

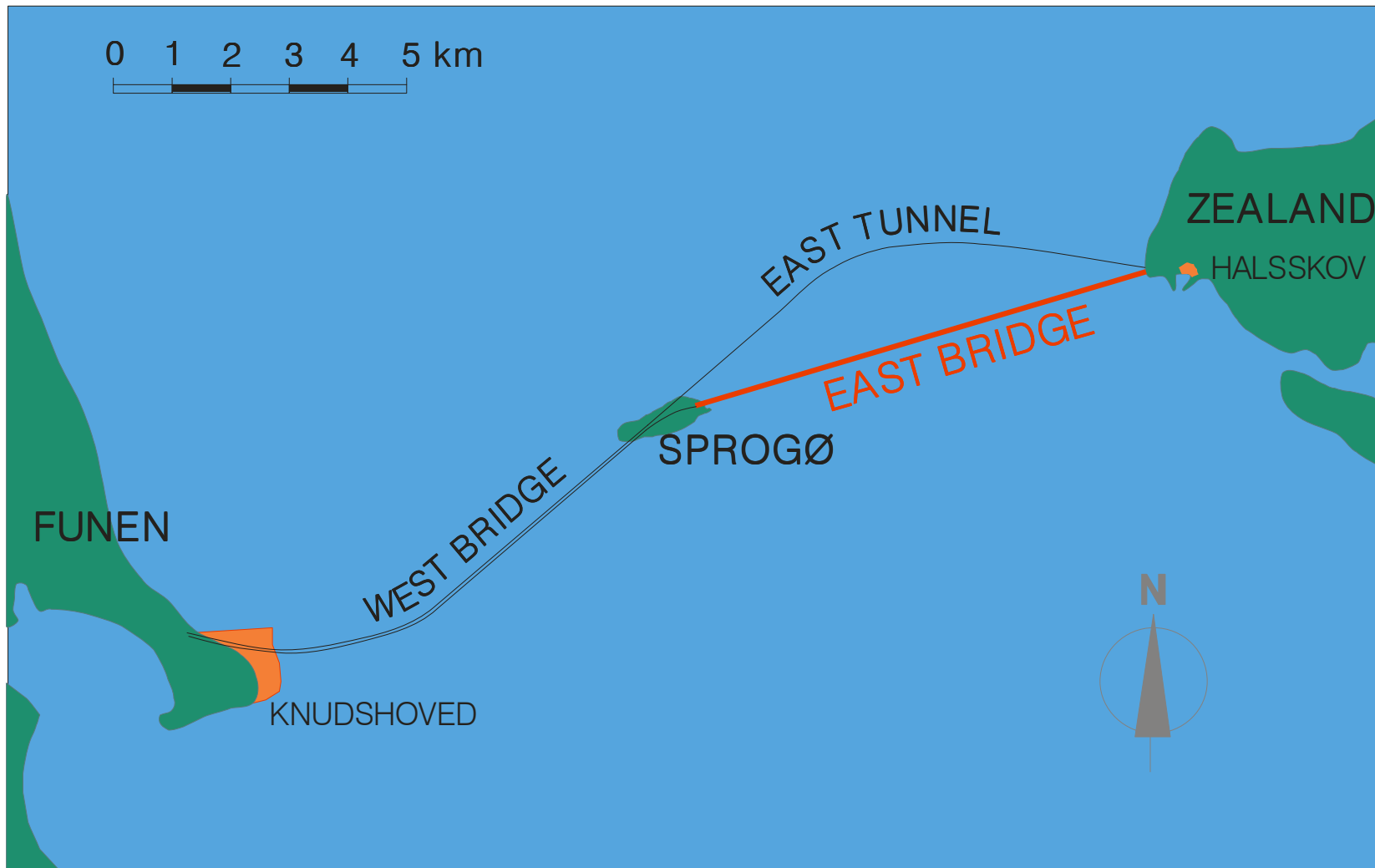
## Monitoring an großen Brückenbauwerken



