



RETEM  
3D STEEL  
GRID



**No Forms**

**No Joints**

**No Finishing**

**No Motorized Equipment**

**No Skilled Labor Required**

**RETEM**  
**3D STEEL**  
**GRID**



Prior to  
Construction

07/15/2019 12:32

RETEM  
3D STEEL  
GRID

ALDOT - Slope Paved Abutment CR-68 over I-65



Prior to  
Construction

07/15/2019 12:37

ALDOT - Slope Paved Abutment CR-68 over I-65

RETEM  
3D STEEL  
GRID



Prior to  
Construction

07/15/2019 12:41

Concrete Placed & Finished in 3.0 Hours  
1,800 ft<sup>2</sup>  
24 yd<sup>3</sup>

Slope Shaped

ALDOT - Slope Paved Abutment CR-68 over I-65



Concrete Placed & Finished in 3.0 Hours



LDP Placed

Concrete Placed & Finished in 3.0 Hours



Steel Placed



Concrete Placed & Finished in 3.0 Hours



# Steel Anchoring

ALDOT - Slope Paved Abutment CR-68 over I-65





Concrete Placed & Finished in 3.0 Hours

Prepared

Concrete Placed & Finished in 3.0 Hours

# Concrete Pump

07/25/2019 09:31

ALDOT - Slope Paved Abutment CR-68 over I-65



Concrete Placed & Finished in 3.0 Hours



Concrete Placed

07/25/2019 09:47



Concrete Placed & Finished in 3.0 Hours



Concrete Placed & Finished in 3.0 Hours

Concrete Shaped

Concrete Placed & Finished in 3.0 Hours

Concrete Placed

Concrete Placed & Finished in 3.0 Hours



Complete





Dream Team

ALDOT - Slope Paved Abutment CR-68 over I-65



Concrete Placed & Finished in 2.0 Hours  
16 yd<sup>3</sup>  
100 yd<sup>2</sup>



# Eroded Ditch

Concrete Placed & Finished in 2.0 Hours



Shaped



Concrete Placed & Finished in 2.00 Hours

# Steel Delivery

Concrete Placed & Finished in 2.0 Hours



Steel Anchored

05/16/2019 13:09

Concrete Placed & Finished in 2.0 Hours



Steel Anchored



Autauga County - County Road 59

Concrete Placed & Finished in 2.0 Hours

# Footing

05/16/2019 10:23



Concrete Placed & Finished in 2.0 Hours



Prepped

Concrete Placed & Finished in 2.0 Hours



Prepped



Autauga County - County Road 59





Concrete Placed & Finished in 2.0 Hours

Concrete Placement

Autauga County - County Road 59





Concrete Placed & Finished in 2.0 Hours

# Concrete Placement

Concrete Placed & Finished in 2.0 Hours



Concrete Placement

Concrete Placed & Finished in 2.0 Hours

# Concrete Placement

Concrete Placed & Finished in 2.0 Hours

Complete

05/16/2019 13:09



Concrete Placed & Finished in 1.50 Hours  
20 yd<sup>3</sup>  
1,280 ft<sup>2</sup>

# Project Profile



Concrete Placed & Finished in 1.50 Hours

Place Concrete

Concrete Placed & Finished in 1.50 Hours



Rake Finish

Concrete Placed & Finished in 1.50 Hours

Project Complete

Elmore County - County Road 2995 (Deatsville Highway)



Concrete Placed & Finished in 1.50 Hours

Weeks Later

Elmore County - County Road 2995 (Deatsville Highway)



Concrete Placed & Finished in 1 Day  
27 yd<sup>3</sup>  
2,100 ft<sup>2</sup>

# Project Profile



Prepped



# Steel Placement





# Steel Placement



# Concrete Placement



# Concrete Placement



Completed



Completed



Completed

Concrete Placed & Finished in 1 Day  
325' Flume  
28 yd<sup>3</sup>



# Steel Placement

08/12/2019 12:20



Concrete Placed & Finished in 1 Day

Concrete Placement

08/12/2019 12:23



Concrete Placed & Finished in 1 Day

# Concrete Placement

08/12/2019 12:22

Concrete Placed & Finished in 1 Day



Complete

08/12/2019 15:55

# Technical Instructions for Land Stabilization in Ditches and Canals Using Retem 3-D Steel Grid

## 1. Specifications:

The *Retem 3-D Steel Grid* is a three dimensional web made of galvanized steel deployed on two levels of parallel steel strips linked by oblique ribs without welding points. (fig. 1 and 2)

