Integrated ESIA Greece
Annex 3.6 - Technical Drawings- Work Strip, Construction Methods
3. Fig. 2 Schematic for stacking and de-stacking

1. Stacking
2. Unloading

4. Trans Adriatic Pipeline (TAP)
   Integrated ESIA Greece

SOURCE:
   Document Reference G.APL00.D.F-100-T-TRP-0002_00

2. Figure 4-2 of Appendix 3: Comparison of Logistic Concepts Greece

3. 2. Figure 4-2 of Appendix 3: Comparison of Logistic Concepts Greece
General Layout of a Pipeline Construction Camp

Example Photographs of Pipeline Construction Camps

Appendix F: GPL00-ILF-100-F-TRP-0003_0D-a066-Main Camps and Pipe Yards

Typical Layout of Construction Camp

Trans Adriatic Pipeline (TAP)
Integrated ESIA Greece
Typical Components of Microtunnelling
(Note: image depicts a marine microtunnel and is only indicative of the technique)

Concrete jacking pipe
Jacking shaft
Microtunnel

SOURCE: ERM SpA (January 2012)

Example of Casing/Jacking Pipe

SOURCE: Acakawood 2011 (retrieved November 2011)

SOURCE: Photo bucket 2011 (retrieved November 2011)

Microtunnel Boring Machines (MTBM)

Jacking shaft for microtunnel construction

SOURCE: HamvaneH, 2011 (retrieved November 2011)
**General Comments:**

- All dimensions without units are in meters.
- All requirements specified in the client's crossing permit shall be observed.

**Notes for Type I + II:**

1. All variables (X, Y, Z) are site-specific.
2. After installing the carrier pipe, the last isolator to be fitted.
3. These dimensions are to be used as minimums and shall be field verified by contractor and adjusted to suit specific crossing profile construction requirements.
4. The annular space between the casing and the pipeline shall be filled with material that will continually protect the pipeline against corrosion. The pipeline shall be protected with anode ribbons.
5. Line current / casing pipe test station defined in detail design.
6. CP and NIP posts at suitable location as required.

**Source:**

**Document Title:**

Major Road Crossing with casing pipe (Thrust boring) for 48" Pipeline

**Client:**

TRANS ADRIATIC PIPELINE

**Project:**

Trans Adriatic Pipeline (TAP)

**Integrated ESIA Greece**

**Title:**

Integrated ESIA Greece Annex 3.6 - Technical Drawings - Working Strip, Construction Methods and Crossings

Pipeline Construction: Major Road Crossings with Casing Pipe (Thrust Boring) for 48" pipeline

**Scale:**

No scale

**Drawings No:**

Figure 4-19
RAILWAY CROSSING (SINGLE TRACK) CASING PIPE (TYPE I & II)

TYPE I

RAILWAY CROSSING (DOUBLE TRACK) CASING PIPE (TYPE III & IV)

TYPE III

NOTE A

VIEW A

CABLE CONDUIT

DOE FOR GEOMETRIC PROTECTION

PLATE OPTIC CABLE PIPE PROTECTOR

INSULATING PIPE SPACES

DETAIL Z

PLUGGER I抵抗 BETWEEN CASING PIPE WITH CASING PIPE PROTECTOR

EXPOSED TINES PROTECTION CASING PIPE PROTECTOR

Trans Adriatic Pipeline (TAP)

Integrated ESIA Greece

SOURCE: ENR (2012)

GENERAL COMMENTS:

- ALL DIMENSIONS WITHOUT UNITS ARE IN METERS
- ALL REQUIREMENTS SPECIFIED IN THE CLIENT'S CROSSING PERMIT SHALL BE OBSERVED
- 1. A CABLE DUCT ALONGSIDE
- 2. THE LAST SPINNER SHALL BE FITTED AFTER PULLING IN THE PRODUCT PIPE
- 3. ALL DRAWINGS PULLED ALONG MULTIPLE
- 4. THE ANGULAR SPACE BETWEEN THE CASING AND THE PIPELINE SHALL BE FILLED WITH MATERIAL THAT WILL CONTINUALLY PROTECT THE PIPELINE AGAINST CORROSION OR THE PIPELINE SHALL BE PROTECTED WITH ANODE REBOWS
- 5. LINER CURRENT - CASING PIPE MEASUREMENT TEST STATION DEFINED IN DETAIL DESIGN
- 6. CP AND HP POSTS AT SUITABLE LOCATION AS REQUIRED

CLIENT:
TRANS ADRIATIC PIPELINE

PROJECT:

Trans Adriatic Pipeline (TAP)

