

INSTRUCTION

TURNKEY CONTRACTS: "AS BUILT" DOCUMENTATION AND HANDOVER FOR OPERATION

1. PURPOSE

This instruction describes the preparation of "as built" documentation, and handover for operation for road facilities constructed under a turnkey contract for the Danish Road Directorate.

Scope:

- All new and rebuilt road facilities, including structures constructed under a turnkey contract for the Danish Road Directorate. (For current turnkey contracts it may be a good idea to agree to apply this instruction, but note that it is written for digital facilities.)
- All road facilities constructed by third-party employers and for which the Danish Road Directorate will become the operating authority. (The third-party employer is then considered as "Contractor" in this instruction).

Target group:

- Mainly turnkey contractors (in the following referred to as the "Contractor"), the Danish Road Directorate's site managers, employer's supervision and specialist project managers in AD-ES
- In addition, specialist project managers and designers in AD-PV, project managers and designers in AD-VEST-MA as well as external consultants who design or supervise the Danish Road Directorate's construction projects
- Third-party employers and the Danish Road Directorate's superintendent on these projects.

About assignment:

The final road facility is assigned to the future road administration:

- **Main roads (including structures)** are assigned to the Danish Road Directorate
- **Local roads (including structures) and local streams** are assigned to local authorities
- **Private roads, common roads and private streams** are assigned to private individual.
- **Railway structures** are assigned to Banedanmark.

About "as built" documentation:

The purpose of preparing "as built" documentation is to create:

- A basis for the operating organisation's operating and maintenance activities
- Certainty that no information is lost about the road facility between construction and operation, including information about outstanding issues in relation to e.g. contractors and suppliers
- A basis for assigning roads, bridges, streams, signal systems, etc. to private individuals, local authorities and Banedanmark
- A basis for cadastral confirmation etc. in relation to landowners.

DISCLAIMER

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3. DESCRIPTION

GENERAL			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Preparation, collection and management of "as built" documentation</p> <p>Contractor</p> <p>The Contractor is responsible for the preparation and assignment of "as built" documentation to the Employer and shall ensure that resources are earmarked for the task and that the necessary inputs are obtained from other parties.</p> <p>It is important that the Contractor from the beginning of the task systematically collects "as built" documentation, and that agreements are concluded to ensure collection of the part of the documentation which consultants, subcontractors and suppliers shall provide.</p> <p>To manage the "as built" documentation, the Contractor shall apply the Danish Road Directorate's paradigm for the list of annexes. This should be started during the design phase.</p> <p>The Danish Road Directorate's "as built" coordinator can assist with advice. (See 4. DEFINITIONS AND ABBREVIATIONS)</p>	<p>"As built " documentation</p> <p>List of annexes</p>		<p>X</p> <p>X</p> <p>X</p>
<p>Employer</p> <p>The Employer's site manager shall call in a start-up meeting about "as built" under the contract. The purpose of the meeting is to define the "as built" task based on a review of the list of Annexes.</p> <p>The Employers supervision shall ensure regular receiving inspection of the Contractor's "as built" documentation.</p> <p>The site manager shall arrange for the assignment to operating authorities and systems subject to this instruction.</p> <p>The specialist project manager (FPL TILSYN) shall ensure that an agreement is made well in advance with other parties about resources for receiving inspection of "as built" documentation.</p>	<p>S.U. - start-up meeting</p> <p>Reception inspection</p> <p>Assignment</p> <p>Resources</p>	<p>Site manager</p> <p>Employer's supervision</p> <p>Site manager</p> <p>FPL TILSYN</p>	

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GENERAL			
Activity	Result	Responsibility	
		Employer	Contractor
<p>List of annexes</p> <p>The list of annexes is a complete list of the contents of the "as built" documentation and data.</p> <p>The list is prepared in several steps:</p> <ul style="list-style-type: none"> The Contractor completes the list of annexes continuously in line with the execution of the work – in a file in projektweb. <ul style="list-style-type: none"> All relevant documentation and data referred to in this instruction shall be included in the list of annexes All the relevant drawing numbers shall be included in the list of annexes, see the section "as built" drawings for DriftLocator. The drawings shall be entered in ascending kilometerage The responsibility column shall be completed to avoid any doubt as to who is doing what Yellow fields "Project drawing number/Reference to projektweb" shall be completed. The Employer's supervision will enter 360° number or date in the column "Drawing no. in DriftLocator/ 360° case no. or date" – in the Contractor's file in projektweb. The Employer's supervision will ensure an updated copy of the list of annexes always is available in 360°. <ul style="list-style-type: none"> All the relevant protocols shall be listed in the list of annexes and refer to their 360° no Link to the completed list of annexes in 360° shall be sent to the person responsible for AD-AG-GEO-DriftLocator When the list of annexes is completed and saved in 360°, an e-mail will be sent with the case number to the AD-ES "as built" coordinator, who will create an automatic status for "As built" in a central file for the management The Employer's supervision shall ensure that the final completed list of annexes is assigned to AD-ES-DRI's coordinator for facilities for operation, e.g. by e-mail with 360° case number as a part of commissioning. The person responsible for AD-AG-GEO Driftlocator shall insert drawing numbers in the column "Drawing no. in DriftLocator/ 360° case no. or date" – in the list of annexes in 360°. 	<p>List of annexes</p>		
			X
			X
			X
			X
		Employer's supervision	
	Protocols DriftLocator	Employer's supervision	
	Archive and status	Employer's supervision	
	Assignment	Employer's supervision	
		Person resp. for Driftlocator	



