CORINTH PIPEWORKS
PIPE INDUSTRY S.A.

- **LOGISTIC PLANS FOR TRANSPORT AND STORAGE;**

Please refer to the below enclosed project logistics plan. It demonstrates the approach for execution of the activities, the specific tasks and steps in their sequence, coordination and mutual interdependence which are in conformity with the features of the Technical specification and the technical solutions for execution. The proposed approach for execution will lead to the qualitative and timely completion of the procurement.

We apply a transportation management system (TMS) incorporated in our Project Management practices, that deals with four important operations, namely Planning, Execution, Follow-up and Measurement.

Our practices address all detailed stages of transportation:

- Optimization
- Route planning
- Yard administration
- Order visibility
- Delivery

CORINTH PIPEWORKS S.A.

HEAD OFFICES: [illegible]
CORPORATE HEADQUARTERS: [illegible]
Tel.: +30 210 6787 [illegible] Fax: +30 210 6787 520 email: info@cpw.gr
General Commercial Registry No: 003470101000
VAT Number: EL 099362125
Tax Office: FAE Athens

CORINTH PIPEWORKS
PIPE INDUSTRY S.A.

LOGISTICS PLAN

CORINTH PIPEWORKS S.A.

HEAD OFFICES: 2-4 Mesogeion Av., 115 27 Athens, Greece
CORPORATE HEADQUARTERS: 33, Amarousiou-Halandriou Str., GR-15125, Marousi, Athens, Greece
Tel: +30 210 6787 111, fax: +30 210 6787 520 / email: info@cpw.gr

General Commercial Registry No: 003978301000
VAT Number: EL 099362325
Tax Office: FAE Athens

CORINTH PIPEWORKS
PIPE INDUSTRY S.A.

CPW ***DELIVERY SCHEDULE*** ***FROM THE COMMENCEMENT DATE***

OVERALL DELIVERY PERIOD ***10 FULL MONTHS FROM THE COMMENCEMENT DATE***

NO. PERIODS	DELIVERY PERIOD	QUANTITY % OF METERS LENGTHS	COMMENTS
1st	Up to the 4th full month	25%	Includes 50% of the pipes for cold bends (SAWL)
2nd	Up to the 6th full month	25%	Includes 50% of the pipes for cold bends (SAWL)
3rd	Up to the 8th full month	25%	
4th	Up to th 10th full month	25%	Includes the emergency stock

Note: The calendar month of the Commencement Date is not included in the calculation of the Delivery Period

HEAD OFFICES: 2-4 Mesogeion Av., 115 27 Athens, Greece
CORPORATE HEADQUARTERS: 33, Amarousiou-Halandriou Str., GR-15125, Marousi, Athens, Greece
Tel: +30 210 6787 111, fax: +30 210 6787 520 / email: info@cpw.gr

General Commercial Registry No: 003978301000
VAT Number: EL 099362325
Tax Office: FAE Athens

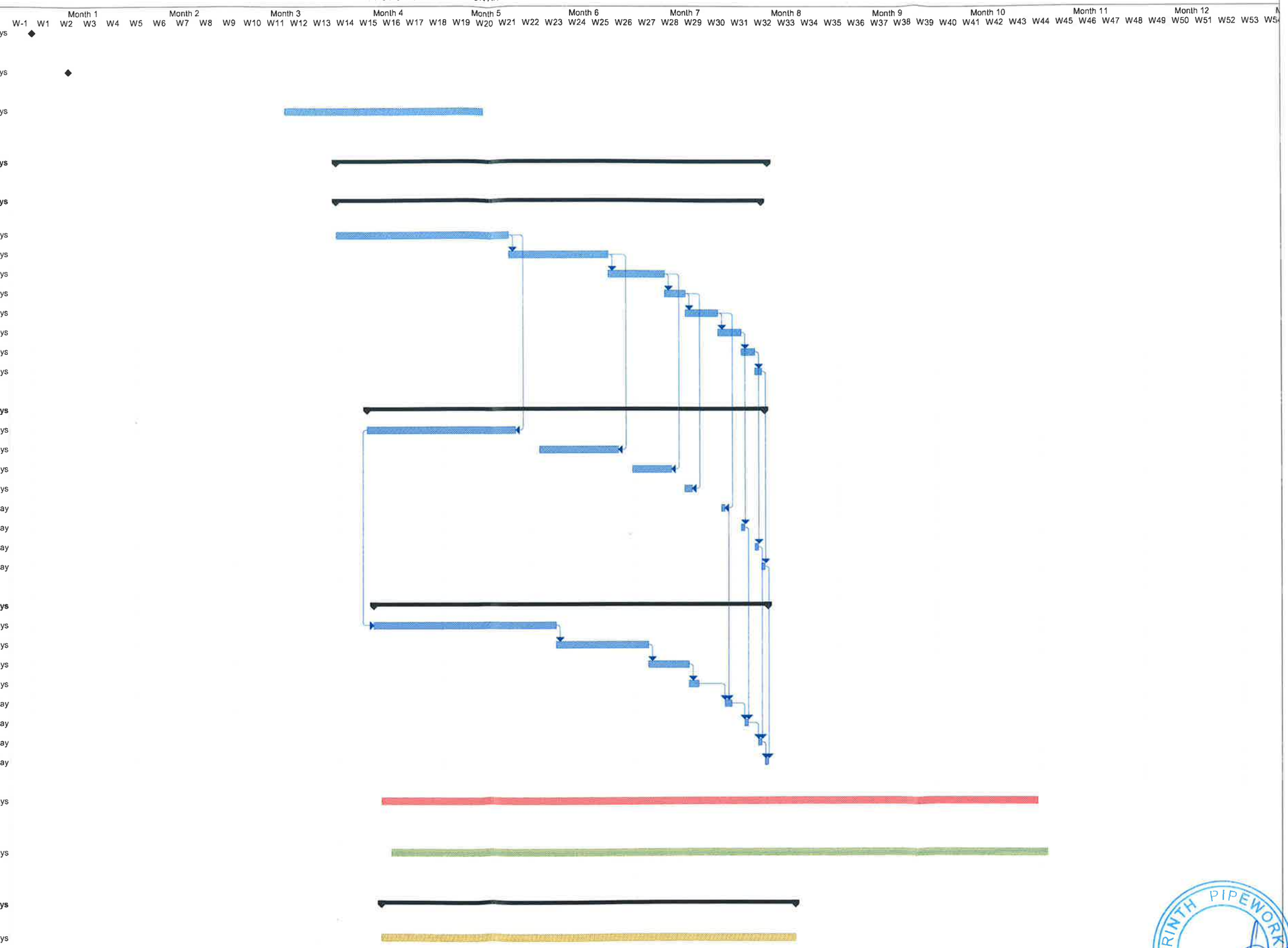
CORINTH PIPEWORKS S.A.

CORINTH PIPEWORKS S.A.