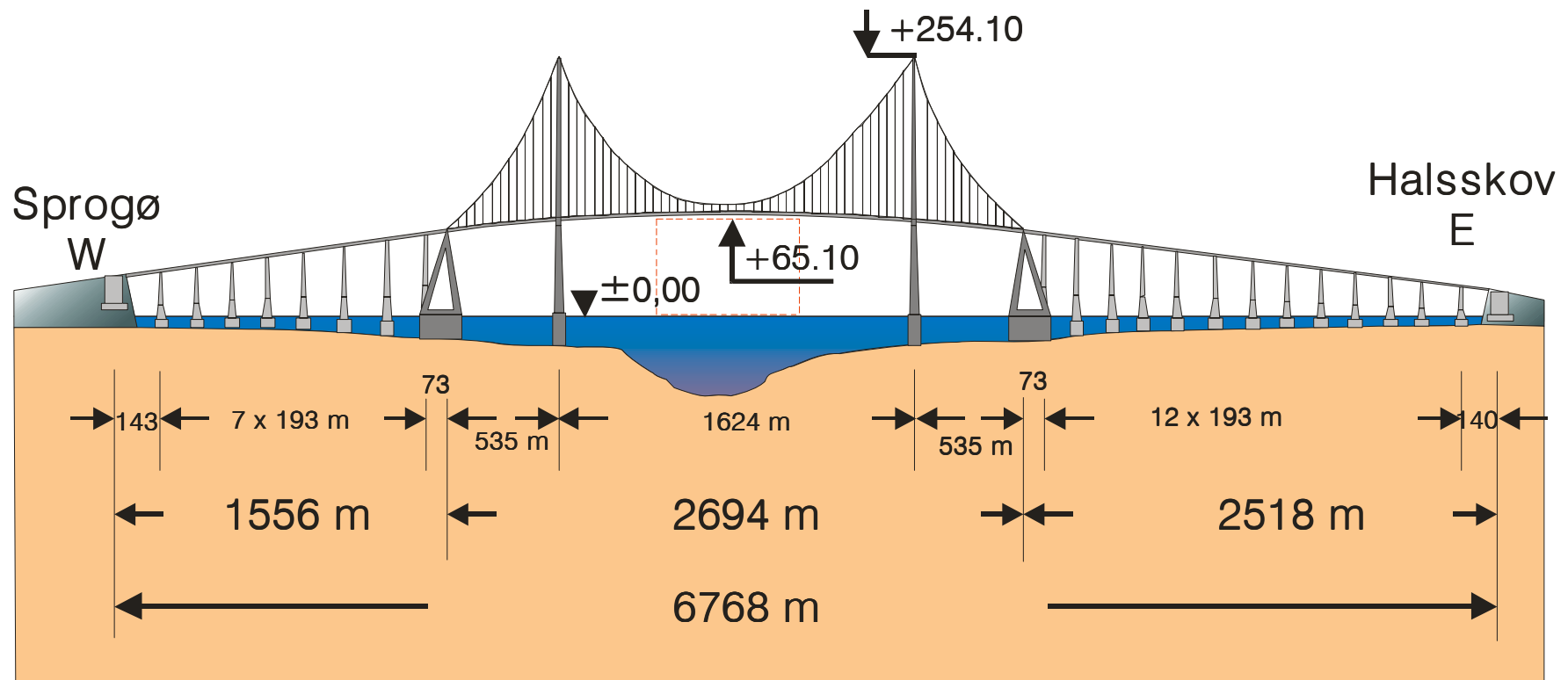
ALLSAT OPEN - Hannover  
18. Juni 2009

Dipl.-Ing.  
**Peter Bartel**

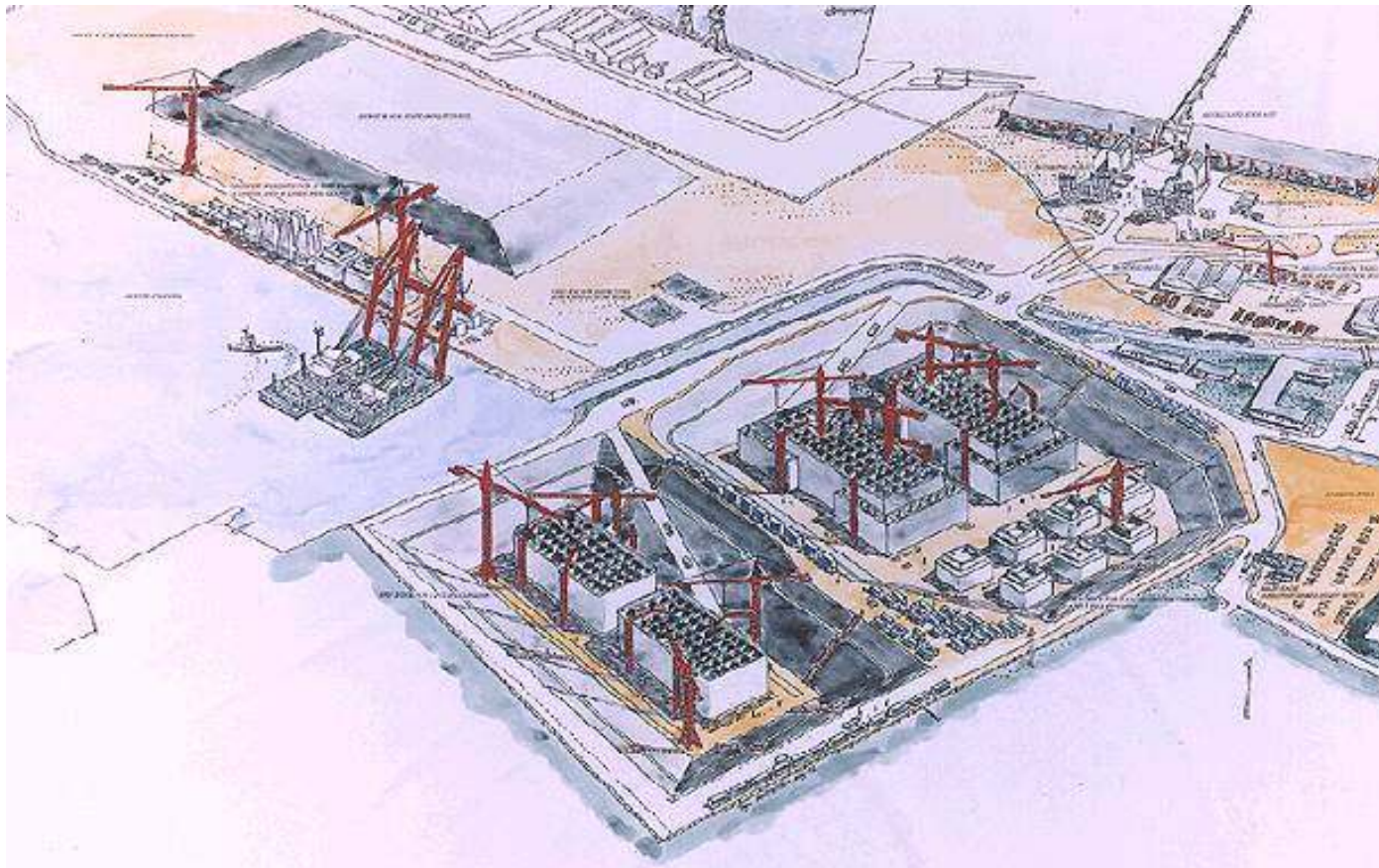
## The fixed link across the Great Belt



# East Bridge - Longitudinal