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Activity	Result	Responsibility	
		Employer	Contractor
Assignment to the Danish Road Directorate's operation			
Assignment			
The purpose of the assignment to operation is that the responsibility for operation and maintenance transfers from the construction project to the operating authority. In order to ensure that the Employer's operating contractors remain in charge of operations and maintenance of all relevant areas and equipment on the main road at all times, the construction project shall notify all transfers from operation to construction or from construction to operation.			
<ul style="list-style-type: none"> The site manager shall notify the AD-ES-DRI coordinator for facilities for operation about commissioning dates (dates on which operations shall be resumed on the areas). Notification shall be made in good time before the relevant part of the facility is commissioned and before the Contractor's handover to the Employer. 	Notification of commissioning	Site manager	
<ul style="list-style-type: none"> AD-ES-DRI's coordinator for construction to operation shall ensure that the complete road facility is reviewed before final commissioning so that operations becomes familiar with the facility, including any ongoing remedying of defects, agreements with neighbours, ownership, etc. 	Review of the facility with operation	AD-ES-DRI's Coordinator for facilities for operation	
<ul style="list-style-type: none"> The Employer's supervision should participate in the review of operations 		Employer's supervision	
Remember measuring in to vejman.dk and Administration of consumption points.			
Emergency response plans			
Preparation of emergency response plan			
<ul style="list-style-type: none"> The Contractor shall prepare an emergency response plan according to RD's Data and drawing standard – Specialist theme: Road design, Phase 5, 05 Facilities, Facility - Emergency response plan. 	Emergency response plan	Site manager	X

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Activity	Result	Responsibility	
		Employer	Contractor
<p>The Contractor can get instructions for providing information about watersheds from AD-ES asbuilt coordinator.</p> <p>Meeting with the emergency response team Before the opening (commissioning) of the road facility, the Employer's site manager shall convene the emergency response team to review the road facility. On this occasion, the emergency response plan with information on watersheds etc. shall be reviewed and given to the emergency response team. Minutes shall be taken from the meeting.</p> <p>The Contractor shall participate in the meeting with the emergency response team</p>	<p>Minutes of meeting with the emergency response team</p>	<p>Site manager</p>	<p>X</p>
<p>Assignment to local authorities Before meetings with local authorities or private individuals on the assignment of road facilities, the site manager shall form a complete overview of the road facility with associated interfaces to main roads. Information on operating and maintenance boundaries can be obtained from the project manager.</p> <p>At technical meetings with the local authority in question, it will be determined how they want to receive "as built" documentation and to which extent they want such information as well as whether the road facility should be measured in to vejman.dk. The following points are therefore indicative. The site manager collects the material and assigns it to the respective recipients.</p> <p>Subject to agreement with the local operating authority, a technical review of the new road facility will be conducted before commissioning.</p> <p>The Contractor shall participate in the technical review</p> <p>All assigned material as well as protocols and letters – <u>with</u> signatures – shall be entered in 360°.</p>	<p>Agreement on assignment</p> <p>Assignment</p> <p>Technical review</p> <p>Filing</p>	<p>Site manager</p> <p>Site manager</p> <p>Site manager</p> <p>Site manager</p>	<p>X</p>



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Activity	Result	Responsibility	
		Employer	Contractor
<p><i>Assignment of roads to local authorities</i></p> <p>For each local authority, the following shall be prepared and assigned:</p> <ul style="list-style-type: none"> • Covering letter to the local authority • Assignment protocol for local roads covering all local roads being assigned <p>For each local road, the following shall be prepared and assigned (indicative):</p> <ul style="list-style-type: none"> • Plan 1:4000/1:1000 with indication of the road • Plans 1:500 with roundabouts, intersections, etc. • Plans for signs, signals and markings 1:500 • Drainage plans • Road furniture plans • Normal cross section with surfacing structure • Longitudinal profile • Main drawing of any bridges, tunnels • Operating manuals and meter cabinet locations for any lighting at structures and roundabouts <p><i>Assignment of streams to local authorities</i></p> <p>For each local authority, the following shall be prepared and assigned (indicative):</p> <ul style="list-style-type: none"> • Assignment protocol for local streams covering all local streams being assigned • Plan 1:4000/1:1000 with indication of the stream 	<p>Letter Protocol</p> <p>USB and 360°</p> <p>Protocol Plan</p>	<p>Site manager Site manager</p> <p>Site manager</p>	<p>X</p> <p>X</p>
<p>Assignment to private individuals</p> <p>Assignment of private common roads</p>			