Integrated ESIA Greece

TITLE:
Integrated ESIA Greece Annex 3.6 - Technical Drawings - Working Strip, Construction Methods and Crossings
Pipeline Construction: Railway Crossing with Casing Pipe (Thrust Boring) for 48" Pipeline

SCALE

DRAWWING NO:

00 00/08/15

SHEET OF

Figure 4-21

No scale
RAILWAY CROSSING (SINGLE TRACK) WITHOUT CASING PIPE (TYPE I & II)

TYPE I

RAILWAY CROSSING (DOUBLE TRACK) WITHOUT CASING PIPE (TYPE III & IV)

TYPE III

SECTION A - A

TRANS ADRIATIC PIPELINE

Trans Adriatic Pipeline (TAP)

Integrated ESIA Greece

SOURCE: EMT (2012)

GENERAL COMMENTS:
- All dimensions without units are in inches.
- All requirements specified in the client's crossing permit shall be observed.

NOTES:
1. A cable duct alongside.
2. All variables indicated are site-specific.
3. Increased wall thickness as required.
4. CP and MP posts at suitable location as required.

CLIENT:

PROJECT:

TITLE: Integrated ESIA Greece Annex 3.6 - Technical Drawings - Working Strip, Construction Methods and Crossings

Pipeline Construction: Railway Crossings (Thrust Boring) for 48" Pipeline (no casing)

SCALE: No scale

DRAWING NO:
Figure 4-22
Typical ‘Open-Cut’ River Crossing

LONGITUDINAL SECTION

ORIGINAL RIVER SURFACE
GEOTEXTILE
BOULDERS (IN-SITU TYPE) OVER FULL WIDTH OF RIVER BED AND BANKS
MAX WATER LEVEL Q100
CONCRETE COATING
BACKFILL (EXCAVATED MATERIAL)
RIVER BED
MIN. 2.00 + SCOURING

CROSS SECTION

WATER FLOW
ORIGINAL RIVER BED
WATER FLOW
ORIGINAL RIVER BED
GEOTEXTILE
CONCRETE COATING
BOULDERS (IN-SITU TYPE)
FIBRE-OPTIC PIPELINE CABLE
ORIGINAl RIVER BED
ROCK BLIND
HEAVY BOULDERS OF IN-SITU TYPE (SEPARATE TRENCH)
BACKFILL (MATERIAL IN-SITU TYPE)
1st TRENCH
2nd TRENCH
4.00 4.00 2.50 1.00

SOURCE: APP.504 225 x 715m 08/2003 Rev 0.0
Attachment 4 - Typical Drawings, Civil Engineering Construction Concept

CLINT:
TRANS ADRIATIC PIPELINE

PROJECT:
Trans Adriatic Pipeline (TAP)
Integrated ESIA Greece

TITLE:
Integrated ESIA Greece Annex 3.6 - Technical Drawings - Working Strip, Construction Methods and Crossings
Pipeline Construction: Typical ‘Open-Cut’ River Crossing

SCALE: No scale
PROJECT: Figure 4-23
DRAWING NO: 12/17
SHEET OF

Issued for Information
SPP
PREP
CHECK
APR

00 06/06/2015

Size: A4
Typical Ditch and Brook Crossings (with Buoyancy Protection)

**NOTES:**

1. Sizing and thickness requirements to be determined in the hydrological investigations.
2. Conduit casing installation through the crossing for construction flexibility and pipe installation quality.
3. Selection of field bend or hot bend to be made during detail engineering phase.
4. Attach to pipeline with proper fasteners.
5. Actual installation depth and minimum cover to be determined from the results of the hydrological investigations/authority requirements.
6. Increased wall thickness as required.
7. Distance min. 1.50 m from top edge of bank to standard laying depth with minimum cover of 1.50 m.
8. CP and MP posts at suitable location as required.
9. Spacing has to be defined by construction contractor.
10. A cable duct alongside (see construction documentation).
11. Radial of site bends in line with corresponding longitudinal section.
12. Site bends may also be replaced by factory bends.
13. Precise laying depth and minimum cover taking into consideration hydrological conditions and in line with crossing permit.
14. Degree of angles of bends in line with corresponding longitudinal section.
15. Protection of the ditch/s brook bottom and embankment according to crossing permit.
16. Number of saddles for anti-buoyancy determined by calculation, concrete saddles according drawing CPH-ENT-105-F-DPT-0002.
17. Actual length from the results of the hydrological investigations.
18. Has to be advised by supervisor.

**GENERAL COMMENTS:**

- All dimensions without units are in meters.
- All requirements specified in the client's crossing permit shall be observed.