section



## Trockendock Kalundborg



## Trockendock Kalundborg



## Trockendock nach dem Fluten

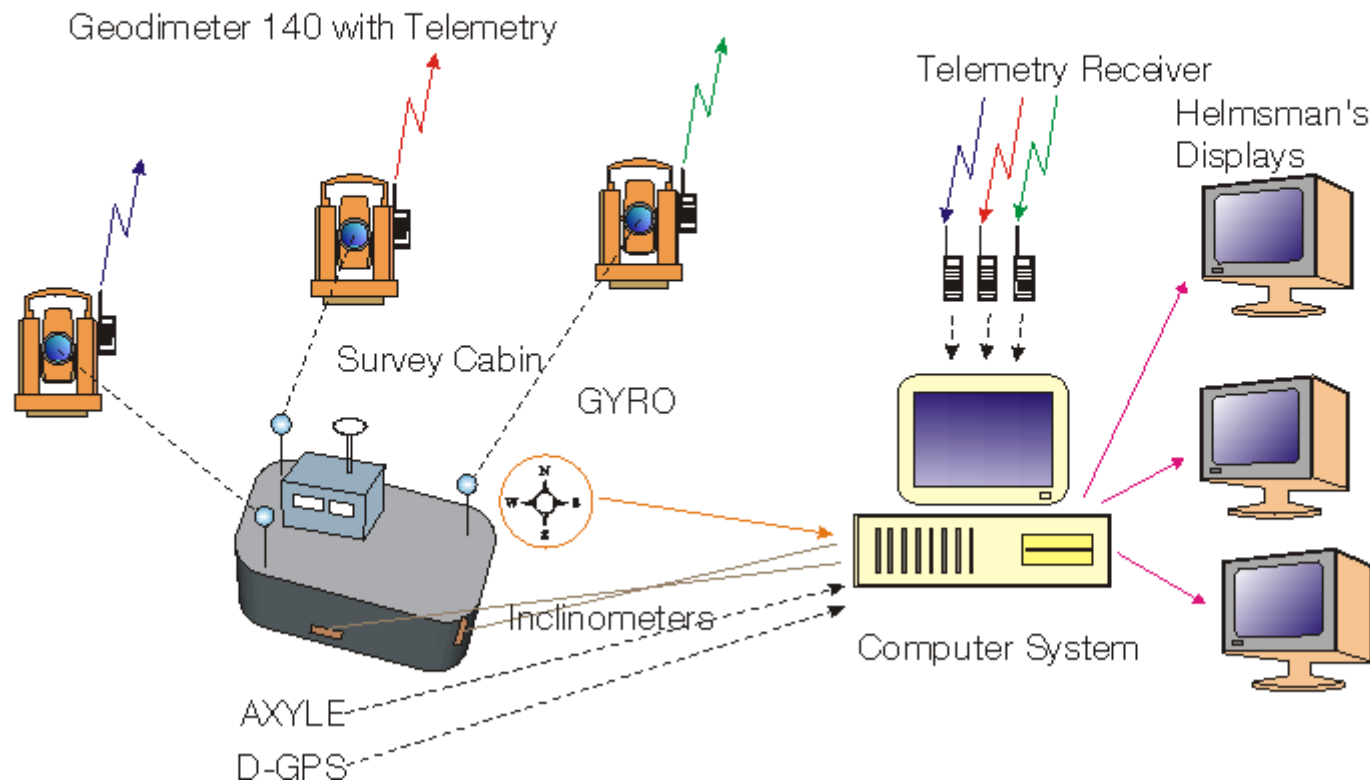




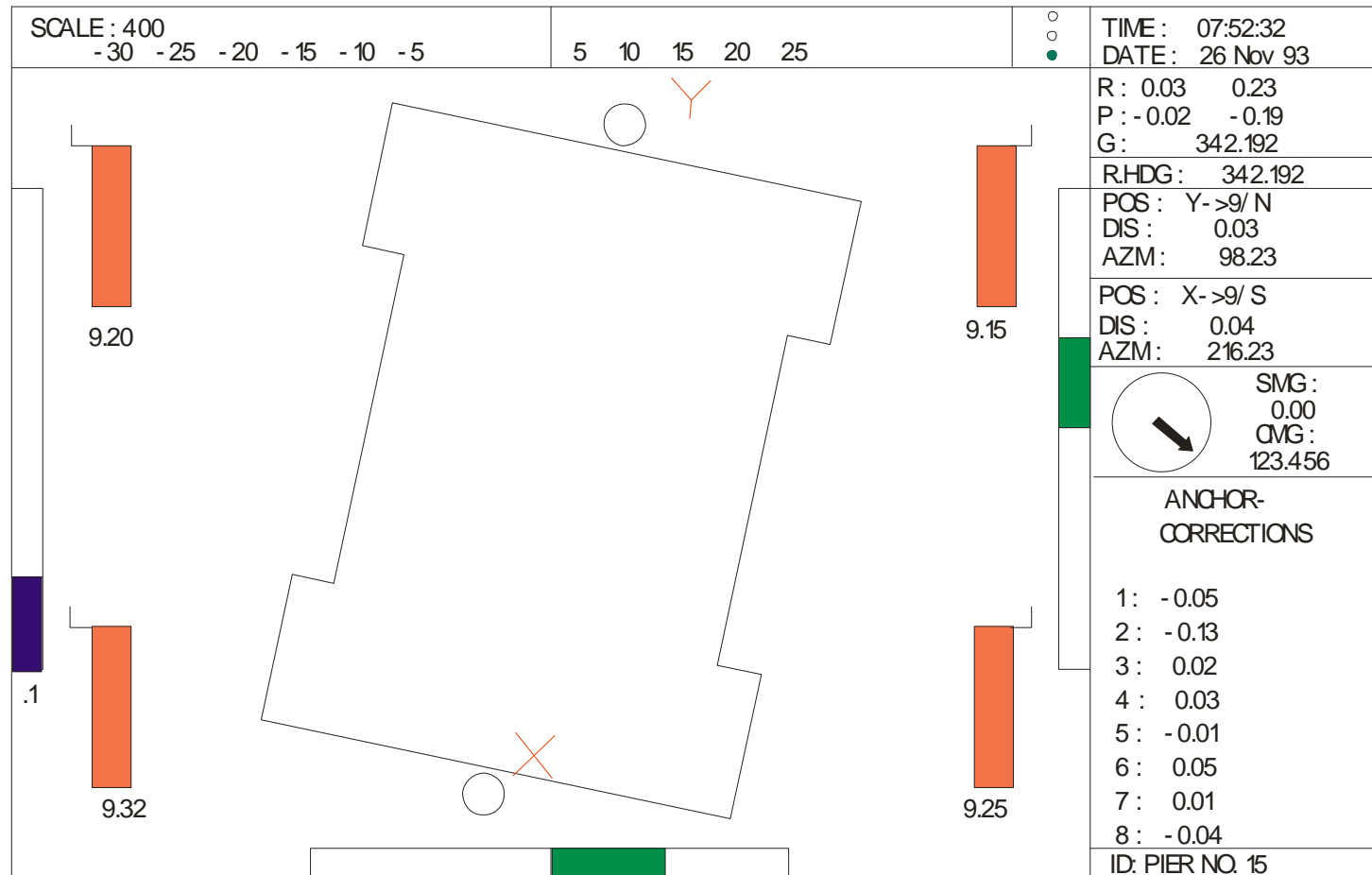