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Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> • Letter regarding assignment of Private common road (to those entitled to use the road) concerning assignment of responsibility for operation and maintenance • Letter to the local authority regarding assignment of Private common road, the local authority has the duty of supervision • Plan 1:4000/1:1000 (or section) with indication of the road as well as any corrections made by hand. <p>Assignment of private roads</p> <ul style="list-style-type: none"> • Letter regarding assignment of Private roads (to land owner) concerning assignment of responsibility for operation and maintenance • Level 1:4000/1:1000 (or section) with indication of the road <p>Assignment of private streams, drains and pipes</p> <ul style="list-style-type: none"> • Letter regarding assignment of stream to land owner concerning assignment of responsibility for operation and maintenance of the stream • Annex to letter providing drain information to land owners, comprising: <ul style="list-style-type: none"> ○ Section of the 1:4000 plan from the Water protocol (alternatively a section from future ownership) ○ Section of the updated drainage plans with relevant connecting drains, including coordinates of wells as well as pipe dimensions and type (alternatively, a map section from WebVand) ○ The map section shall include measured, re-laid pipes, e.g. field irrigation systems, slurry pipes, etc., incl. ducts. <p>Letters and map section shall be entered in 360°.</p>	Letter	Site manager	
	Letter	Site manager	
	Plan		X
	Letter	Site manager	
	Plan		X
	Letter	Site manager Site manager	
	Annex Section	Site manager	
	Section		X
	Measuring in		X
	Filing	Site manager	
<p>Assignment to Banedanmark of railway structures</p> <p>Reference is made to “As built” documentation and assignment to operation for main contracts/ individual trade contracts.</p>			X

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Activity	Result	Responsibility	
		Employer	Contractor
<p>Digital models</p> <p>"As built" digital models shall be provided, see the ICT description. The Contractor shall notify the Employer's supervision when each of the final "as built" digital models are available in projektweb.</p>	As built models		X
<p>Drawings</p> <p>In addition to delivery of "as built" digital models, the Contractor shall deliver "as built" drawings that are covered by this instruction and as specified in the list of annexes. All the "as built" drawings shall be transferred to the Employer's electronic drawings archive Driftlocator. (Drawings of structures are excluded.)</p> <p>Delivery of "as built" drawings shall be made as soon as possible. Emergency response plans and drawings which include elements of current and water shall be given highest priority – especially regarding conditions which cannot be seen in the field</p> <p>"As built " drawings for DriftLocator</p> <ul style="list-style-type: none"> • "As built" drawings are provided as pdf files – according to "Operating and filing instruction, Driftlocator" (select "Operating instruction" at the bottom to the left) – and are entered in projektweb <ul style="list-style-type: none"> ○ All "as built" drawings shall be provided with operating kilometrage in the form of the system line and conversion factor The system line is available in vejman.dk and the conversion factor can be obtained from AD-AG-GEO-GOL (responsible for the reference line) ○ All "as built" drawings will be provided with an "as built" revision field, as shown in the Danish Road Directorate's Data and drawings standard • After the Employer's supervision has performed reception inspection of the Contractor's "as built" drawings, the Employer's supervision will notify the person responsible for AD-AG-GEO DriftLocator that the drawings are ready for DriftLocator • "As built" drawings will be sent to the person responsible for AD-AG-GEO-DriftLocator by e-mail – or an agreement on giving this person access to the drawings on the contract projektweb is made 	<p>"As built" drawings for DriftLocator</p> <p>PDF files</p> <p>Kilometrage</p> <p>Revision field</p>	<p>Employer's supervision</p> <p>Employer's supervision</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>



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Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> The prerequisite for measuring in is that the road system lines have been submitted subject to the project ICT specification (and thus is located in DGP and Vejman.dk). It shall be ensured that the AD-BBM-MAAL surveyor sends a receipt once measuring in and data have been entered into vejman.dk. <p>DGP/vejman.dk updating</p> <p>DGP will be updated by flying over the new road facility, meaning that DGP and vejman.dk at that point in time will reflect the "as built" project for everything that that can be seen from the air. AD-AG-GEO will order the flight based on RD's project database and from reports retrieved through "Reporting of changes of the road reserve (road reserve change)".</p> <p>"The road in pictures"</p> <ul style="list-style-type: none"> Pictures shall be recorded for "The Road in Pictures" after the road has opened. Ordering of picture registration is done in "Order form for measuring services from AD-BBM-MAAL", mark with X in the column 'Video' The prerequisite for picture registration is that the road system lines have been submitted subject to the project's ICT specification (and thus is located in DGP and Vejman.dk). 	<p>E-mail receipt</p> <p>Updated DGP and vejman.dk</p> <p>Ordering</p>	<p>Employer's supervision / AD-BBM-MAAL surveyor</p> <p>AD-AG-GEO</p> <p>Employer's supervision</p>	<p>X</p> <p>X</p>
<p>Law relating to adjoining properties</p> <p>It is primarily AD-AG-ARE who will handle agreements with and contact to land owners and ensure that these are regularly filed in 360°.</p> <p>The name of AD-AG ARE's administrator on the specific projects is provided in in the list of annexes. The same administrator will complete the project in respect of easements, profits and restrictive covenants and reservation of title.</p>	<p>Filing of agreements</p> <p>Contact in AD-AG-ARE</p>	<p>AD-AG-ARE</p> <p>Employer's supervision</p>	