ВРЕМЕННО ПРОГРАМА ЗА ПРОИЗВОДСТВО И ДОСТАВКА

PROVISIONAL PRODUCTION AND DELIVERY SCHEDULE

ID	Task Name	Duration
1	**ПРИЕМАНЕ НА ПОРЪЧКИ - PO PLACEMENT**	0 days
2		
3	**ПОРЪЧВАНЕ НА СТОМАНА - STEEL ORDERING**	0 days
4		
5	**РАЗТОВАРВАНЕ НА ПРИСТИГНАЛА СТОМАНА - STEEL ARRIVAL UNLOADING**	60 days
6		
7	**TOTAL PRODUCTION PERIOD**	**130,38 days**
8		
9	**ПРОИЗВОДСТВО НА НЕПОКРИТИ ТРЪБИ - BARE PIPE PRODUCTION**	**109,5 days**
10	32"x11,00mm-L450ME-91.300m-PE/E-SAWH	44,3 days
11	32"x14,20mm-L450ME-43.687m-PE/E-SAWH	25,8 days
12	32"x16,00mm-L450ME-20.476m-PE/E-SAWH	14 days
13	32"x20,00mm-L450ME-5.295m-PE/E-SAWH	5,7 days
14	32"x11,00mm-L450ME-13.345m-PE/E-LSAW	8,4 days
15	32"x14,20mm-L450ME-8.935m-PE/E-LSAW	5,9 days
16	32"x16,00mm-L450ME-3.593m-PE/E-LSAW	3,4 days
17	32"x20,00mm-L450ME-1.017m-PE/E-LSAW	2 days
18		
19	**ВЪНШНО ПОКРИТИЕ - EXTERNAL COATING**	**102,68 days**
20	32"x11,00mm-L450ME-91.300m-PE/E-SAWH	38,6 days
21	32"x14,20mm-L450ME-43.687m-PE/E-SAWH	19,4 days
22	32"x16,00mm-L450ME-20.476m-PE/E-SAWH	9,3 days
23	32"x20,00mm-L450ME-5.295m-PE/E-SAWH	2,5 days
24	32"x11,00mm-L450ME-13.345m-PE/E-LSAW	1 day
25	32"x14,20mm-L450ME-8.935m-PE/E-LSAW	1 day
26	32"x16,00mm-L450ME-3.593m-PE/E-LSAW	1 day
27	32"x20,00mm-L450ME-1.017m-PE/E-LSAW	1 day
28		
29	**ВЪТРЕШНО ПОКРИТИЕ -INTERNAL COATING**	**101,68 days**
30	32"x11,00mm-L450ME-91.300m-PE/E-SAWH	46,8 days
31	32"x14,20mm-L450ME-43.687m-PE/E-SAWH	23,5 days
32	32"x16,00mm-L450ME-20.476m-PE/E-SAWH	10,8 days
33	32"x20,00mm-L450ME-5.295m-PE/E-SAWH	2,8 days
34	32"x11,00mm-L450ME-13.345m-PE/E-LSAW	1 day
35	32"x14,20mm-L450ME-8.935m-PE/E-LSAW	1 day
36	32"x16,00mm-L450ME-3.593m-PE/E-LSAW	1 day
37	32"x20,00mm-L450ME-1.017m-PE/E-LSAW	1 day
38		
39	**ТРАНСПОРТИРАНЕ С ЖЕЛЕЗОПЪТЕН ТРАНСПОРТ - TRANSPORTATION BY RAIL**	198 days
40		
41	**ТРАНСПОРТИРАНЕ С КАМИОН - TRANSPORTATION BY TRUCK**	198 days
42		
43	**АЛТЕРНАТИВ: ДОСТАВКА НА БЪРЗОТО ПЪТ ALTERNATIVE: FAST TRACK DELIVERY**	**125 days**
44	ТРАНСПОРТИРАНЕ С КОРАБ/ЖЕЛЕЗОПЪТЕН ТРАНСПОРТ/КАМИОН - TRANSPORTATION BY VESSEL/RAIL/TRUCK	125 days



Project: IGB
Date: Wed 27/6/18

Task		Summary		External Milestone		Inactive Milestone		Duration-only		Start-only		External Milestone	
Split		Project Summary		Inactive Task		Inactive Summary		Manual Summary Rollup		Finish-only		Progress	
Milestone		External Tasks		Inactive Milestone		Manual Task		Manual Summary		External Tasks		Deadline	

CORINTH PIPEWORKS S.A.

CORINTH PIPEWORKS S.A.	QUALITY MANAGEMENT SYSTEM	CORINTH PIPEWORKS S.A. Date Issued: 05/02/18 Date Revised: - Date Valid: 05/02/18

TITLE	**LOGISTICS & TRANSPORT MANAGEMENT DEPARTMENT LOGISTICS PLAN**
PROCEDURE No	**CPW-PLTP-002-2018**
REVISION No	**0**
PRODUCTION LINE	**SAWH / SAWL / TCP48 / TCP100 / TLP56/ YARD/ PORT**
RECIPIENTS	PLANT DIRECTOR
	DEPUTY PLANT DIRECTOR
	COMMERCIAL DIRECTOR
	QUALITY DIRECTOR
	ADMINISTRATIVE DIRECTOR

	ISSUED	REVIEWED	APPROVED
NAME	**E. MITROPOULOS** PROJECT MANAGEMENT SENIOR MANAGER	**K. MOSCHAKIS** LOGISTICS MANAGER	**K. MOSCHAKIS** LOGISTICS MANAGER
SIGNATURE			

CORINTH PIPEWORKS S.A.

Revision History

Rev. No	*Date*	*Change Description*
0	5/2/2018	*Initial Release*

Logistics & Transport Management Plan Index

1. INTRODUCTION 4

1.1 Scope of Transportation and Delivery 4

2. LOGISTICS OPERATIONS AT CPW THISVI PREMISES & THIVA RAILWAY STATION 6

2.1 Internal Handling within the Thisvi yard 6
2.2 Storage within the Thisvi yard 7
2.3 Loading onto trucks for destinations beyond Thisvi yard 7
2.4 Loading of pipes on Railway wagons at Thiva Train Station 8
2.5 The Thisvi Port (Contingency plan, optional) 10
2.6 Loading from trucks into Vessel Holds (Contingency plan, optional) 10

3. LOGISTICS OPERATIONS UPON ARRIVAL AT DESTINATION RAILWAY STATIONS OR (ALTERNATIVELY) PORTS 13

3.1 Unloading of pipes at the final railway station(s) – Loading on Trucks 13
3.2 Contingency plan: Unloading of pipes at destination ports – Loading on Trucks 13
3.3 Possible intermediate storage in Bulgaria at Stomana's Premises 14
3.4 Transportation by Trucks 14

4. TRANSIT TIMES – MAIN DATA 15

4.1 Transportation by Railway 15
4.2 Contingency Plan: Transportation by Vessels from Thisvi port 15

5. PIPE TRACKING SYSTEM 15

6. APPENDIX A – TABLES AND FIGURES 17

Table A.1 – SCOPE OF SUPPLY 18
TABLE A.2 – MAX. NUMBER OF LAYERS PER STOWAGE ARRANGEMENT 18

7. APPENDIX B (RAILWAY INFORMATION – GREECE AND BULGARIA) 19

CORINTH PIPEWORKS S.A.