## Transport Ankerblock

## Vermessungssystem Plazierung in der Brückenlinie

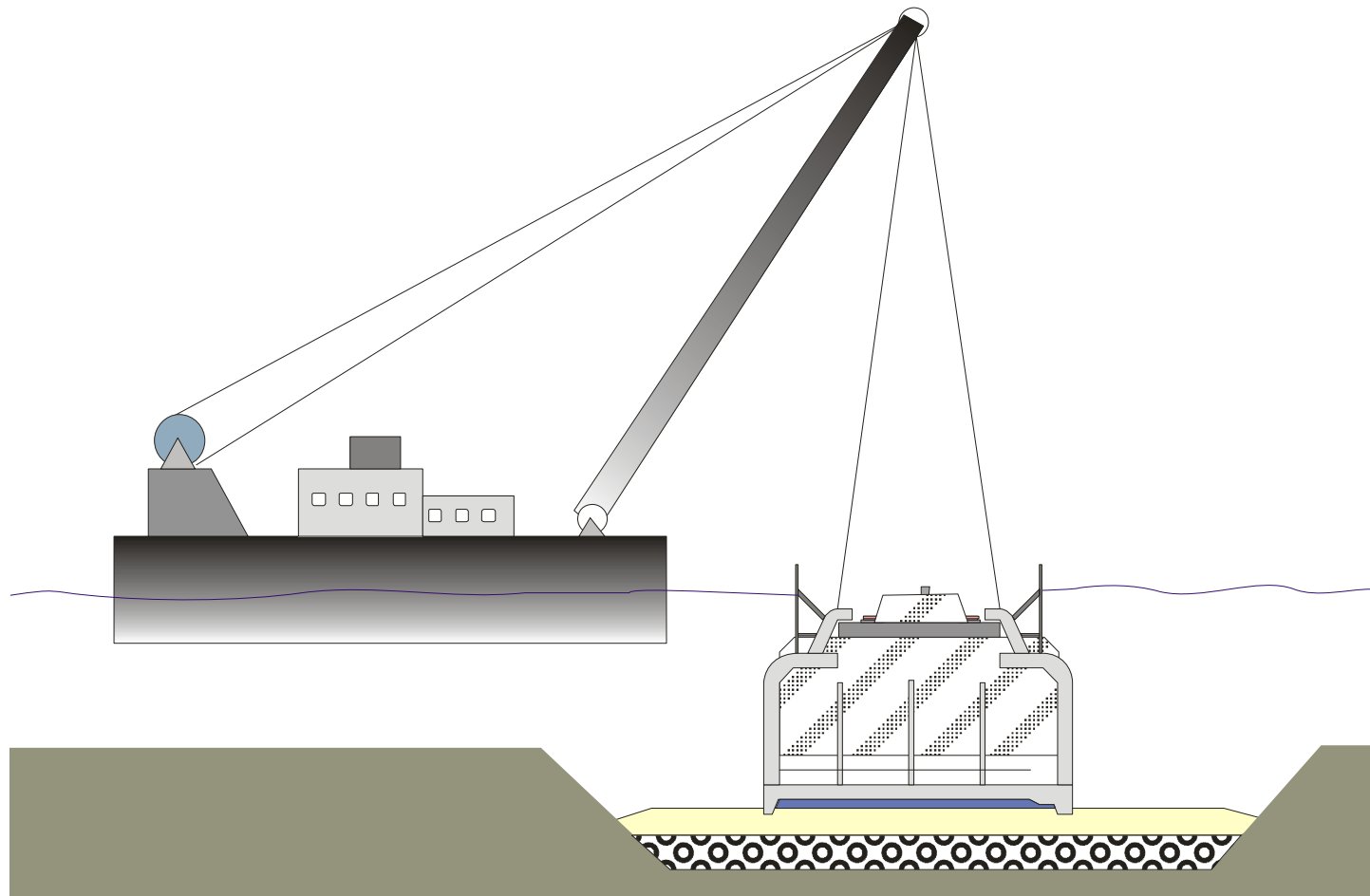
### Survey System for Towing & Placing



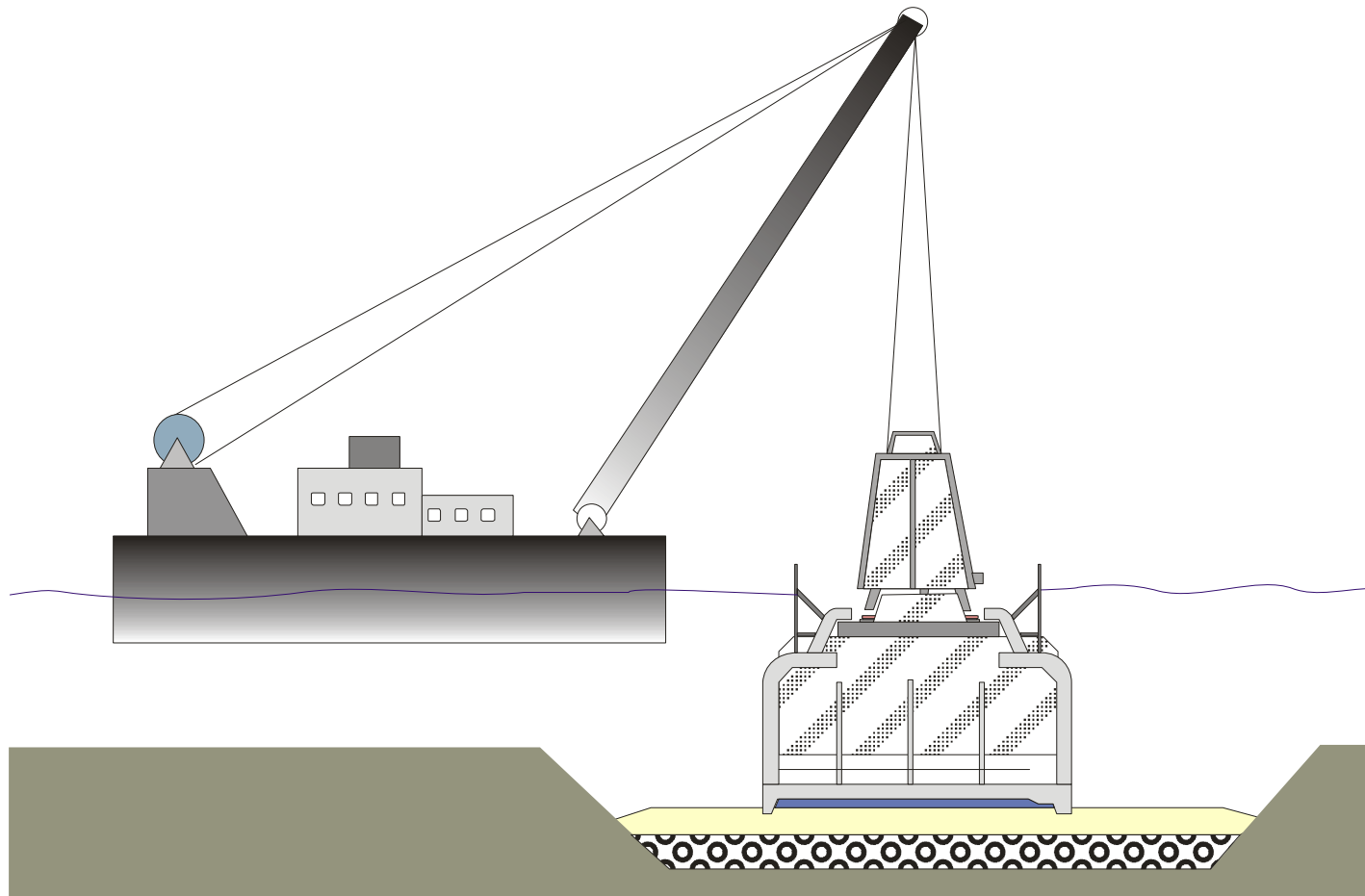
## Plazierungsinformationen am Bildschirm