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GENERAL			
Activity	Result	Responsibility	
		Employer	Contractor
360° case numbers of cases that are complete at the time of assignment to operation shall be stated in in the list of annexes and in the assignment protocol.	360° number of pending cases	Employer's supervision	

SURFACING			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Surfacing</p> <p>Surfacing structure</p> <ul style="list-style-type: none"> Form: Surfacing, Data for Vejman.dk shall be completed with data for laid surfacing. The form shall be completed for the road surfacing on all new road parts and if new surfacing has been laid on sections longer than 50 m The form shall be sent as soon as possible to AD-ES's road-technical coordinator for surfacing, who will perform quality assurance and ensure upload to vejman.dk. For complex facilities, e.g. cloverleaf interchange, it is recommended to involve AD-ES's road-technical coordinator for surfacing in the completion of the form. AD-ES's road-technical coordinator for surfacing will notify the Contractor and the Employer's supervision once the form has been submitted for upload to vejman.dk. 	<p>Surfacing data for Vejman.dk</p> <p>Mail to road-technical coordinator for surfacing</p> <p>Receipt</p>	<p>AD-ES's road-technical coordinator for surfacing</p>	<p>X</p> <p>X</p>

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SURFACING			
Activity	Result	Responsibility	
		Employer	Contractor
<p>TIP: Subject to agreement, AD-BBM-MAAL surveyor may provide the following additional material once the road has been measured in to vejman.dk:</p> <ul style="list-style-type: none"> - lists of correct road numbers and kilometerages - rough sketches of possible ramp facilities, located in 360° on case 13/10413 where they are broken down by road number. <p>Results from friction measurements and evenness measurement: AD-BBM-MAAL will ensure that the results from their measurements on wearing courses are entered in vejman.dk.</p> <p>Special conditions concerning the surfacing will be mentioned in the assignment protocol – e.g. tilting sections and tests, demonstration sections, laying conditions, execution problems. For tilting sections, the start and end kilometerage shall be stated in the protocol.</p>	<p>Friction and evenness data to vejman.dk</p> <p>Comment in protocol regarding special conditions</p>	<p>Employer's supervision</p> <p>AD-BBM-MAAL</p> <p>Employer's supervision</p>	
<p>Road marking (stripes)</p> <ul style="list-style-type: none"> • "As built" plans for signs, signals and markings 1:200/1:250 or 1:500 for roundabouts, intersections, intersecting roads, rest areas and other node points and details shall be provided. • Kilometerage should only be made for priority roads. • Form: Stripes, Data to Stribeman shall be completed with information for Stribeman. This information forms the basis for the entry of ECODYN measurements from the Contractor. The completed form is sent to the person responsible for AD-ES-AVV-Stribeman. The form is only to be completed for new sections longer than 500 m. 	<p>"As built" plans</p> <p>Form for Stribeman</p>		<p>X</p> <p>X</p> <p>X</p>

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STRUCTURES			
Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> ○ For the Contractor's preparation of annexes for the Inspection report, registration sheet shall be obtained from the AD-BBM-BYG registrar, who has completed the form with basic data for the structure. See examples of completed registration sheets. 	Annex: Completed registration sheets		X
<ul style="list-style-type: none"> • The Contractor's Inspection report(s) with annexes will be sent to the AD-BBM-BYG bridge coordinator, who after a random samples check will forward it to AD-BBM-BYG registrar. 	Random sample check	Employer's supervision	
<ul style="list-style-type: none"> • The Employer's supervision will obtain information about the vertical clearance of the structure by ordering a measuring of the vertical clearance from AD-AG-GEO, which will provide the information to the AD-BBM-BYG registrar. See example of the result of a vertical clearance measurement. 	Vertical clearance	Employer's supervision	
Data for DANBRO for underpasses with a diameter less than 2.00 m, and which are open (visible) on both sides of the road course			
<ul style="list-style-type: none"> • Drawings showing the diameters and levels of the underpass etc. as well as completed registration sheets shall be submitted to the AD-BBM-BYG registrar. Files shall be named according to the "Filing instruction". 			X
<ul style="list-style-type: none"> ○ Registration sheet is available from the AD-BBM-BYG registrar, who is filling in the form with base data for the structure. See examples of completed registration sheets. 			X
Data for DANBRO for Gantries			
<ul style="list-style-type: none"> • Elevation drawings for gantries and completed registration sheets shall be submitted to the AD-BBM-BYG registrar. Files shall be named according to the "Filing instruction" 			X
<ul style="list-style-type: none"> ○ Registration sheets are available from the AD-BBM-BYG registrar, who is filling in the form with base data for the structure. See examples of completed registration sheets. 			X

