dressing to the surface of the installed joint is recommended to improve the anti-skid quality of the trafficked surface.	After final screed is applied	1-3mm bauxite is sprinkled to the surface to allow additional anti skid surfacing	Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

(Britflex BEJ) 3. Installation of new Expansion Joint System									
3.1.1	If drainage is specified, prime beneath the position of the drainage channel with a mix of the two resin components.	After joint concrete has been prepared		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.1.2	The adjacent road surface shall be taped along the edge of the saw cut on each respective side of the joint to protect the adjacent construction from spillage etc.	After drainage has been prepared		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.1.3	The prepared joint recess shall be primed with a coat of Britflex Resin (no aggregate).	After road surface edge has been taped		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.1.4	The two resin components are warmed in thermostatically controlled oil jacketed heaters with the resin temperature maintained at 60 – 85°C. The resin temperature must not exceed 85°C.	After joint recess has been primed		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.1.5	Once the resins have reached temperature the Base and Hardener Resins are decanted into separate calibrated jugs providing	After resins have been heated to correct temperature		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

	the correct quantities of each resin component per mix. 2.5 kg Base Resin : 1.5 kg Hardener Resin .								
3.1.6	The resins are added together in a separate mixing container and mixed with a slow speed mixing paddle for 30 seconds to 1 minute until homogenous and streak free.	After resins have been separated into correct quantities		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.1.7	Once suitably mixed the heated and mixed resin is painted onto all exposed surfaces within the joint recess to which the Nosing Mortar will bond.	After resins have been mixed correctly		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
Assembly of the Joint Rails									
3.2.1	BEJ Joint Rails are to be cut to length to suit conditions and lane configuration to ensure that where possible butt joints between rails are located on lane lines. Where this is not practicable butt joints must be placed in an un-trafficked area.	After resin has been painted onto joint recess		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.2.2	The expansion joint gap between the rails is to be set to suit the expansion joint gap within the bridge; or wider as may be required to suit the selected joint type.	After joint rails have been cut to length		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

3.2.3	The appropriately sized Gap-Setters are selected and installed between the rails to set the new joint gap. The rails are then attached to the strong backs and positioned over the new joint recess.	After expansion joint gap has been set		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
Forming the Rails Butt Joint									
3.3.1	The Butt Joint between the rails are to be formed to connect the rails along the length of the bridge joint as required.	After Gap setters have been selected and installed		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.3.2	A Single-V butt joint will be used with chamfered edges being formed at 45°. The chamfer will be formed on the top and rear faces of the rails using an angle grinder, with the chamfer having a face of 5 to 10 mm.	After Butt Joints have been connected		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.3.3	Once the rails have been ground to form the chamfer the rails are to be positioned such that there will be no difference between the rails across the butt joint in either plane; vertical or horizontal. Once the alignment is good the rails can	After edges have been chamfered		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

	be clamped to hold in position before welding.								
3.3.4	A weld is to be formed into the Single-V butt joint across the top and rear faces of the rails. The weld shall be visually inspected to ensure good penetration is achieved	Once rails have been clamped		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.3.5	The welds are then to be carefully ground back to be flush with the rails.	Once welds have been completed		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.3.6	On completion of grinding the weld must again be visually inspected to ensure that sufficient strength is maintained in the weld. The affected area is then to be touched-up with high zinc content cold gal paint.	After welds have been ground back		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
Alignment of Joint Rails									
3.4.1	The BEJ Rails are positioned along the length of the joint to ensure good alignment over the expansion joint gap.	After welds have been visually inspected		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.4.2					As per Issued for Construction				

	Strong backs and Gap Setters are to be placed at least every metre along the length of the joint.	After BEJ rails have been positioned correctly		Visual and physical Application	Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.4.3	The gap width between the rails (measured perpendicularly) must be checked to ensure that the gap width remains within a tolerance of 3 mm over the length of 1 metre.	After Strong backs and gap setters have been placed		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.4.4	The height of the rails must be adjusted to ensure that they are positioned within 0mm to -3mm of the adjacent surfacing.	After gap width has been measured and within tolerance		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.4.5	The joint gap formwork is to be inserted between the rails ensuring that the formwork matches the joint gaps between the rails and is inserted into the joint gap securely within the structure.	After the height of the rails have been checked		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
Installation of Joint Nosing's									
3.5.1	The two resin components (Base & Hardener Resin) are warmed in thermostatically controlled oil jacketed heaters with the resin temperature maintained at 60 – 85°C.	After joint gap formwork has been inserted		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