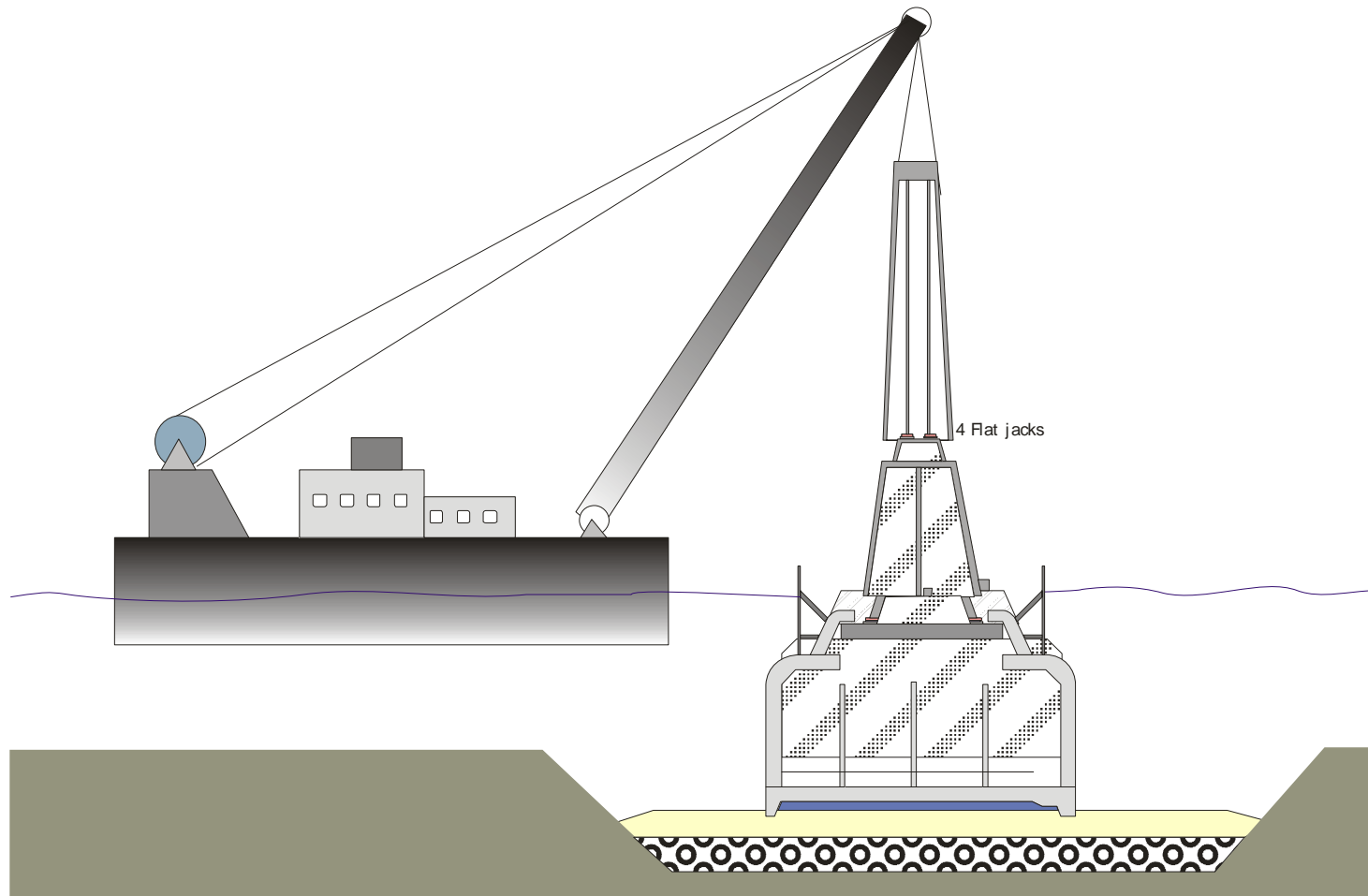
## Schema Plazierung der Senkkästen

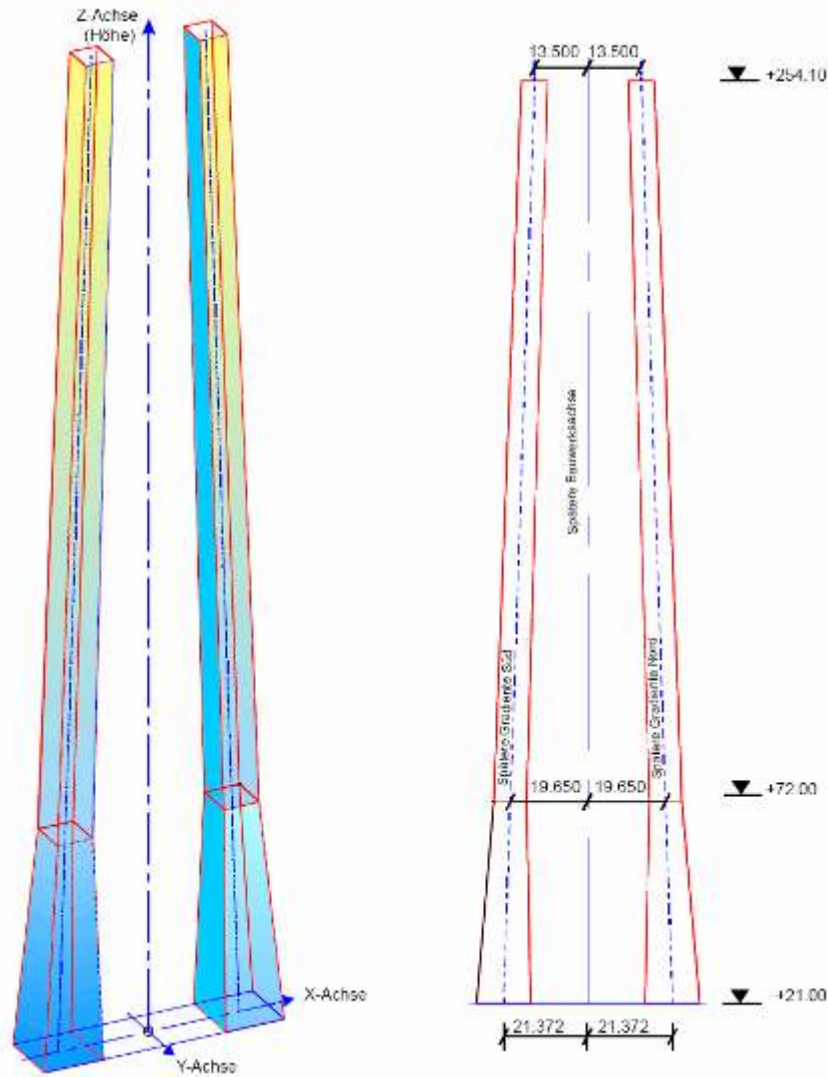


## Schema Plazierung der unteren Brückenpfeiler



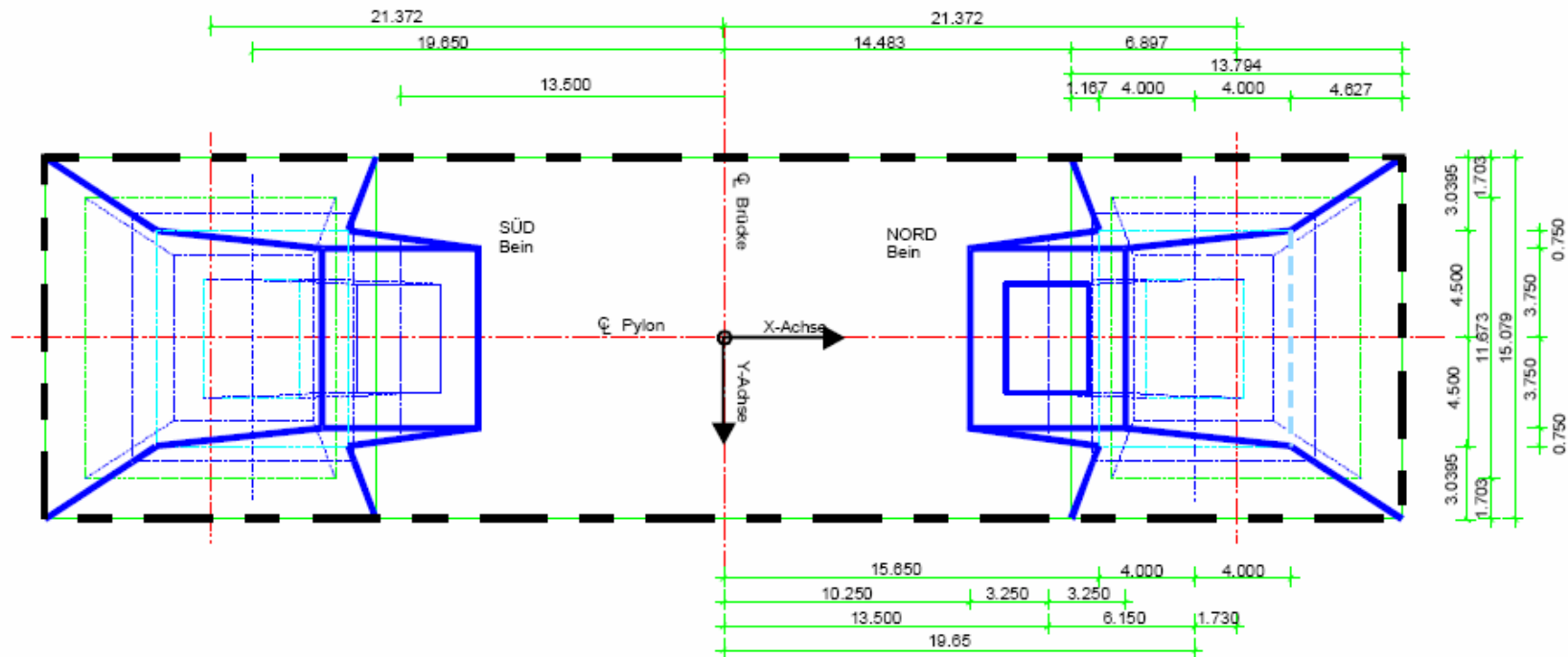
## Schema Plazierung der oberen Brückenpfeiler