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Drainage</p> <p>External drainage</p> <p>Water protocol with annexes and assumptions (broken down into local authorities)</p> <ul style="list-style-type: none"> For operations, the 360° number for the following in the List of annexes will be stated: <ul style="list-style-type: none"> Signed Water protocol (text part), and assumptions: <ul style="list-style-type: none"> Related emission permits for run-off from stormwater basins Approvals under the Danish Nature Protection Act with annexes <p>TIP: The designer should have entered the protocol and assumptions in 360°.</p> <ul style="list-style-type: none"> Drawing annex for the Water protocol: Drawings provided as annexes to the Water protocol will <u>not</u> be changed, but the drawing numbers will be stated in the list of appendices so that the drawings will be transferred to DriftLocator (see section on "As built" drawings for DriftLocator.) <p>New catchment pipes and connection of existing subsoil drainage pipes</p> <ul style="list-style-type: none"> New catchment pipes and connection of existing subsoil drainage pipes shall be specified in the "as built" drainage plans. Relevant sections of drainage plans for assignment to land owners will be scanned and saved on 360° case "Assignment to private individuals". See also Assignment of subsoil drainage pipes and pipes to land owners 	<p>360°no. for protocol and assumptions</p> <p>Drawings</p> <p>Connections etc. shown on plans</p> <p>Section to land owner</p>	<p>Employer's supervision</p> <p>Employer's supervision</p> <p>Employer's supervision with assistance from AD-PV-PRV</p>	<p>X</p>

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Registration sketch</p> <ul style="list-style-type: none"> Registration is made when road water runs into the land owner's pipes/streams. AD-AG-ARE prepares the registration sketch and makes sure that they are handed over It shall be ensured that AD-AG-ARE has access to updated drainage plans. 	<p>Registration sketch</p> <p>Updated drainage plans</p>	<p>AD-AG-ARE</p> <p>Employer's supervision</p>	
<p>Internal drainage</p> <p>Drainage data and drainage plans for internal wells and pipes, etc.</p> <ul style="list-style-type: none"> "As built" drainage plans* 1:500 showing the entire drainage system shall be provided, see As built drawings for Driftlocator. See example of "as built" drainage plan. "As built" drainage (as ascii file) in accordance with Transfer of data to WebVand to the person responsible for WebVand: webvand@vd.dk. The person responsible for WebVand will forward data to the operating system DAS7. <p>Model drawings for drainage elements See "Model drawings"</p>	<p>Drainage plans for DriftLocator</p> <p>Drainage data for DAS7</p> <p>As built project-specific model drawings</p>	<p>Person resp. for WebVands</p>	<p>X</p> <p>X</p> <p>X</p>

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Stormwater basins Stormwater basins shall appear from the drainage plans – provided with "as built" information about e.g. casing, bottom level, future basin number.</p>	Information on stormwater basins		X
<p>Special drainage elements For pumping stations, root zone or ochre treatment systems, sedimentation structures, flyover constructions and other others special drainage elements shall be delivered "as built":</p> <ul style="list-style-type: none"> • Plan and detailed drawings, see "As built" drawings for Driftlocator • Operating plans and guidance (pdf) • Product Sheets (pdf) • Any measurements and registrations of water quality or other operating data, which demonstrate system efficiency 	Documentation of special drainage elements		X
<p>All documentation, except drawings, shall be saved on the "as built" case in 360° and stated in the List of annexes.</p>	Documentation in 360°	Employer's supervision	
<p>Prior to use/assignment, consumption points with meter number, meter ID, supplier, etc. shall be created (or changed) in accordance with Administration of consumption points</p>	Consumption settlement assigned to operation	Employer's supervision	
<p>Planting and grass areas</p>			
<p>Planting</p>			