1. INTRODUCTION

The purpose of this document is to describe the methods and practices that Corinth Pipeworks S.A. (CPW) will apply for handling and transportation of the contractual quantities of line pipe to their final destinations, for the Gas Interconnector Greece-Bulgaria project.

Logistics operations to achieve final delivery at the agreed locations is recognised as one of the main and critical stages of the project.

1.1 Scope of Transportation and Delivery

The volume of the project necessitates the use of multimodal transportation that consists of the following stages:

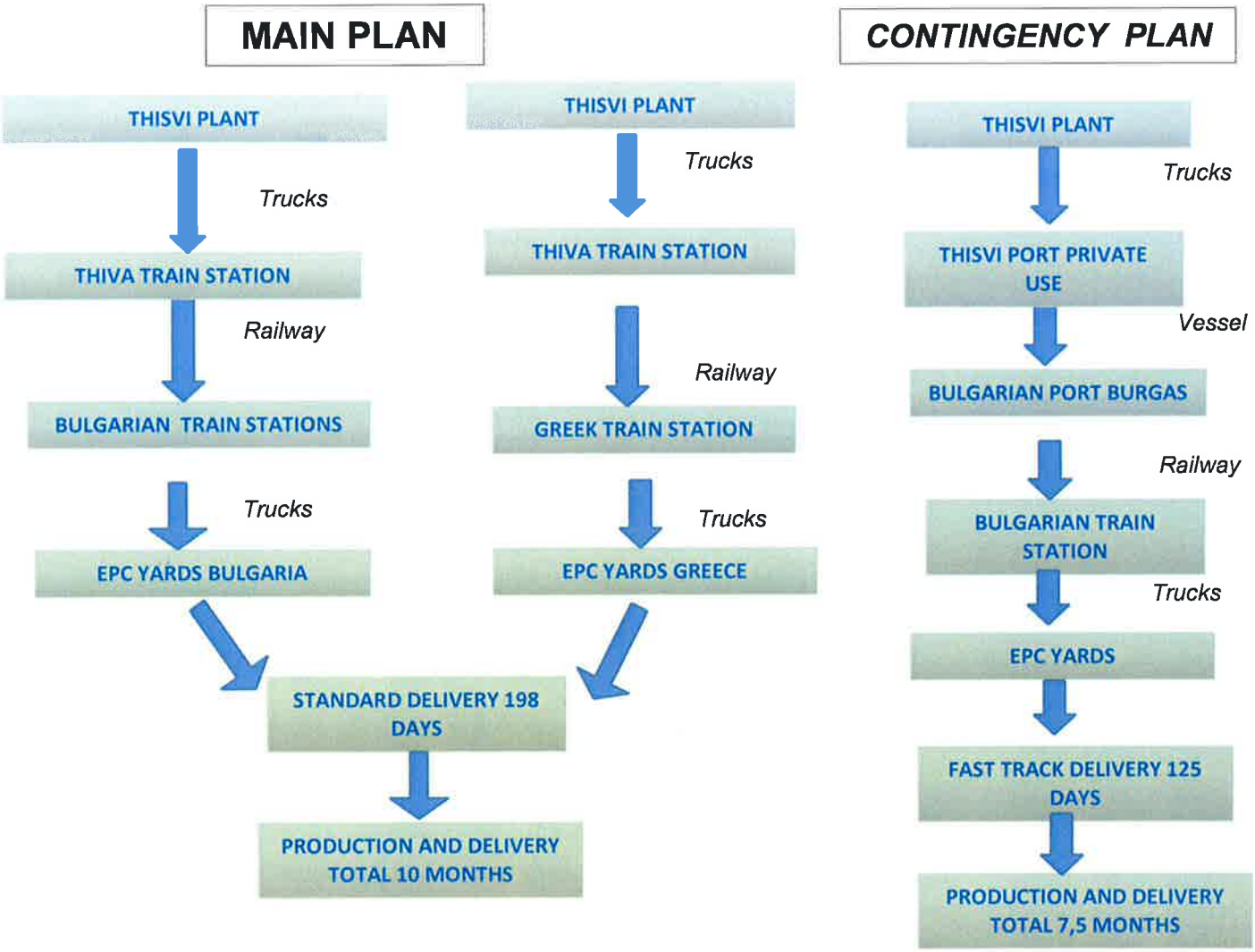
1. Loading of the pipes from the supplying facilities onto trucks.
2. Multimodal transportation : Loading from the factory on trucks to Thiva Railway station. Railway transportation and finally reloading on trucks to final destination.

Railway transportation will be born by the National Railway service in Greece and in Bulgaria by "BDZ Cargo" which is the state railway freight operator (see Appendix B for details).

As part of our risk assessment procedures, we also have in place an alternative logistics pathway, in case this will be required for risk mitigation (in parallel or as alternative to our main plan): Loading into Vessels from CPW's own port (Thisvi Port). At a second stage, truck transportation to the final destination.

Transportation by all modes will be covered by Clause A insurance (all risks).

IGB – Delivery Plan/ Delivery Schedules

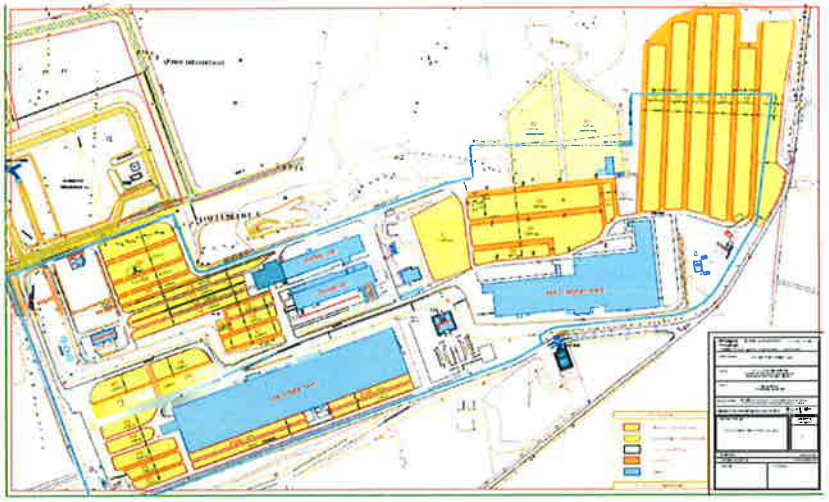


The combination of CPW Production Capacity and the efficient Delivery Plan secure the elimination of time Risk for the IGB Project

CORINTH PIPEWORKS S.A.

2. LOGISTICS OPERATIONS AT CPW THISVI PREMISES & THIVA RAILWAY STATION

The storage yard of the CPW Thisvi Plant in Viotia Greece is the main storage location of finally accepted products produced at CPW-Greece, ready to be transported towards final destinations.



It covers an open area of approx. 400,000m^2 . It is ideally suit for handling and storage of the project pipes and it offers a first class buffer, adequate enough to absorb all "fluctuations" of the project that will be necessary to ensure a smooth delivery process.