**SOURCE:** CFLD-ENT-125-F-DPT-0007 00 Typical Water Crossings (open cut) for 48 inch Pipeline
**Horizontal Direction Drilling (HDD)**

**Layout of Rig Site**

1. Dredge
2. Control box / power unit
3. Drill pipe rack
4. Rear pump
5. Mud tank
6. Recycle unit (separation of cuttings from mud)
7. Mud pump
8. Bunkersite
9. Generators
10. Main fuel container
11. Office
12. Crew container
13. Entry pit
14. Mud pit (temporary storage for used drilling mud)

**Layout of Pipe Site**

1. Mud pit (temporary storage for used drilling mud)
2. Exit pit
3. Rollers
4. Pipeline
5. Excavator
6. Drilled pipe
7. Generator
8. Transport to recycling unit

**Pilot hole.**

**Pre-ream.**

**Reaming and pipe installation.**

**Figure 4-25**

Pipeline Protection in Washout Area

Protection against Erosion with Sandbags

SECTION A-A

GENERAL COMMENTS:
- All dimensions without units are in meters.

NOTES:
1. For backfilling requirements please refer to specification "Backfilling" (see EN-CODE 1-8:2018).
2. The cable duct is always located to the right of the pipeline.
3. Length of each block: 5.0 m (inside a 0.5 m x 0.5 m.)
4. Space shall be filled with appropriate filling material.
5. Has to be advised by construction supervisor.

LEGEND:
- Natural Soil
- Rock Blocks
- Excavated Material
- Sand or Selected Material

PARTS LIST:
- Item 1: "Warning tape".
- Item 2: DRAINAGE PIPE WITH FILTER LAYERS (EN 889).
- Item 3: CONCRETE SPODLE ACCORDING (NF, CPL00-ENT-125-F-DFT-3855).

SOURCE: CPL00-ENT-125-F-DFT-0011_06-Pipe Protection in washout area.pdf

Source: CPL00-ENT-125-F-DFT-0014_06-Protection against Erosion with sandbags Model.pdf

Trans Adriatic Pipeline (TAP)

Integrated ESIA Greece

Methods of Pipeline Stabilisation: Protection

Figure 4-26
LEGEND:
- REINFORCED CONCRETE
- NATURAL SOIL
- ROCK BLOCKS
- SELECTED MATERIAL
- NATURAL TOP SOIL

TOP VIEW

ITEM 1
ITEM 2
PIPELINE

ITEM 1
ITEM 2
WARNING TAPE

SECTION A-A

APPROX. 8 m

ITEM 4
EXCAVATED MATERIAL
ITEM 3
SAND OR SELECTED MATERIAL (SEE NOTE 5)
PIPELINE

ITEM 1

APPROX. 8 m

CONCRETE SLAB FOR PROTECTION FOR DIRT ROAD CROSSINGS (SEE NOTE 6)

0.5
0.6
0.5
0.6
0.5
0.5
0.6
0.5
0.6
0.5
0.5
0.6
0.5
0.6
0.5
0.5

Source: C:\PL00-ENT-125-3-DFT-9012_00---Concrete Slab Protection for dirt roads

Client: TRANS ADRIATIC PIPELINE

Project: Trans Adriatic Pipeline (TAP)

Integrated ESIA Greece

Methods of Pipeline Stabilisation: Concrete Slab Protection for Dirt Roads for 48" Pipeline

Figure 4-27
PIPELINE CROSSING
WITH UNDERGROUND OBSTACLES

GROUND SURFACE

STANDARD LAYING DEPTH

1.00

EXISTING PIPELINE, CABLE, ETC.

0.5 m (min)

FIELD BENDS (NOTE 1)

FIELD BENDS (NOTE 1)

STANDARD LAYING DEPTH

1.00

GENERAL COMMENTS:

- All dimensions without units are in meters.
- All dimensions are to be used as minimums and shall be field verified by construction contractor.
- All requirements specified in the clients crossing permit shall be considered.

NOTES:

1. Field bends are preferred. Unless hot bends are designated in the detail design.

SOURCE: CPL60-ENT-125-F-DFT-0003_00

CLIENT:
TRANS ADRIATIC PIPELINE

PROJECT:
Trans Adriatic Pipeline (TAP)

Integrated ESIA Greece

TITLE:
Integrated ESIA Greece Annex 3.6 - Technical Drawings - Working Strip, Construction Methods and Crossings
Pipeline Crossing with Underground Obstacles

SCALE
No scale

DRAWING NO.
Figure 4-32

SHEET OF
17/17