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<p>The following "as built" documentation shall be provided:</p> <ul style="list-style-type: none"> • The planted areas as polygons, in XML/GML format (file), see guidance for import into vejman.dk • Plant tables with unit lists and volumes and indication of origin/clone including any corrections (pdf) • Intention description (pdf) • Care plan/maintenance manual (pdf) <p>All pdf documentation will be saved on the "as built" case in 360° and be stated in the List of annexes.</p> <p>Grass areas Grass areas along the main road – coded as flat objects – shall be transferred to vejman.dk. The Employer shall create these on the basis of the Contractor's as built model (Færdigvej) in XML/GML format (file), see Guidance for import into vejman.dk</p>	<p>"As built" for planting</p> <p>Documentation in 360°</p> <p>Data for vejman.dk</p>	<p>Employer's supervision</p> <p>AD-PV-PRV</p>	<p>X</p>
<p>Marker posts, safety barriers, signs and fences</p> <p>Marker posts</p> <ul style="list-style-type: none"> • Marker posts shall be transferred to vejman.dk. See Data and drawings standard – Model standard – Marker posts no later than one month before opening. • Excel sheet with x,y coordinates is extracted from the model and sent to AD-AG-GEO Data manager. <p>Safety barrier</p> <ul style="list-style-type: none"> • Polylines for the safety barrier project shall be transferred to vejman.dk in XML/GML format (file), see guidance for import into vejman.dk no later than one month before opening. • File shall be sent to AD-AG-GEO Data manager and be entered on the "as built" case in 360°. 	<p>Data for vejman.dk</p> <p>Data for vejman.dk</p>	<p>AD-PV-PRV</p> <p>Employer's supervision</p>	<p>X</p> <p>X</p>

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> Information about safety barrier make and supplier shall be entered into 360° (a form is currently being prepared to be loaded into vejman.dk) Safety barrier model drawings, see "Model drawings" 	Make and supplier	Employer's supervision	X
<p>Signs The following "as built" documentation shall be provided:</p> <ul style="list-style-type: none"> Excel sheet with sign type and x,y coordinates, where the post meets the terrain. If the post has several legs, coordinates of the post furthest from the road shall be provided. Excel sheet shall be sent to AD-AG-GEO Data manager and be entered on the "as built" case in 360°. Plans for direction, position or indication signs Detailed drawing of signs, both on intersecting road and motorway, including information about: <ul style="list-style-type: none"> Mounting material, type and dimension Foundation, type and dimension The designer of road signs/markings shall prepare a memo providing grounds for any deviations from road standards, test of new materials, etc. The supervision shall be informed of the 360° file number of the memo for the list of annexes. 	Excel file for vejman.dk	Employer's supervision	X
	Drawings for Driftlocator	AD-PV-PRV	
	Drawings for Driftlocator	AD-PV-PRV	
	Any memo	AD-PV-PRV	
<p>Fences</p> <ul style="list-style-type: none"> Polylines for the fence project shall be transferred to vejman.dk in XML/GML format (file), see guidance for import into vejman.dk no later than one month before opening. Form: "Fences, Data for vejman.dk" shall be completed. File and form is to be sent to AD-AG-GEO Data manager and to be entered in the "as built" case in 360°. Fence model drawings, see "Model drawings" 	Data for vejman.dk		X
	Form	Employer's supervision	X
			X



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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> In connection with special fence types, the Employer may request a materials description and an operating manual 			X
<p>Street lighting</p> <ul style="list-style-type: none"> Final "as built" facility documentation for street lighting shall be collected and prepared. The documentation shall contain the following items, see Guidance for preparation of facility documentation for street lighting: <ul style="list-style-type: none"> Description of lighting systems System components Light technical data Drawings Measuring in plans, measuring reports and KS material The material shall, to the extent possible, be available in both editable formats (e.g. .docx, .dgn. or .dwg) and in pdf format. See example of Facility documentation for street lighting. The facility documentation (all material) shall be entered in 360° as a single zip file. Document cards shall be named with M/H[road no.], km [from km] – [to km] – [VejlysWeb no.] – facility documentation for street lighting: [name of facility] (available from AD-ES-DRI's coordinator for facilities for operation) Drawings and detailed drawings in pdf format shall also be submitted to DriftLocator according to "As built" drawings for DriftLocator The street lighting system shall also be entered in the operating records Vejlys-web. Here, the facility components, administrative data, 360° case number and information about consumption point shall be entered. 	<p>Facility documentation</p> <p>Files</p> <p>Filing in 360°</p> <p>Filing in DriftLocator</p> <p>Registration in Vejlys-web</p>	<p>Employer's supervision</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> Prior to use/assignment, consumption points with meter number, meter ID, supplier, etc. shall be created (or changed) in accordance with Administration of consumption points. Measuring in of electric supply cables shall be carried out according to Guidance for registration of survey data for road furniture. Survey data is sent to the person responsible for AD-AG-GEO-DGP and to vejman.dk at DRIO-DM@vd.dk. <p>Location of ducts for street lighting, see Ducts/underdrilling</p>	<p>Consumption settlement assigned to operation Data for DGP and Data for vejman.dk</p>		<p>X</p> <p>X</p>
<p>Emergency telephone facilities</p> <ul style="list-style-type: none"> Final "as built" facility documentation for emergency telephone facilities shall be collected and prepared. <ul style="list-style-type: none"> Facility layout consisting of drawing (schematic), which shows emergency telephones, road cabinets, connectors, etc. with ID, kilometerage and phone no./IP address as well as possible indication of routing the main cable (road side) Information about electricity supplies (installation no. + meter no.) and about leased communication connections (ISDN, ADSL, etc.) Description of emergency telephone facility Tables, electrical diagrams and layout drawings of road cabinets Configuration and setup of emergency telephone central, including file with backup of the configuration Completed test forms 	<p>Facility documentation</p>		<p>X</p>