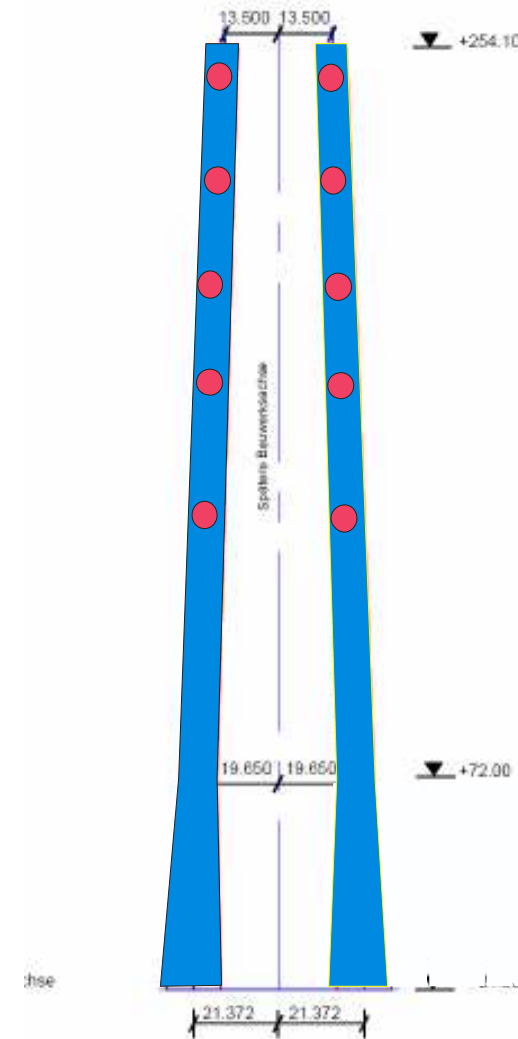


## Schematische Darstellung der Pylone

## Schematische Darstellung der Pylone-Draufsicht



# Pylon Monitoring



## Pylon Monitoring



## Pylon Monitoring



## GBC GREAT BELT CONTRACTORS

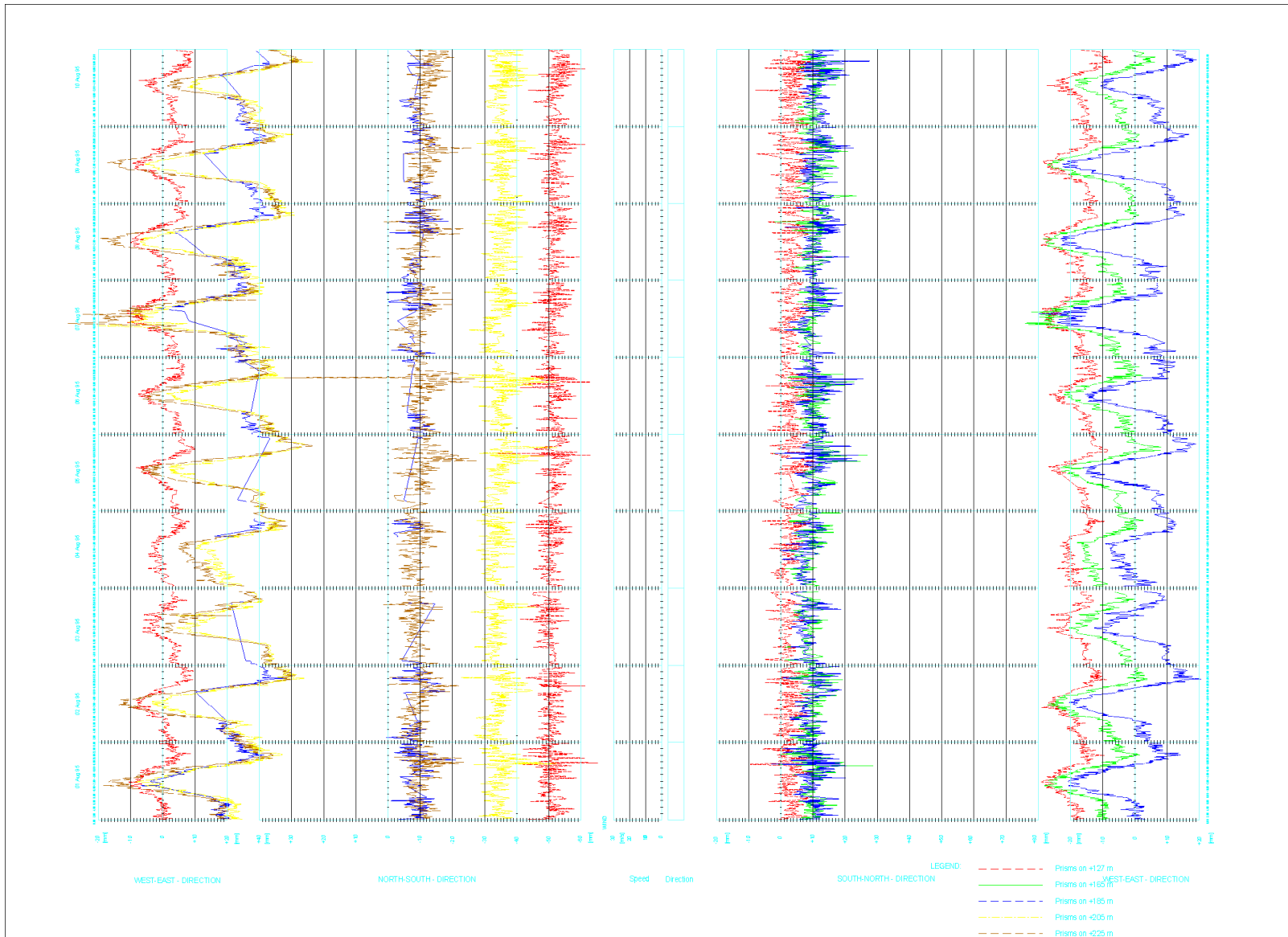
Survey Section

### PYLON 16 Monitoring

PnNo	Time	HAngle	VAngle	SDist	East	North	Elev.	dE	dN
1612	14:52	397.8078	80.4085	537.892	6.592	-13.592	174.055	+3	+5
1615	14:49	396.9258	85.9200	527.998	4.368	-20.808	126.950	-6	-0
1625	14:53	2.0671	85.9151	527.716	4.352	20.772	126.928	-22	-10
1610	14:54	0.0009	98.8298	511.339	7.669	4.065	20.522	+0	+0
1611	14:57	397.1702	80.4231	538.019	6.632	-18.727	173.976	+5	+10
1612	14:57	397.8079	80.4090	537.892	6.590	-13.589	174.051	+2	+8
1615	14:54	396.9267	85.9196	527.998	4.368	-20.798	126.954	-6	+10
1617	14:56	397.0527	81.5717	537.612	4.212	-19.785	164.583	-7	-6
1625	14:59	2.0671	85.9153	527.716	4.352	20.775	126.927	-22	-7
1610	14:59	0.0005	98.8303	511.339	7.669	4.065	20.518	+0	+0
1611	15:01	397.1698	80.4230	538.018	6.633	-18.727	173.977	+6	+10
1612	15:02	397.8073	80.4088	537.890	6.593	-13.591	174.052	+5	+7
1615	15:00	396.9265	85.9196	527.997	4.369	-20.797	126.954	-5	+11
1617	15:01	397.0523	81.5720	537.614	4.210	-19.785	164.581	-9	-6
1625	15:04	2.0664	85.9146	527.716	4.353	20.772	126.932	-21	-10
1610	15:05	0.0010	98.8303	511.339	7.669	4.065	20.518	+0	+0
1611	15:07	397.1701	80.4217	538.019	6.636	-18.728	173.988	+9	+8
1612	15:08	397.8074	80.4086	537.891	6.592	-13.594	174.054	+4	+3
1615	15:05	396.9266	85.9194	527.996	4.371	-20.800	126.955	-3	+8
1617	15:06	397.0536	81.5721	537.614	4.209	-19.778	164.580	-10	+1
1610	15:09	0.0010	98.8304	511.339	7.669	4.065	20.517	+0	+0
1611	15:11	397.1699	80.4230	538.018	6.634	-18.730	173.977	+6	+7
1612	15:12	397.8075	80.4085	537.890	6.594	-13.593	174.055	+5	+4
1615	15:10	396.9266	85.9196	527.996	4.370	-20.800	126.953	-4	+8
1625	15:13	2.0667	85.9151	527.716	4.352	20.771	126.928	-22	-11
1610	15:14	0.0006	98.8306	511.339	7.669	4.065	20.516	-0	+0
1611	15:16	397.1704	80.4233	538.018	6.633	-18.723	173.974	+5	+14
1612	15:17	397.8081	80.4086	537.891	6.592	-13.585	174.054	+4	+12
1615	15:14	396.9261	85.9194	527.996	4.371	-20.801	126.955	-3	+7
1617	15:16	397.0531	81.5723	537.612	4.211	-19.779	164.578	-8	-0
1625	15:18	2.0665	85.9147	527.715	4.354	20.772	126.931	-20	-10

