IS.COM
International Strategic
Consultancy & Management

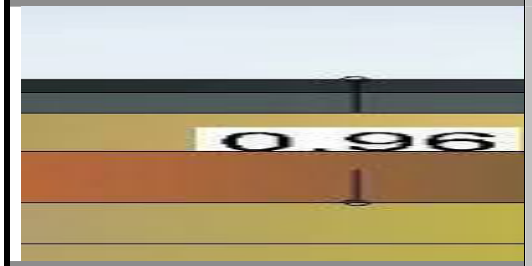
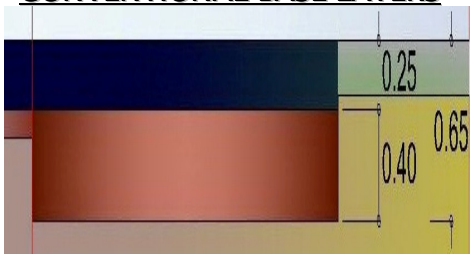
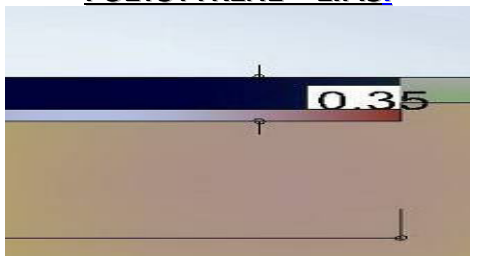
SUMMARY I

COMPARATIVE EXPLANATION

EXAMPLE FOR A ROAD OF 7M WIDTH AND 100KM LONG

(EUROPEAN UNION STANDARDS)

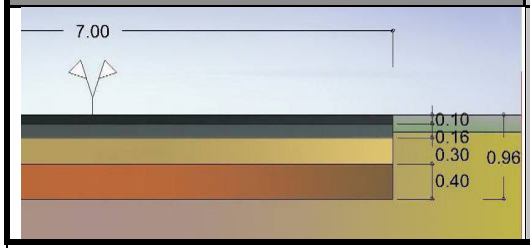
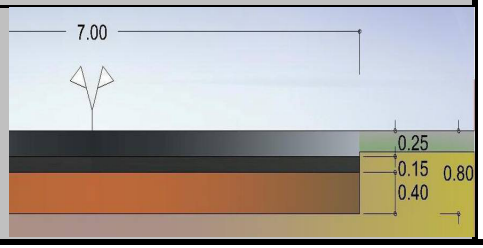
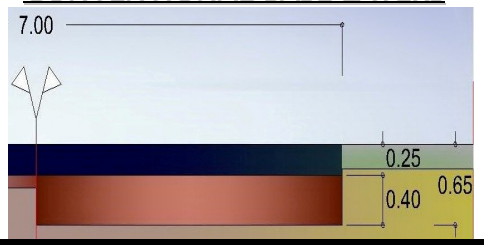
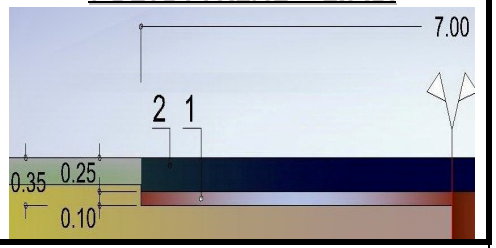
OPENING A BOX IN THE SOIL – EARTHMOVING

ASPHALT LAYERS	CONVENTIONAL CONCRETE PAVEMENT LAYERS	CONCRETE SLAB WITH CONVENTIONAL BASE LAYERS	FOUNDATION LAYERS WITH HIGH DENSITY EXPANDED POLYSTYRENE – E.P.S.
			