### 1.1 *3-D Steel Grid* panel specifications:

	Metric	English
Length	2.15 m	7.05 ft
Width	1.30 m	4.27 ft
Surface	5 m <sup>2</sup>	53.82 ft <sup>2</sup>
Weight	5 kg per panel	11.02 lbs
Distance between panel levels	40, 60 or 80 mm	1.57, 2.36 or 3.15 in
Width of ribs	5 mm	0.20 in
Distance between longitudinal ribs	110 mm	4.33 in

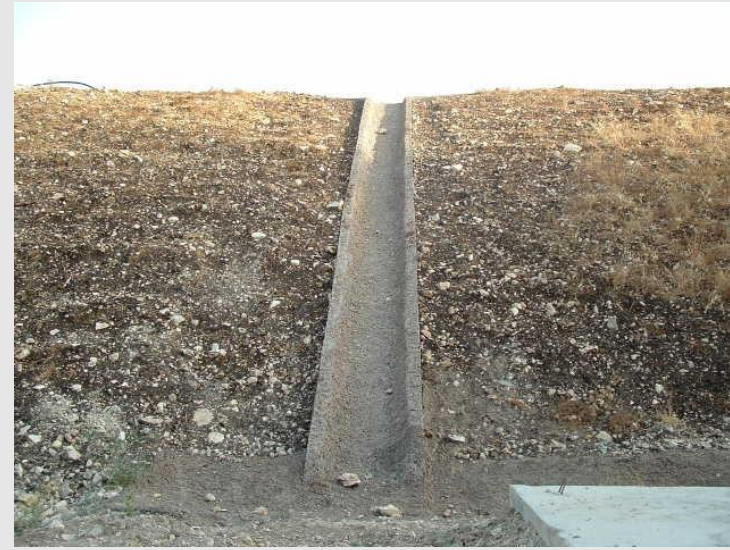
### 1.2 Steel specifications:

Galvanized steel	S350 – Z80	
	S350 = steel qualification related to chemical compound of material	
	Z80 = thickness of the zinc 80 grams/sqm (2.36 oz/square yard)	
Yield Strength nominal	350 N/mm <sup>2</sup>	50.76 ksi
Tensile strength	450 N/mm <sup>2</sup>	65.27 ksi
Elongation	17%	17%
Steel thickness	1.4 mm	0.06 in

# 3D Grid main applications



Rigid lining of ditches & canals



Constructing flume channels



Culverts & "dip" areas

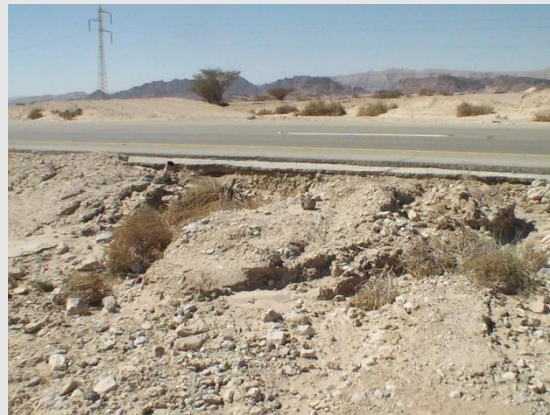


Stabilizing slopes & river banks

# Culverts & irish passages



Protecting soil erosion in culvert areas – before & after



Erosion damages in “dip” areas –  
irish water passages



Irish passage after installation –  
fully functional, no erosion

# stabilizing slopes & river banks



Stage 1: Anchoring the 3D grid



Stage 2: spreading stones & soil mixture



Stage 3: Natural vegetation reclaims the slope

- Optional – using seeds & fertilizes mixture as a final vegetalisation layer
- This system is also used to reclaim and repair eroded river banks (illustrated in the following pictures)

IDF air force base – lining drainage channels



Austria, Lienz – stabilizing and vegetalising slope in a public park



Spain, La Coruna – Soil stabilization in a road tunnel project