Auszug aus den  
justierten  
Beobachtungen

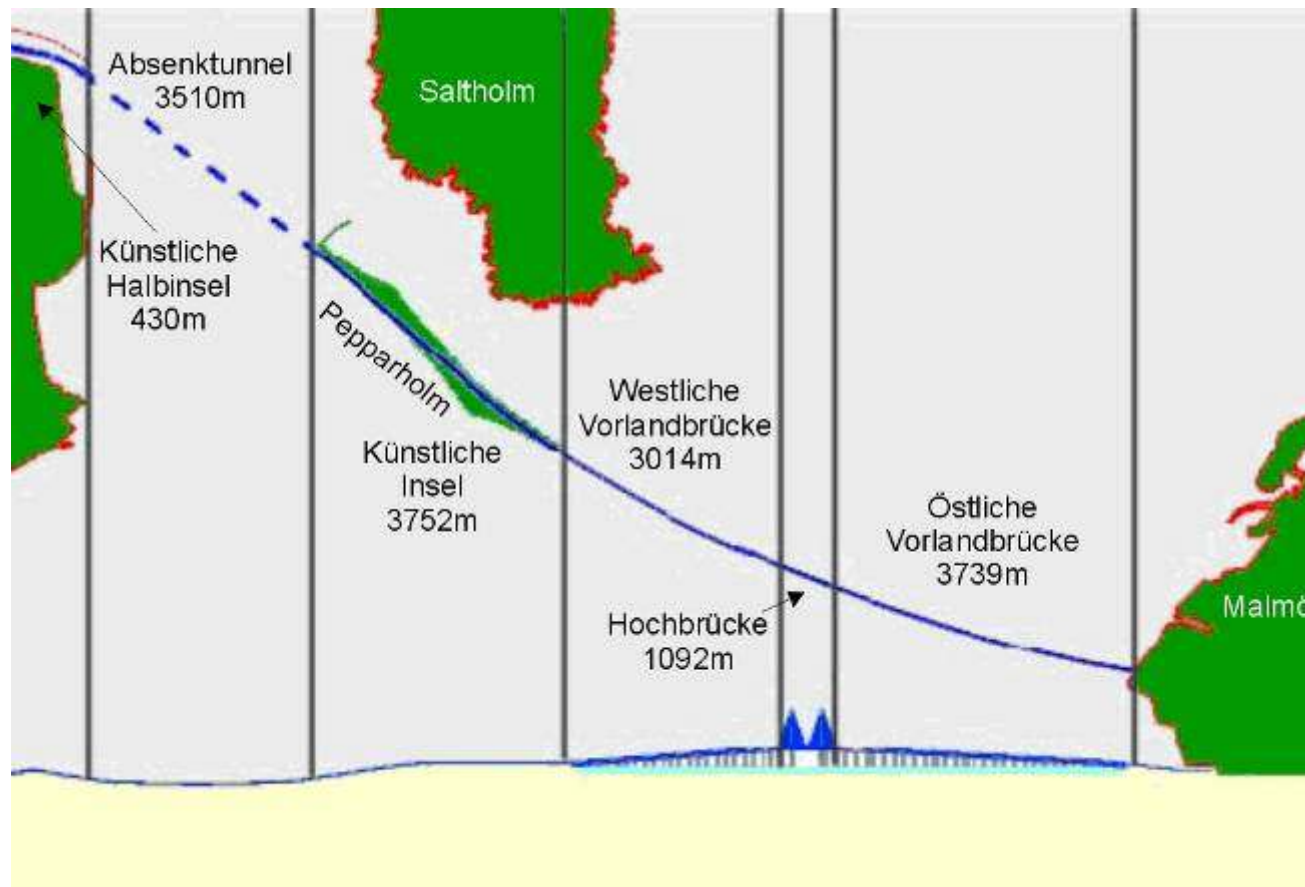




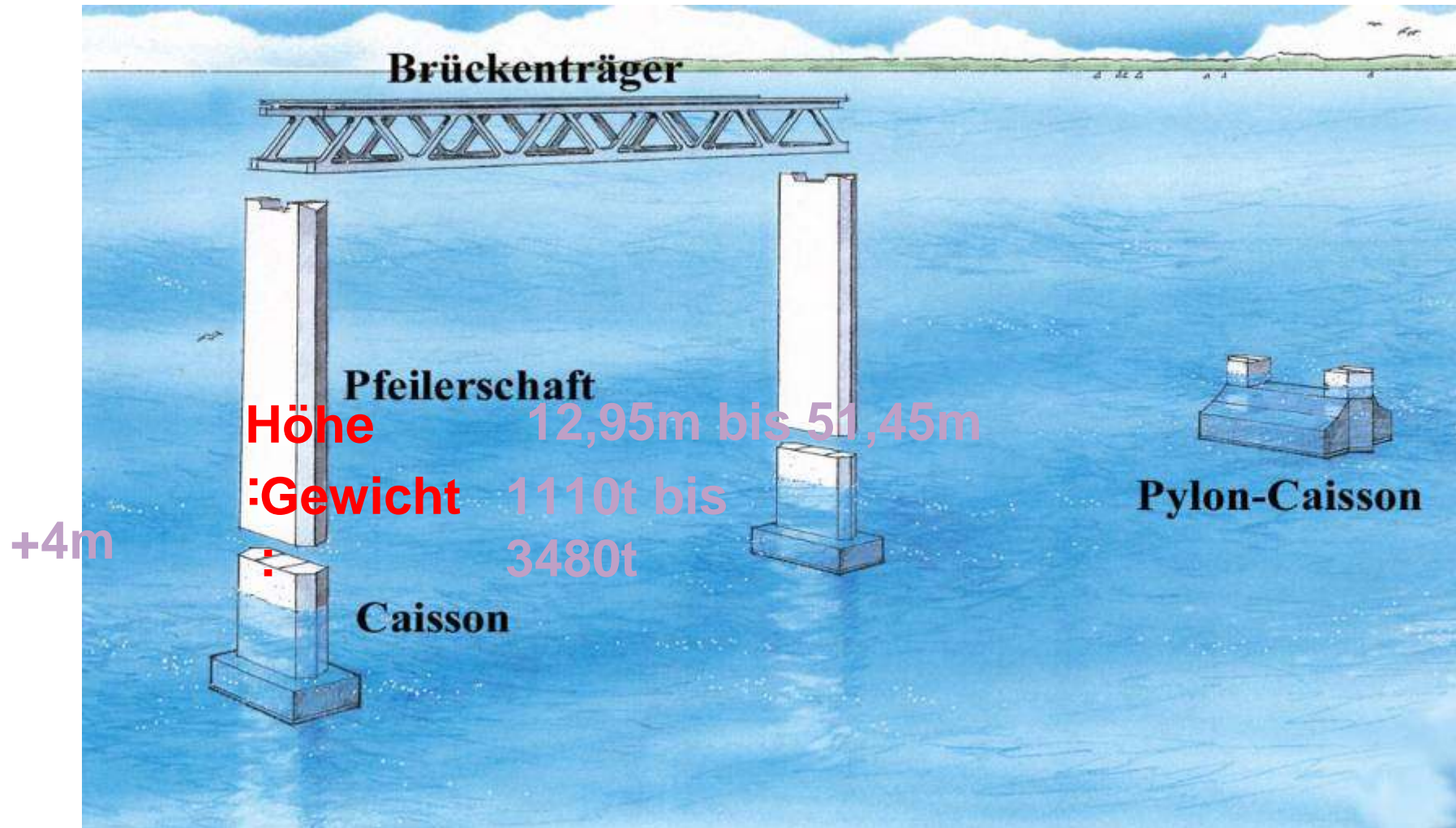




## Brückenbauwerke in der Öresundverbindung



## Aubau Prinzip der Brücke



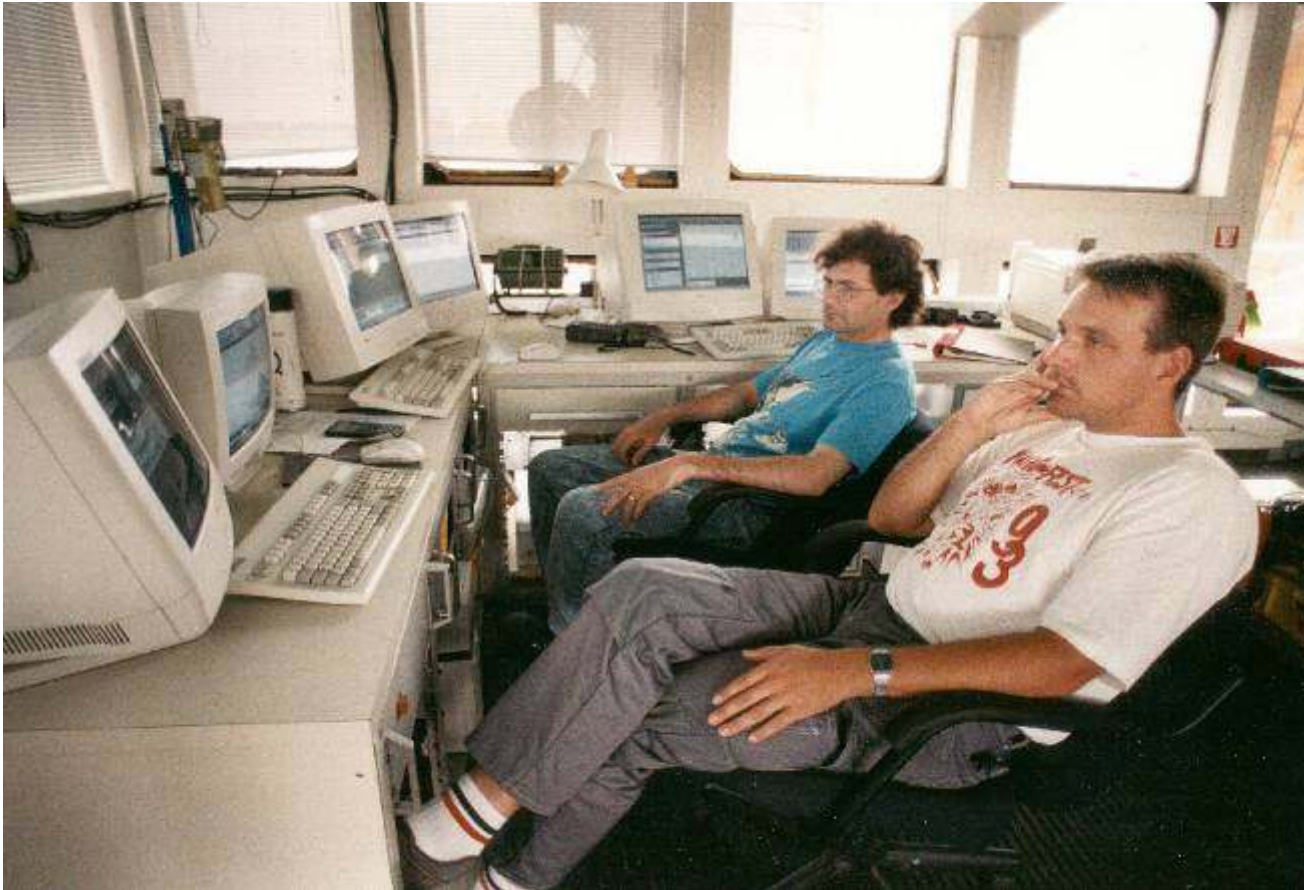
## Plazierung eines Pfeilerschafts



## Plazierung eines Vorlandbrückenträgers

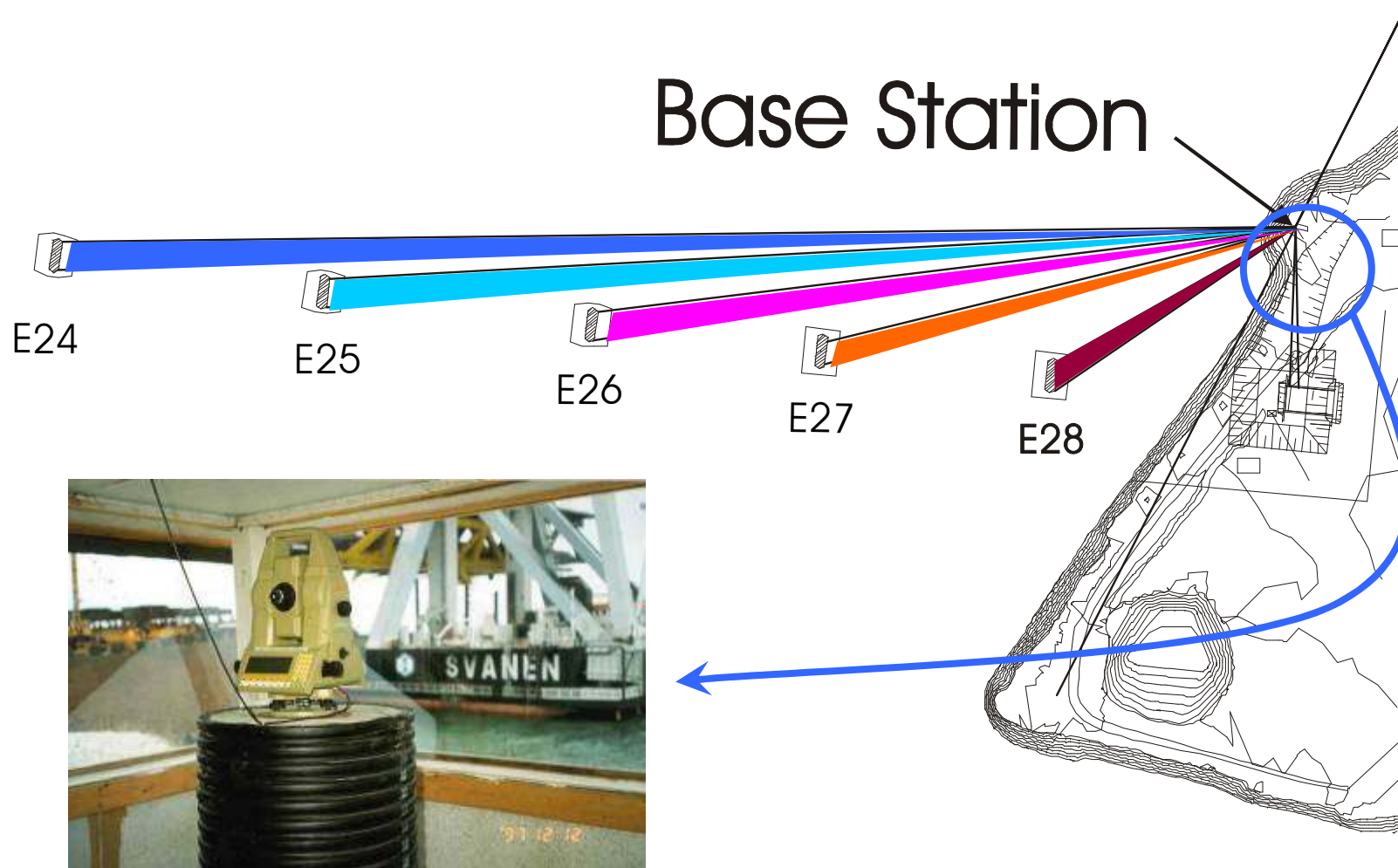