Box with 0,96 m depth	Box with 0,80 m depth	Box with 0,65 m depth	Box with 0,35 m depth
Earthmoving m3 for 100km = 672.000 m3	Earthmoving m3 for 100km = 560.000 m3	Earthmoving m3 for 100km= 455.000 m3	Earthmoving m3 for 100km= 245.000 m3
Trucks required=20.000	Trucks required=16.000	Trucks required=13.000	Trucks required=7.000

EARTHMOVING ECONOMY

M3 Eathmoving			
672.000 m3 100% Base of Comparison	560.000 m3 83% (-17%)	455.000 m3 68% (-32%)	245.000 m3 36% (-64%)
TRUCKS VOYAGES REQUIRED - 1 TRUCK =35 M3			
19.200 Trucks 100% Base of Comparison	16.000 Trucks 83% (-17%)	13.000 Trucks 68% (-32%)	7.000 Trucks 36% (-64%)

BASE AND SUB BASE CONSTRUCTION MATERIALS

ASPHALT LAYERS	CONVENTIONAL CONCRETE PAVEMENT LAYERS	CONCRETE SLAB WITH CONVENTIONAL BASE LAYERS	FOUNDATION LAYERS WITH HIGH DENSITY EXPANDED POLYSTYRENE – E.P.S.
			
Crusher Run m3 for 100km (compacting factor = 1.5) Aprox 210.000 m3 x 1.5 = 315.000 m3		Crusher Run m3 for 100km (compacting factor = 1.5) Aprox 210.000 m3 x 1.5 = 315.000 m3	None
Gravel m3 for 100km (compacting factor = 1.5) Aprox 280.000 m3 x 1.5 = 420.000 m3	Gravel m3 for 100km (compacting factor = 1.5) Aprox 280.000 m3 x 1.5 = 420.000 m3	None	None
Sand m3 for 100km	Sand m3 for 100km	None	None
Tar irrigation m3 for 100km=	Tar irrigation m3 for 100km	None	None
			HIGH DENSITY EXPANDED POLYSTRYRENE – E.P.S m3 for 100km= 70.000 m3

TRANSPORT ECONOMY – BASE AND SUB BASE MATERIALS

M3

735.000 m3=100%	420.000 m3=57%	315.000 m3=42%	None
TRUCKS VOYAGES REQUIRED = 1 TRUCK – 35 M3			
21.000 Trucks 100% Base of Comparison	12.000 Trucks 57% (-43%)	9.000 Trucks 42% (-68%)	None E.P.S. produced with a portable machine at the site avoids more than 2.000 trucks of transportation

PAVEMENT CONSTRUCTION

1 layer of asphalt of 16cm height= 112.000 m3	1 layer of lean concrete of 15cm height= 105.000 m3	None	None
1 layer of asphalt of 10cm height= 70.000 m3	1 layer of concrete of 25cm height= 175.000 m3	1 layer of concrete of 25cm height= 175.000 m3	1 layer of concrete of 25cm height= 175.000 m3

TRANSPORT ECONOMY – PAVEMENT MATERIALS

M3			
182.000 m3 Asphalt 65%	280.000 m3 Concrete 100%	175.000 m3 Concrete 62,5%	175.000 m3 Concrete 62,5%
TRUCKS VOYAGES REQUIRED = 1 TRUCK – 35 M3			
5.200 Trucks	8.000 Trucks	5.000 Trucks	5.000 Trucks

GRAND TOTAL TRANSPORT ECONOMY

EARTHMOVING, PAVEMENT BASE AND SUB BASE, MATERIALS & CONSTRUCTION

TRUCKS CAPACITY CONSIDERED = 1 TRUCK = 35 M3			
ASPHALT LAYERS	CONVENTIONAL CONCRETE PAVEMENT LAYERS	CONCRETE SLAB WITH CONVENTIONAL BASE LAYERS	FOUNDATION LAYERS WITH HIGH DENSITY EXPANDED POLYSTYRENE – E.P.S.
672.000 m3 735.000 m3 182.000 m3 1.589.000 m3 45.400 Trucks	560.000 m3 420.000 m3 280.000 m3 1.260.000 m3 36.000 Trucks	455.000 m3 315.000 m3 175.000 m3 945.000 m3 27.000 Trucks	245.000 m3 175.000 m3 420.000 m3 12.000 Trucks
Base of Comparison	-21% Less: • Laying machinery • Compacting machinery • Time of machinery Works • Transportation	-61% Less: • Laying machinery • Compacting machinery • Time of machinery Works • Transportation	-74% Much Less: • Laying machinery • Compacting machinery • Time of machinery Works • Transportation