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> ○ Cable and connector plans ○ List of components specifying suppliers ○ Operating guidance with particular focus on use for operation in connection with troubleshooting etc. ○ Drawings ○ Emergency telephones (data sheets, installation manuals, user manuals, etc. for emergency telephones, telephone central, etc.) ○ Survey data for emergency telephones, road cabinets, connectors, wells and cables shall be handed over in accordance with RD's Guidance for registration of survey data. ● CD-ROM with facility documentation shall be sent immediately to the person responsible for AD-ES-DRI Emergency telephone. All documentation shall be provided in pdf format and for data prepared by the Contractor, also as source file. ● Table with data for vejman.dk shall be completed as soon as the location of the emergency telephones is known and sent immediately to AD-AG-GEO at drio-dm@vd.dk to be entered into vejman.dk. Is also entered into 360°. ● Table of data for vejman.dk to be entered in 360°. ● Prior to use/assignment, consumption points with meter number, meter ID, supplier, etc. shall be created (or changed) in accordance with Administration of consumption points. <p>Location of ducts for emergency telephone facilities: see Ducts/underdrillings</p>	<p>Emergency telephones, Data for vejman.dk</p> <p>Consumption settlement assigned to operation</p>	<p>Employer's supervision</p>	<p>X</p> <p>X</p> <p>X</p>
Roadside facility (rest areas on main roads)			
Roadside facilities			

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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<ul style="list-style-type: none"> For roadside facilities, "as built" documentation shall be included in the total documentation within the specific technical subject. No "as built" documentation shall be submitted to the Employer for tank installations located within a leased area. 			X
<p>Roadside facility data for vejman.dk</p> <ul style="list-style-type: none"> The road elements of the roadside facility are included in AD-BBM-MAAL's total measuring in of the road facility for vejman.dk 	Road data to vejman.dk	AD-BBM-MAAL	
<p>Flushing and cleaning facilities (for busses, etc. at rest areas)</p> <p>The following "as built" documentation shall be provided:</p> <ul style="list-style-type: none"> "As built" documentation, including run-off plans and detailed drawings showing the final location of installations etc. All "as built" drawings shall be provided as specified in "As built" drawings for DriftLocator. All other documentation shall be provided in pdf format All other documentation shall be entered into 360° 	Drawings and Facility documentation	Employer's supervision	X
<p>Toilet buildings</p> <p>The following "as built" documentation shall be provided:</p> <ul style="list-style-type: none"> "As built" documentation, including drawings showing the final location of buildings, installations, etc. All "as built" drawings shall be provided as specified in "As built" drawings for DriftLocator All other documentation shall be provided in pdf format All other documentation shall be entered into 360° 	Drawings and Facility documentation	Employer's supervision	X



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ONGOING ROAD OPERATIONS			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Prior to use/assignment, consumption points with meter number, meter ID, supplier, etc. shall be created (or changed) in accordance with Administration of consumption points.</p> <p>Pumping stations See Special drainage elements</p>	Consumption settlement assigned to operation		X
<p>Paving work Paving work areas – coded as flat objects – shall be transferred to vejman.dk. The Employer shall create these on the basis of the Contractor's as built model (Færdigvej) in XML/GML format (file), see Guidance for import into vejman.dk.</p> <p>AD-BBM-MAAL will arrange for measuring in of traffic islands and truck aprons in cross section for vejman.dk – in connection with the measuring in of the road elements.</p>	<p>Data for vejman.dk</p> <p>Registration in vejman.dk</p>	AD-PV-PRV	AD-BBM-MAAL
<p>Ducts/underdrillings</p> <ul style="list-style-type: none"> Survey data shall be provided for all electricity ducts, emergency telephone cables, cabling for traffic measuring coils and warning system for slippery roads, etc. as well as empty pipes as specified in Guidance for registration of survey data (for road furniture, including street lighting, ITS and signal systems). Survey data is sent to the person responsible for AD-AG-GEO-DGP and to vejman.dk at DRIO-DM@vd.dk. 	<p>Survey data</p> <p>Data for DGP and vejman.dk</p>		<p>X</p> <p>Employer's supervision</p>