2.1 Internal Handling within the Thisvi yard

Handling within CPW's Thisvi yard is done by:

1. Appropriate lifting equipment of suitable capacity
2. and/or side forklifts

Bare pipes, either as a final product or as semifinal entity (meant for further coating), are stacked at Thisvi yard. Their transportation from the pipe mill's exit ramps to the pile is done via trucks with side stanchions and/or specialised side forklifts. Unloading at the point of stowage is done via appropriate and certified lifting equipment.

At the time of coating, the bare pipes from their intermediate stack will be loaded on trucks and/or forklifts and introduced to the coating lines.

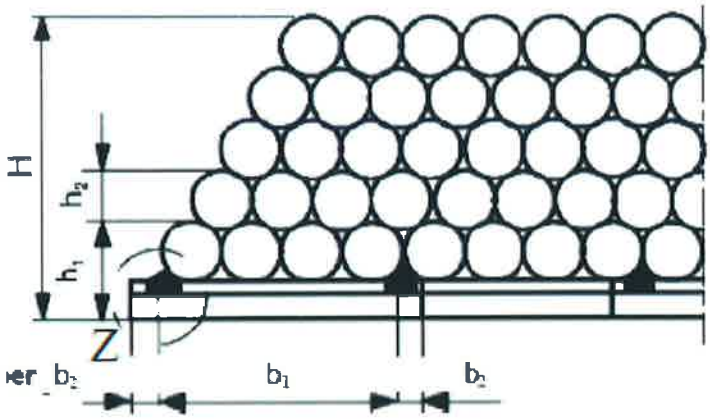
The operators will be trained and advised, as per the relevant internal procedures and work instructions. The pipes must be handled at all times and transported within the yard with special care to avoid damages.

All the skids or platforms onto which the pipes are transported after production should not have any sharp points or other hard surfaces that can damage the pipes. During internal transportation of coated pipes, the contact points between the pipes and any kind of platform shall be suitably padded. Naked wire ropes for lifting will not be used.

The personnel in the yard must take special care so that the lifting equipment is freed and removed slowly, to avoid damages on the pipes.

CORINTH PIPEWORKS S.A.

2.2 Storage within the Thisvi yard



The pipes in the yard will be stored in the "pyramid" way, on top of base dunnage wood.

Max number of layers shall be as follows:

Pipe O.D. (in)	Max number of layers
32"	4

2.3 Loading onto trucks for destinations beyond Thisvi yard

CPW privately operates a port located at a distance of 1.5km from the main storage yard.

The Thiva railway station is located at a distance of approx. 35 kms from the main storage yard.

The products from the storage yard to these intemediate main stations are transported by trucks.

During the loading activities, onto trucks, the following measures apply so that the surface of the pipes is protected:

- The lifting equipment is properly protected to prevent damage on the pipes during contact. In case such protection is worn out, it will be replaced.
- The body/trailer of the trucks is clean and does not have any metal or other sharp edges or objects.
- The side stanchions of the trucks are protected on the parts where they come in contact with the pipes, by rubber sheet or polyethylene cover.

2.4 Loading of pipes on Railway wagons at Thiva Train Station

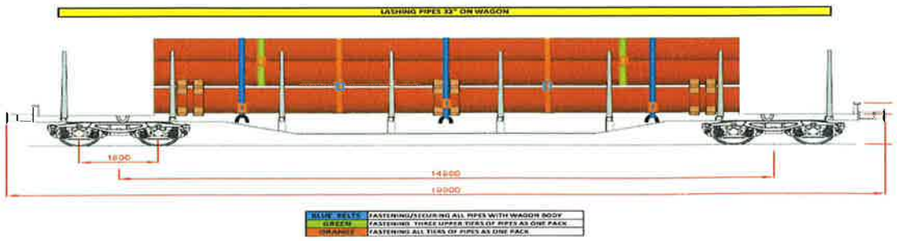
Pipes are in principle unloaded directly from arriving trucks onto the railway wagons. In case this is required for smooth operations, a small buffer on ground will be also created.

Pipes are secured via suitable wooden bases/cradles and lashing shall be performed by straps, as per RIV regulations.

In Figure 3, typical arrangements from past projects and actual operations at Thiva Train station are presented for simlar size pipes.

Figure 3 – Loading activities at Thiva Railway station

In Figure 4, methods of stowage and lashing of 32" pipes on the wagons are demonstrated, for 12m and 18m long pipes.