## Vermessungsbüro auf dem Schwimmkran

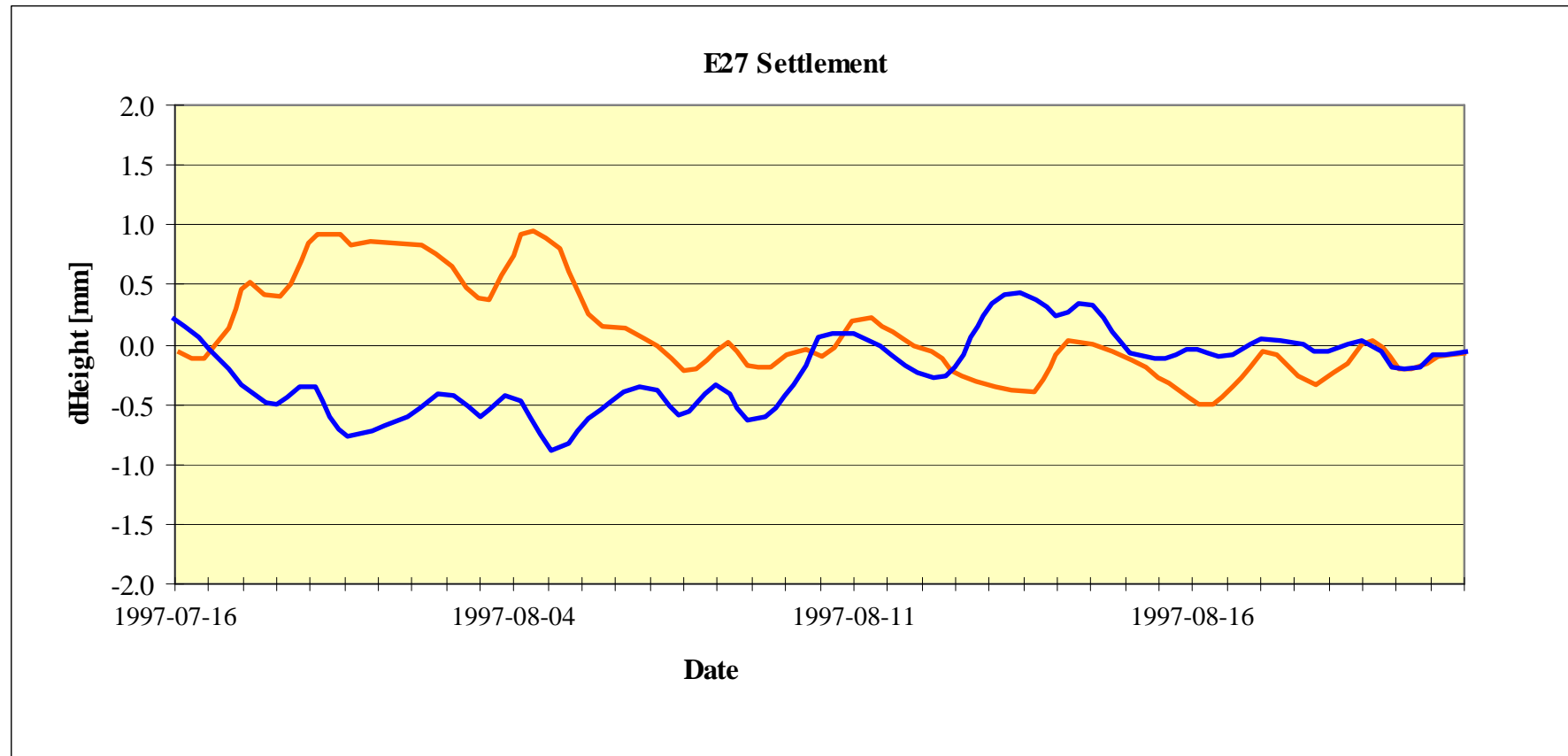


3 voneinander unabhängige Systeme beim Platzieren der Elemente und Navigation des Schwimmkrans

## Lageskizze Setzungsmessungen



## Setzungsdiagramm



## Östliche Vorlandbrücke und Hochbrücke



# Über den Wolken