3.5.2	Once the resins have reached temperature the Base and Hardener Resins are decanted into separate calibrated jugs providing the correct quantities of each resin component per mix. 2.5 kg Base Resin : 1.5 kg Hardener Resin.	After resins have been heated to the correct temperature		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.5.3	The resins are added together in a separate mixing container and mixed with a slow speed mixing paddle for 30 seconds to 1 minute until homogenous and streak free.	After resins have been separated into correct quantities		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.5.4	The pre-batched blend of aggregates is first pre-heated to 70 – 85°C in a forced action mixer using a gas torch. The temperature of the aggregate shall be checked using an infrared non-contact thermometer.	After resins have been mixed correctly		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.5.5	The mixed resin component is added to the aggregate and mixed for 1.5 to 2 minutes until homogenous, and all aggregate particles are thoroughly coated.	After the aggregate is at the required temperature throughout		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.5.6	The resin mortar is poured into the prepared trench in the carriageway	After mixed resin is added to aggregate		Visual and physical Application	As per Issued for Construction Drawings or consultant design	Evolution Team Leader			

	and trowelled flush with the rails and surfacing.	and thoroughly coated			or Manufacturers Recommendation				
3.5.7	An aggregate dressing is applied to the surface of the nosing to enhance the skid resistance and aesthetic appearance of the nosing.	Once resin mortar is poured and levelled		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.5.8	Curing will be achieved after 2 or 3 hours when the material is installed at 70°C. Adjustments to the temperature of the resin components or heating tunnels may be used to accelerate the curing of the Britflex Resin Mortar.	After aggregate dressing is applied		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
Installation of Expansion Joint Seal									
3.6.1	Strong backs and Gap formwork are removed to facilitate the installation of the joint seal.	Once the joint has cured		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			
3.6.2	The expansion joint seals are installed using specially designed tongs to compress and insert the seals throughout.	Prior to installing the seal, the joint rails must be visually		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

		inspected for damage to the protective coating. Touch up using a high zinc content cold gal paint.							
3.6.3	Expansion Joint Seal must be checked to ensure that it is seated correctly and fully engaged within the rails. (Hold Point)	On completion of insertion of the joint seals		Visual and physical Application	As per Issued for Construction Drawings or consultant design or Manufacturers Recommendation	Evolution Team Leader			

8. QA and Documentation Checklist

QA Documentation Checklist as required by CLIENT:

Documents Title:	Contractors Name:	Batch Numbers (If applicable):	Documents Provided (Y/N/NA)	Comments
Contractors Site Records	Evolution Civil			
Non-conformance reports	Evolution Civil			
Certificate of Conformity (Workmanship Warranty)	Evolution Civil			
Certificate of Conformity (Material COC) Applicable	Evolution Civil			
Certificate of Conformity (Material COC) Applicable	Evolution Civil			
Completed and signed ITP	Evolution Civil			

Additional Comments:

EVOLUTION | INSPECTION & TEST PLAN

EVOLUTION	**Completion Sign Off** **PROJECT:**	**Evolution Civil Maintenance Pty Ltd** ABN: 81 140 124 858 51 Heathcote Road Moorebank NSW 2170 Ph 1300 880 476
CLIENT NAME:	**CONSTRUCTION PROGRESS:**	**REVISION NO: 1** **Date:16/10/2023**
Contractor: Evolution Civil Maintenance Pty Ltd	**SPECIFICATION:**	**PREPARED BY:** Tommy Tran
Sub-Contractor:	**STRUCTURE/COMPONENT: Bridge Expansion Joint**	**APPROVED BY:** Chris Peel

Evolution Civil Maintenance

Final Inspection: I confirm that the above works have been installed in accordance with the specification requirements. Any minor alterations to the standards are stated on the attached Daily Diary or Non-Conformance Report (NCR).

Print Name: Signature: Date:

EVOLUTION | INSPECTION & TEST PLAN

Revision: 1.1 (16.10.2023)

Prepared By: Tommy Tran

Approved By: Chris Peel