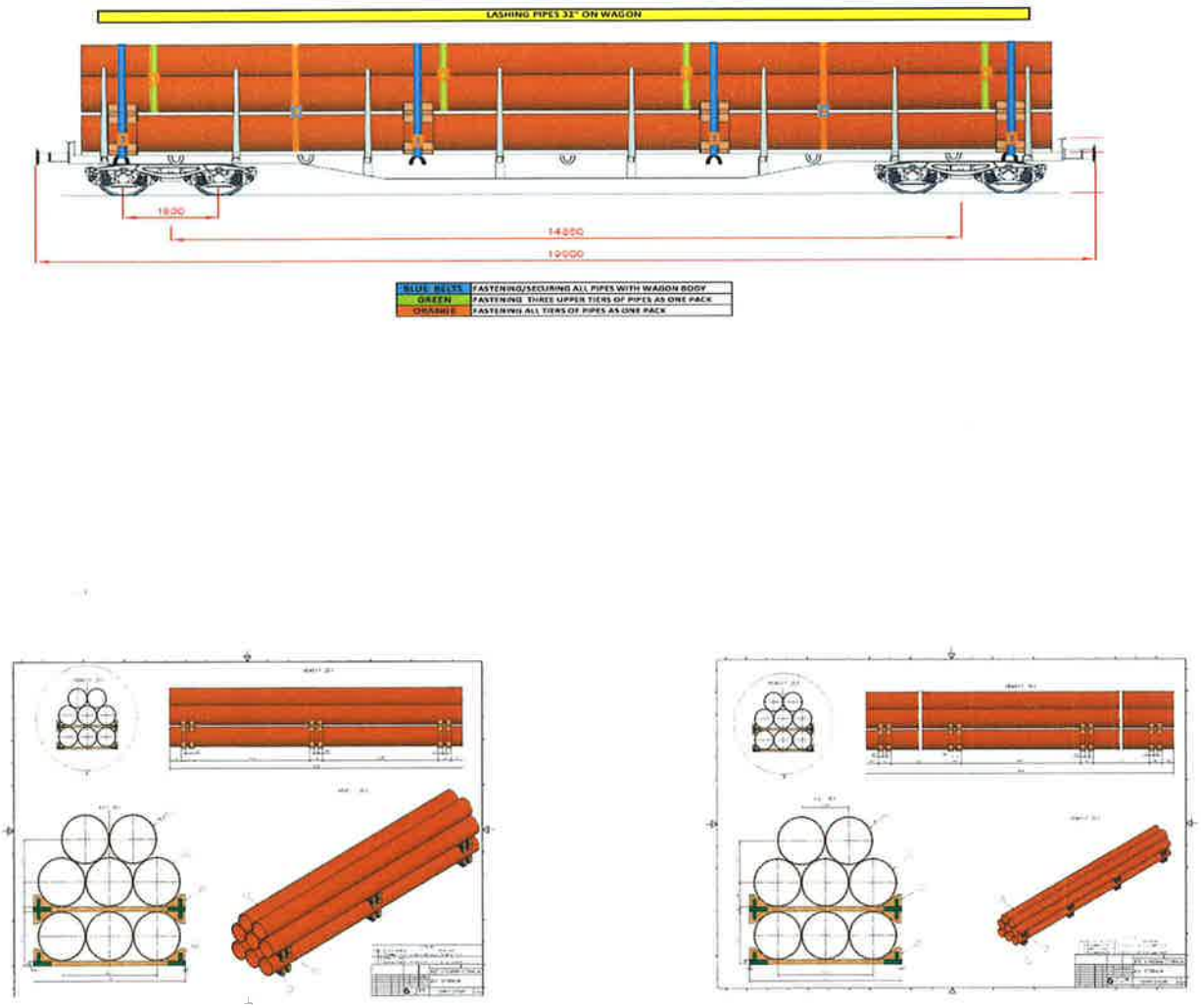


Figure 4 – Stowage and lashing configuration on wagons – 32" pipes (12m and 18m nominal lengths)

CORINTH PIPEWORKS S.A.

2.5 The Thisvi Port (Contingency plan, optional)

CPW privately operates a port located at a distance of 1.5km from the main storage yard. Two main docks are available and the port can handle ships of up to ≈200m length.

Figure 5- Thisvi Port

The piers for discharging / loading are as follows:

Berth "A" (ALPHA): Depth 11,10 m Length 205 m
Berth "Γ" (GAMMA): Depth 9,50 m Length 90 m.

- There are no restrictions concerning Beam & Air Draft
- Pilot boarding position is located at the East point (Red light) of Fonias Island, between Fonias & Groboloura Islands position Lat: 38°10'5" N / Long: 022°58'5" E and Master should watch on VHF Channel 16
- Anchorage position place: Vathi bay
Lat: 38° 12' 59" N / Long: 22° 55' 48" E
- Pilotage / Towage compulsory

2.6 Loading from trucks into Vessel Holds (Contingency plan, optional)

The discharging of pipes from the trucks will be carried out by vessel. Maximum number of lifted pieces at once per gang is defined by the lifting equipment limits and best practices to achieve the optimum loading rate, in accordance also with our relevant procedures and work instructions.

The lifting equipment used will be properly protected/padded to avoid damage on the products. In case the protection is worn out, a replacement will be used.

Great care should be taken when lowering pipes into the ship holds to avoid damages on the body of the pipes against the ship hatch comings, bulkheads, Australian ladders or other constructions.

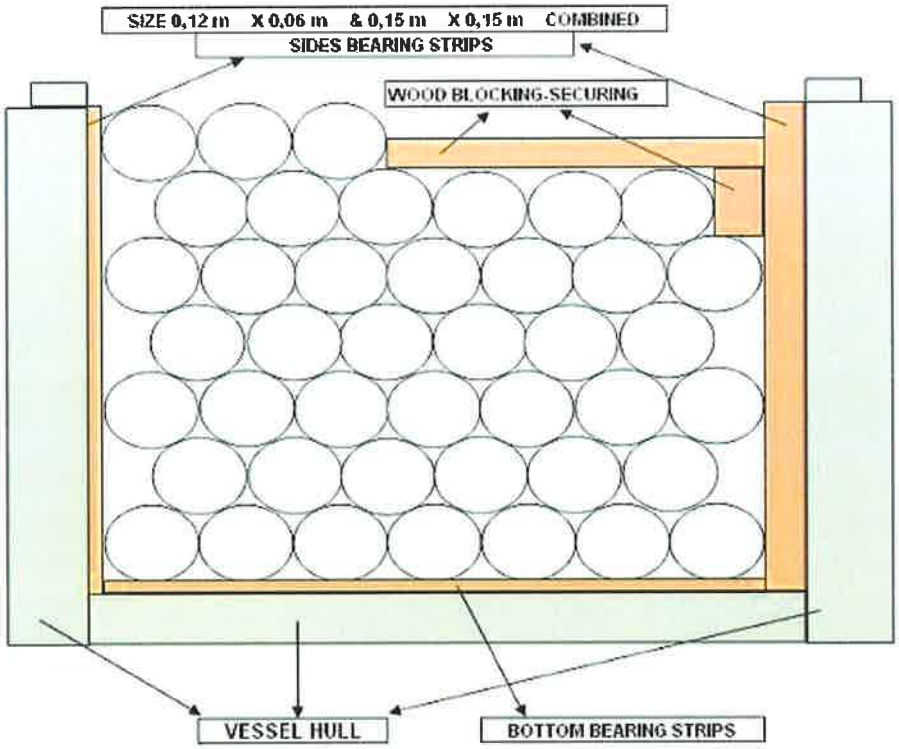
Inspection of the lifting materials and their protection takes place before starting the daily loading operations and regular checks are repeated during each shift.

Stowing into vessel holds is performed in a manner outlined in Figure 6.

Tank top Bearing Strip, side bearing strip and Side chocking (or anywhere necessary) of timber are used to secure stowage in place. The pipes are nested without timber between the tiers.

CPW intends to charter box type/open hatch vessels. Larger size vessels will be geared (with own cranes), whereas for smaller batches geared ships may not be applicable. Regardless of the type of ship, the use of the ship's cranes is subject to the consent of the port authorities of the destination ports and may not be feasible. Depending on the local circumstances, shore cranes may be used for the unloading operations at the destination ports.

CORINTH PIPEWORKS S.A.



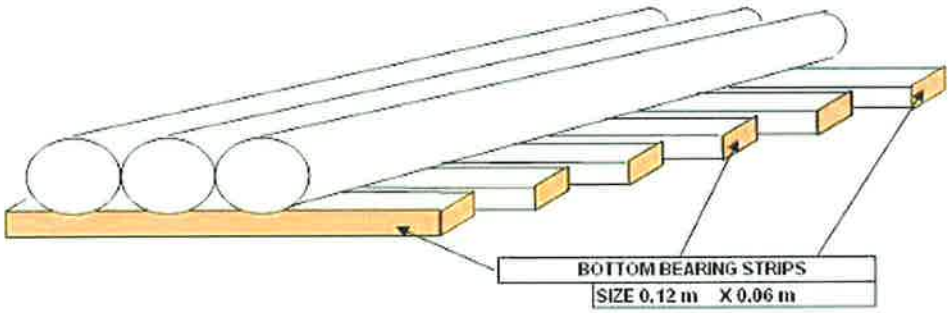


FIGURE 6 - INDICATIVE STOWAGE INTO VESSEL HOLDS (*)

Note (*): Actual stowage may vary according to the particularities of the vessel holds

CORINTH PIPEWORKS S.A.