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TRAFFIC AND EMERGENCY RESPONSE			
Activity	Result	Responsibility	
		Employer	Contractor
<p>Signal system</p> <ul style="list-style-type: none"> Final "as built" facility documentation shall be collected and prepared as specified in "Guidance: Projects with signals – for the consultant". Facility numbers on signal systems shall appear from the documentation. (If they do not appear from the project, AD-ES-DRI's coordinator for facilities for operation shall be contacted) Two sets of facility documentation shall be submitted to the Employer's supervision on paper + on CD-ROM as editable files. An additional set shall be placed in the control cabinet in the field – shall be available on commissioning One set of complete facility documentation to be transferred on paper + on CD ROM as editable files to AD-ES-DRI's coordinator for facilities for operation One set of documentation on paper to person responsible for TRA-TLO-TLA signal systems (see scope in the above instruction) Facility documentation shall be entered in 360°. Measuring in of manholes and cables shall be made as specified in Guidance for registration of survey data (for road furniture, including street lighting, ITS and signal systems). The Contractor's measuring in shall be sent to the person responsible for AD-AG-GEO-DGP. <p>The following information shall be communicated to AD-ES-DRI's coordinator for facilities for operation before commissioning:</p> <ul style="list-style-type: none"> Tel. no. to monitoring (if new) Meter number, meter ID, supplier, etc. for electricity (if new) as specified in Administration of consumption points on VD+ 	<p>Facility documentation on for Signal systems</p>	<p>Employer's supervision Employer's supervision Employer's supervision</p>	<p>X X X</p>
	<p>Information to person resp. for operations</p>	<p>Employer's supervision</p>	<p>X</p>

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TRAFFIC AND EMERGENCY RESPONSE			
Activity	Result	Responsibility	
		Employer	Contractor
NB: It is important that the Employer's supervision specifies the exact date of commissioning of the new or rebuilt signal system when ordering vejman.dk measuring in. The date is included as a key parameter for black spot assessments.	Date of commissioning for vejman.dk	Employer's supervision	

4. DEFINITIONS AND ABBREVIATIONS

Person responsible for AD-AG-GEO DriftLocator = Ketty Jensen

KJ1@vd.dk

AD-AG-GEO Datamanager = Claus Henrik Rasmussen

DRIO-DM@vd.dk

Person responsible for AD-AG-GEO-DGP = Luc Sandré

LUC@vd.dk

AD-BBM-BYG registrar = Peter Nielsen

PN@vd.dk

Person responsible for AD-ES-AVV Stribeman = Per Fuglkjær Bruun

PFB@vd.dk

AD-BBM-MAAL surveyor = Karin Karby Simonsen

KKS@vd.dk

AD-ES warranty administrator = Karin Lisby (large facilities)

KLI@vd.dk

AD-ES warranty administrator = Heidi Kiel Hansen (small facilities)

HKHA@vd.dk

AD-ES as built coordinator = Ulla Nielsen

UNI@vd.dk

AD-ES road-technical coordinator for drainage = Erland Hansen

ERL@vd.dk

AD-ES road-technical coordinator for surfacing = Rene Sørensen

RCS@vd.dk

AD-ES-DRI's coordinator for facilities for operation = Henriette Gammelgaard

HGA@vd.dk

Person responsible for AD-ES-DRI Emergency telephone = Vibeke Nadolny

VRN@vd.dk

Person responsible for AD-AG-GEO reference line = Luc Sandré

LUC@vd.dk

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AD-BBM-BYG bridge coordinator = Rasmus Bang (or other bridge team member)

RBA@vd.dk

Person responsible for TRA-TLO-TLA signal system = Jørn Vammen

JV@vd.dk

AD-PV-PRV = project worker, responsible for road signs/markings

(project dependent)

Person responsible for Webvand = Ole Holmskov

OH@vd.dk

The central electrical unit = Michael Lysgård

CEE@vd.dk

AD-ES = CONSTRUCTION AND OPERATION – Contract management

AD-PV = CONSTRUCTION AND OPERATION – Project and road technology

AD-PV-PRV = CONSTRUCTION AND OPERATION – Project and road furniture

AD-VEST-MA = CONSTRUCTION AND OPERATION – Facility West – Small facilities

AD-AG-ARE = CONSTRUCTION AND OPERATION – Area and Geodata – Land acquisition

AD-AG-GEO = CONSTRUCTION AND OPERATION – Area and Geodata – Geodata

PLA-VM-PM* = PLANNING – Road sector and authority – Planning and authority *AA Aalborg, *N Næstved, *M Middelfart

5. DOCUMENT MANAGEMENT

Approved	Unit/network	Specialist theme	Scheduled revision	Document no.	Access
22 May 2015 KIR	AD-ES/Construction and operation coordination	Contract management	Current and latest May 2016	13/19171-1	[] Internal [x] External

LOG	
28.08.2015	Person responsible for AD-ES-AVV Stribeman changed on page 14. Person responsible for AD-AG-GEO-DGP has been changed to Luc Sandré
22.05.2015	New version for turnkey contracts.



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