3. LOGISTICS OPERATIONS UPON ARRIVAL AT DESTINATION RAILWAY STATIONS OR (ALTERNATIVELY) PORTS

3.1 Unloading of pipes at the final railway station(s) – Loading on Trucks

The pipes are loaded at Thiva Railway station and they arrive at the destination Railway station(s):

PART BULGARIA - STARA ZAGORA, KARDZHALI,DIMITROVGRAND OR ANY OTHER WORKABLE STATION

PART GREECE - KOMOTINI STATION

The discharging of pipes from the Railway wagons will be carried out by suitable lifting equipment. The main intention is that the cargo is directly moved onto trucks. However, there may be cases where the smooth execution of the activities require intermediate stacking of some pipe quantities within the train station area, before loading onto trucks (provided there is available space).

Loaded trucks will move to the nearby stacking area, understood as the final destination point.

3.2 Contingency plan: Unloading of pipes at destination ports – Loading on Trucks

This paragraph is applicable for the backup plan of transporting pipes via vessels. Pipes by vessel shall be shipped to the suitable ports of destination.

The discharging of pipes from the vessel will be carried out by with suitable rigging equipment of appropriate lifting capacity. The pipes will be directly loaded onto trucks, however there may be cases where the smooth execution of the activities require intermediate stacking of some pipe quantities within the port/nearby area, before loading onto trucks.
The equipment used will be properly padded to ensure protection of the pipes. Great care should be taken when lowering pipes onto trucks to avoid damages between the end of the coated pipes or the body and the trucks (provided there is available space).

CORINTH PIPEWORKS S.A.

3.3 Possible intermediate storage in Bulgaria at Stomana's Premises

CPW also have the possibility to use STOMANA's premises to temporarily store the pipes of the project, should this be required for smoother execution.

STOMANA Industry SA is a leading steel manufacturer in Bulgaria, that produces a wide range of products, including concrete reinforcing bars, heavy plates, merchant bars, special steels, special profiles and grinding balls. It belongs to the same group of companies with CPW.

STOMANA's storage area in Bulgaria for steel pipes can be utilized, in addition to Thisvi's warehouse in Greece, in order to facilitate an effective distribution system for the EPCs in Bulgarian sites.

3.4 Transportation by Trucks

The trucks used shall be flat platforms and/or trucks with side stanchions. Pipes shall be stacked on the trucks on wooden bases/cradles.

The number of pipes per truck is limited by the allowable weight of the trucks. Three to eight pieces per truck are expected for the sizes involved in this project, depending on the wall thickness and the length of the pipes..

The body/trailer of the trucks used must be clean and not have any metal or other sharp edges or objects. The sides stanchions of the trucks –where applicable- must be protected on the parts where they come in contact with the pipes and the protection type is rubber sheet and/or polyethylene cover.

Figure 7 – Example of pipe transportation

Some general precautions are also pointed out as follows:

a. Working personnel and operators must adhere to the local safety regulations and strictly follow the instructions of their supervisors and the vessel's captain .
b. Rigging equipment must be regularly checked for damages. In case of any damages it must be replaced.
c. No standing of individuals underneath lifted pipes will be allowed.
d. The personnel must be instructed at all times to prevent pipes from having violent contact with each other, the vessel's holds and the truck frames.

4. TRANSIT TIMES – MAIN DATA

4.1 Transportation by Railway

- Consecutive deliveries of 1 train per day, Saturdays/Sundays normally excluded
- 14-21 Wagons per block train, depending on the weight of the pipes
- Transit time of the block trains to Komotini approx. 2 days (arrival expected within the next day of departure from Thisvi)
- Transit time of the block trains to the station in Bulgaria approx. 3 days and BDZ rail operations (arrival expected within the next or the following after next day of departure from Thisvi).

4.2 Contingency Plan: Transportation by Vessels from Thisvi port

Approximate transit times for the main phases of logistics operations are as follows:

- Sailing time of a vessel loaded to the destination port: approx. 4 days (all going well/weather permiting)
- Loading at Thisvi: ≈2-4days, depending on the vessel sizes
- Unloading at the destination Port and parallel deliveries by trucks to the final destination: Indicatively 4-6 days by working during daylight and as per custom of the port.

5. PIPE TRACKING SYSTEM

CPW fully utilizes its own developed tracking and data management module called "PTS – Pipe Tracking System", a fully automated barcoding system, tracking all pipe manufacturing phases from raw material to bare pipe manufacturing, coating and storage at Thisvi plant. PTS doesn't include only weight / length and ID data, but also all geometrical and mechanical properties of each pipe and its corresponding raw material supply coming from the corresponding certifications but also real time laboratory data, with all being fed on real time into the Project Manager's electronic tracking system through the appropriate interface, thus enabling the supplier to track all necessary data of each pipe through its unique barcode system. PTS can be

CORINTH PIPEWORKS S.A.

supplemented by the logistics data management systems of the transportation companies, whether single or multi-modal, and also those of our clients. In this way full connectivity of unique pipe data together with transportation data and formulating a complete Supply Chain Management in service both of the manufacturer and the client is possible.

6. APPENDIX A – TABLES AND FIGURES

Greece

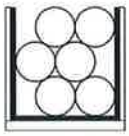
Item	Process	Qty (m)	O.D. (inch)	W. T. (mm)	Material Grade	Weight (kg/m)	Weight (M.T.)	External/ Internal Coating
1	SAWH	17.322,00	32	11,00	L450ME	217,50	3.767,5	PE/E
2	SAWL	6.086,00	32	11,00	L450ME	217,50	1.323,7	PE/E
3	SAWH	5.334,00	32	14,20	L450ME	279,65	1.491,7	PE/E
4	SAWL	2.626,00	32	14,20	L450ME	279,65	734	PE/E
5	SAWH	75	32	16,00	L450ME	314,39	24	PE/E
6	SAWL	0,00	32	16,00	L450ME	314,39	0	PE/E
7	SAWL	545	32	20,00	L450ME	391,01	213	PE/E
8	SAWL	445,00	32	20,00	L450ME	391,01	174	PE/E
9	SAWH	60	32	11,00	L450ME	217,50	13	PE/E
10	SAWH	12	32	14,20	L450ME	279,65	3	PE/E
11	SAWH	12	32	16,00	L450ME	314,39	4	PE/E
12	SAWL	12	32	20,00	L450ME	391,01	5	PE/E
		32.529,00					**7.752,8**	

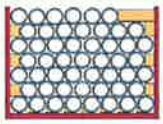
Bulgaria

Item	Process	Qty (m)	O.D. (inch)	W. T. (mm)	Material Grade	Weight (kg/m)	Weight (M.T.)	External/ Internal Coating
1	SAWH	73.762,00	32	11,00	L450ME	217,50	16.043,2	PE/E
2	SAWL	7.259,00	32	11,00	L450ME	217,50	1.578,8	PE/E
3	SAWH	38.257,00	32	14,20	L450ME	279,65	10.698,6	PE/E
4	SAWL	6.309	32	14,20	L450ME	279,65	1.764	PE/E
5	SAWH	20.341	32	16,00	L450ME	314,39	6.395	PE/E
6	SAWL	3.593	32	16,00	L450ME	314,39	1.130	PE/E
7	SAWL	4.726	32	20,00	L450ME	391,01	1.848	PE/E
8	SAWL	572	32	20,00	L450ME	391,01	224	PE/E
9	SAWH	156	32	11,00	L450ME	217,50	34	PE/E
10	SAWH	84	32	14,20	L450ME	279,65	23	PE/E
11	SAWH	48	32	16,00	L450ME	314,39	15	PE/E
12	SAWL	12	32	20,00	L450ME	391,01	5	PE/E
		155.119,00					**39.758,3**	

CORINTH PIPEWORKS S.A.

Table A.1 – SCOPE OF SUPPLY

OD	WT	YIELD	YARD	TRUCK	RAILWAY
IN	MM	MPa			
Pipe Data			Max No. of Pipe PCS (and/or tiers)		
32"	11,0	450	4	8pcs x 12m 5pcs x 18m	8pcs (3x tiers)
32"	14,2	450	4	6pcs x 12m 4pcs x 18m	8pcs (3x tiers)
32"	16,0	450	4	5pcs x 12m 4pcs x 18m	8pcs (3x tiers)
32"	20,0	450	4	4pcs x 12m 3pcs x 12m	8pcs (3x tiers)

OD	WT	YIELD	VESSEL OPTION	
IN	MM	MPa		No. of Bottom Bearing Strips (min.)
Pipe Data			Vessel Data	
32"	11,0	450	30 tiers (*)	12
32"	14,2	450	39 tiers (*)	12
32"	16,0	450	37 tiers (*)	12
32"	20,0	450	56 tiers (*)	12

Note *1: Theoretical Calculation as per API5LW 2nd edition, so that the maximum allowable stress levels are not exceeded. The actual tiers into the ships' holds will be significantly fewer due to dimensional limitations of the holds.

TABLE A.2 – MAX. NUMBER OF LAYERS PER STOWAGE ARRANGEMENT

CORINTH PIPEWORKS S.A.

7. APPENDIX B (RAILWAY INFORMATION – GREECE AND BULGARIA)

- **BDZ REFERENCE LETTER FOR COOPERATION WITH CPW AND STOMANA**
- **BDZ CARGO INFORMATION (RAILWAY INFORMATION IN BULGARIA)**
- **NATIONAL RAILWAY SERVICE INFORMATION (RAILWAY INFORMATION IN GREECE)**
- **REFERENCE LETTER - STOMANA**

CORINTH PIPEWORKS S.A.

To
Whom it May Concern

LETTER OF REFERENCE

From
BDZ Cargo EAD

With this letter of reference, we would like to express our satisfaction with our collaboration with the Viohalco Group of companies.

We have been working with Stomana Industry SA for years. Cooperating with another company within the Group, Corinth Pipeworks, we have transported pipes with block trains for OMV Austria and for the construction of significant infrastructure projects and interconnectors.

We are extremely pleased with the professionalism shown during our collaboration. BDZ Cargo EAD provides railway cargo services, transporting metal ready-made products from the Metal Cargo Station (Pernik) to Romania and Greece, as well as raw materials to Romania and Serbia. To this end, a railway cargo contract has been signed between BDZ Cargo EAD and Stomana Industry SA, which covers also the other companies within the Viohalco Group.

We recommend Corinth Pipeworks as a reliable and trustworthy partner.

Respectfully,

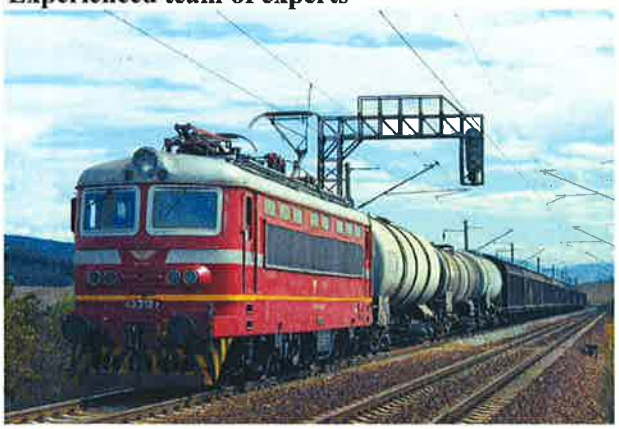
CORINTH PIPEWORKS S.A.

BDZ CARGO

RELIABLE TRANSPORT SOLUTIONS
FOR YOUR BUSINESS

CORINTH PIPEWORKS S.A.

- BDZ Cargo is the state railway freight operator of Republic of Bulgaria
- The company occupies 56.5 % of the railway freight traffic market in the country
- Freight traffic carried out in 2015: 8 315 000 tonnes
- Length of the railway lines - 4 070 km
- 80 stations opened for loading/unloading activities
- Experienced team of experts

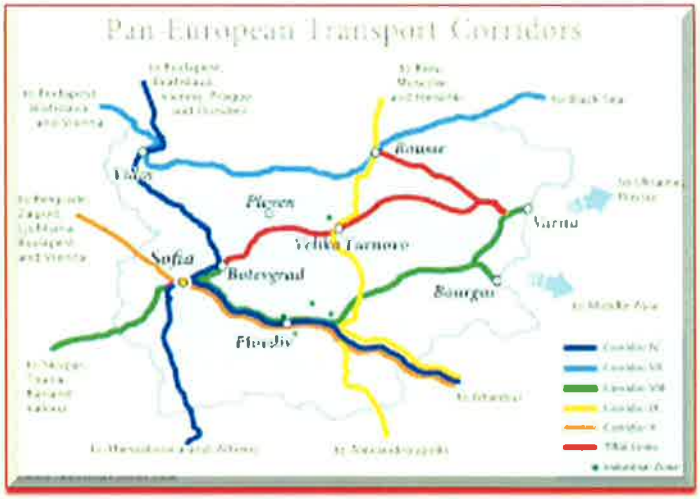


- Rolling stock fleet – 3000 freight wagons in daily operation
- Traction fleet – 110 diesel and electric locomotives in daily operation
- Strategically located network of locomotive and wagon workshops
- Electronic system for document handling and tracking of trains

PIPEWORKS S.A. CORINTH

GEOSTRATEGIC ADVANTAGES OF THE BULGARIAN RAILWAY TRANSPORT

- ***Crossroad position of the country enabling the development of transit transport on the lines of the Pan-European transport corridors;***
- ***Link with five European transport corridors: IV, VII, VIII, IX and X;***
- ***Link with the OSJD corridors: No 6 (Czech Republic, Hungary, Romania, Bulgaria, Turkey, Iran, Turkmenistan), No 12 (Moldova, Romania, Bulgaria);***
- ***Link with the TRACECA transport corridor (Europe- Caucasus- Asia): through Burgas Port, Varna Port, Varna Ferry);***
- ***A railway link with the Black Sea ports of Varna and Burgas and the Danube* ports Lom, Ruse, Svishtov, Silistra and Vidin.**



PIPEWORKS S.A. CORINTH

TRACTION FLEET

Locomotives by type	Series	Total
Diesel	06	30
Diesel	07	22
Electric	40	58
Electric	46	25
Diesel shunting	51	6
Diesel shunting	52	20
Diesel shunting	55	39
Electric shunting	61	7
Total		207

PIPEWORKS S.A. CORINTH

MAIN SERVICES

- *Transport of goods in block-trains*
- *Transport of goods in isolated wagons*
- *Combined transports*
- *Transport of goods in route trains on routes, timetables and prices coordinated with the other RUs*
- *Transport on specially agreed transport schemes*
- *Transport of heavy-load, out-of-gauge and special consignments*
- *Transport of goods from/to the Black Sea ports Varna and Burgas, also in large-capacity containers, processed in the terminals of these ports*
- *Transport of goods from/to the Danube ports Ruse, Lom, Svishtov, Vidin*
- *Transport via the railway ferry lines connecting port Varna, port Caucasus (Russia), port Ilichevsk (Ukraine), ports Poti/ Batumi (Georgia), continuing the transport by rail from/to the countries of CIS, Central and Middle Asia.*

ACCOMPANYING SERVICES

- *Customs clearance, financial guarantees, security and insurance for goods*
- *Routing*
- *Warehousing*
- *Tracking and tracing of wagons and containers*
- *Container terminals and logistic services*
- *Rental of locomotives*
- *Other shipping services*

PIPEWORKS S.A. CORINTH

INTERNATIONAL ORGANIZATIONS

- INTERNATIONAL UNION OF RAILWAYS (UIC)
- INTERNATIONAL RAILWAY TRANSPORT COMMITTEE (CIT)
- COMMUNITY OF EUROPEAN RAILWAYS (CER)
- ORGANIZATION FOR COOPERATION BETWEEN RAILWAYS (OSJD)
- COORDINATING COUNCIL ON TRANS-SIBEREAN TRANSPORTATION
- RAILWAY TRANSPORT COUNCIL
- SOUTH EAST RAILWAYS GROUP (SERG)

CORINTH PIPEWORKS S.A.

CORINTH PIPEWORKS S.A.

TRAINOSE
ΜΕΛΟΣ ΤΟΥ ΟΜΙΛΟΥ FSI

TRAINOSE secures the transportation of any kind of freight that can be carried either on one or more wagons or, even, on entire trains, aiming at freight transportation with block trains as well as regular time-tabled services.

The upgrading of the existing and the construction of new infrastructure as along with the improvements in rolling stock have contributed significantly to the development of freight transport and the increase in rail traffic in this market activity. The service TRAINOSE offers to its customers is not limited to freight transportation within Greece. In cooperation with other European rail companies, TRAINOSE serves any need for rail freight transportation to and from European and Asian countries, as well as transit transportation through Greece.

Thanks to strategic decisions, targeted actions and major international collaborations, TRAINOSE enhances its position within the freight transportation market, while it is also active in the highly demanding logistics sector, thus contributing to rendering Greece into a dynamic and modern hub in Southeast Europe. TRAINOSE, having as its priority the smooth cooperation with its customers –physical persons, companies and organizations- moves forward and further develops, to provide innovative, better and broader services.

The emphasis on multimodal transportation (road or maritime combined with rail transportation), the optimisation of rolling stock management and the efficient allocation of the available human resources render the company's transportation capability more flexible.

TRAINOSE offers reliable and safe door-to-door freight transportation services. In addition to saving money, TRAINOSE's customers take advantage of the comparative advantage transportation by rail offers: the ability to carry large freight volumes for long distances.

The existing rail connection with the Port of Thessaloniki enables the freight transportation to and from the hinterland, as well as the transit transportation through Greece. Moreover, following the completion of the connection between the Port of New Ikonio and the basic axis of the railway network, TRAINOSE secures multimodal transportation from the Port of New Ikonio to Central Europe (Hungary, Slovakia and Czech Republic) and is actively pursuing new freight customers through that gate.

The company's next target is to provide regular transportation of containers to and from Thessaloniki, Skopje, Belgrade, Sofia and Istanbul, aiming at the creation of a multimodal transportation hub in Thessaloniki for the Balkan Region.

CORINTH PIPEWORKS S.A.

- TRAINOSE offers domestic and international freight transportation services – with regular wagons or containers (multimodal transportation), carried either on individual wagons or in block trains.
- The company can carry all types of freight allowed to be transferred by rail (bulk, scrap, fuel, woo reliably, promptly and safely, on a daily basis, in Greece and abroad.
- A number of domestic destinations are being served, whereas there is also the possibility to carry freight to client facilities, through a branch line connecting to the main railroad, and to logistics centers.

Since December of 2013 TRAINOSE, has been offering a service of container transportation (Intermodal Cargo Shuttle- ICS), with a regular daily trip from Athens (Thriasio) to Thessaloniki/ Sindos and back. ICS also serves multimodal transportation needs from the Port of Thessaloniki and the Port of New Ikonio. The service is being provided at convenient hours and at a price that enables the railway to work complementarily to existing transportation and logistics companies.

CORINTH PIPEWORKS S.A.

417

STOMANA INDUSTRY S.A.
Вх.№ 362
Дата 25.06.2018

STOMANA
INDUSTRY S.A.

Stomana Industry AD, 1 Vladaysko Vastanie Street, 2304 Pernik, Bulgaria, Tel.: 076 68 10 14, Fax: 076 68 1952

TO:
CORINTH PIPEWORKS S.A.
2-4, MESOGEION AV., 11527 ATHENS
GREECE

25/06/2018

LETTER OF ENGAGEMENT

STOMANA INDUSTRY S.A. hereby do confirm that on demand could provide 100 000 square meters of outdoor warehouse area and 40 000 square meters of indoor warehouse area for storing of steel pipes with a length of 12 to 18 meters. The total area of the plant is 3.5 million square meters. STOMANA INDUSTRY S.A. processes over 2 million tons per year by rail way transportation and 1 million tons per year by lorries.

Our warehouses are serviced by skilled workers and are equipped with cranes, weighbridges, scales, and a German integrated information system SAP. The logistics at the plant operates in full compliance with a certified integrated quality management system, occupational health and safety system as well as environmental and sustainability management system, i.e. ISO 9001, ISO 14001 and OHSAS 18001. CORINTH PIPEWORKS S.A. can get full logistics service. Also roads and parking lots for trucks are available in STOMANA INDUSTRY S.A. Over 200 lorries, both gondolas and TIRs, are processed daily. Incoming and outgoing logistics flows of lorries are handled by 3 weighbridges. The plant also has a railway maneuvering structure, as well as 45 km of railway tracks. More than 100 wagons are processed per day. There is rail access to all storage spaces and we have 2 railway weighbridges.

In addition, STOMANA INDUSTRY S.A. has contracts with all the major ports in Bulgaria, both at sea and along the Danube River, including Varna port, Lesport port, BMF port, Bourgas port, KRZ Bourgas. At the Danube River we have worked with the port of Lom, port of Rousse and port of Vidin. Since 2009, we have our own port in town of Svishtov with over 50 acres of outdoor warehouse area with rail way access and access for lorries. Indoor and outdoor storage areas might be used at all ports being hubs for intermediate storage.

Konstantin Stamenov
Director Strategic Planning and Investments

STOMANA PERNIK 2 INDUSTRY S.A.