WORKS AND MATERIALS ECONOMY

CONVENTIONAL SOLUTIONS		CONCRETE SLAB FOUNDATION SYSTEM	
BITUMINOUS PAVEMENT LAYERS	CONVENTIONAL CONCRETE PAVEMENT LAYERS	WITH CONVENTIONAL BASE LAYERS	HIGH DENSITY EXPANDED POLYSTYRENE – E.P.S.
– more raw materials	– more raw materials	– crusher run transport	– one E.P.S. layer
– crusher run transport	– transport of gravel	– spreading of crusher run	– one concrete layer
– spreading of crusher run	– spreading the gravel	– compacting crusher run	– sawing the slabs in fresh
– compacting crusher run	– compacting the gravel;	– one concrete layer	– no crusher run transport
– transport of gravel	– transport of sands	– sawing the slabs in fresh	– no spreading of crusher run
– spreading the gravel	– spreading the sand	– no transport of gravel	– no compacting crusher run
– compacting the gravel;	– compacting the sand	– no spreading the gravel	– no transport of gravel
– transport of sands	– one lean concrete layer	– no compacting the gravel;	– no spreading the gravel
– spreading the sand	– one concrete layer	– no transport of sands	– no compacting the gravel;
– compacting the sand	– reinforced concrete	– no spreading the sand	– no transport of sands
– tar irrigation (asphalt)	– concrete with fibbers	– no compacting the sand	– no spreading the sand
– two asphalt layers	– sawing the dry slabs	– no tar irrigation (asphalt)	– no compacting the sand
	– sealing of joints	– no lean concrete layer	– no tar irrigation (asphalt)
		– no reinforced concrete	– no lean concrete layer
		– no concrete fibbers	– no reinforced concrete
		– no sealing of joints	– no concrete fibbers
			– no sealing of joints

OTHER MATERIALS TO BE USED

	LOAD TRANSFER BARS (DOWEL BARS) For 100km	LOAD TRANSFER PLATES For 100km = 520.010 Kg Steel	LOAD TRANSFER PLATES For 100km = 520.010 Kg
	Iron reinforcement of slabs For 100km	Joint Inductor for 100km= 100.000 m	Joint Inductor for 100km=100.000 m (plastic or galvanized sheet of 0,8mm)
	Fibber added to concrete	Plastic film of 0,2mm for 100Km=700.000 m2	Plastic film of 0,2mm for 100Km= 700.000 m2
			EPS for 100km= 70.000 m3

SPECIAL MACHINERY REQUIRED

CONVENTIONAL SOLUTIONS		CONCRETE SLAB FOUNDATION SYSTEM	
BITUMINOUS PAVEMENT LAYERS	CONVENTIONAL CONCRETE PAVEMENT LAYERS	WITH CONVENTIONAL BASE LAYERS	HIGH DENSITY EXPANDED POLYSTYRENE – E.P.S.
ASPHALT PAVER MACHINE	SLIP FORM PAVER	SLIP FORM PAVER	SLIP FORM PAVER
	SAW MACHINE FOR DRY CONCRETE	SAW MACHINE FOR **FRESCH** CONCRETE	SAW MACHINE FOR **FRESCH** CONCRETE
	SEELING JOINTS EQUIPMENT		E.P.S. PORTABLE MACHINE

MINIMUM MAINTENANCE REQUIRED FOR 40 YEARS

CONVENTIONAL SOLUTIONS		CONCRETE SLAB FOUNDATION SYSTEM	
BITUMINOUS PAVEMENT LAYERS	CONVENTIONAL CONCRETE PAVEMENT LAYERS	WITH CONVENTIONAL BASE LAYERS	HIGH DENSITY EXPANDED POLYSTYRENE – E.P.S.
After 2 years filling soil settlements	Sealing joints every 5 years	**None**	**None**
A new asphalt layer every 5 years	Repairing broken slabs	**None**	**None**

FOR DIMENSIONING THE CONCRETE PAVEMENT IS.COM SHALL NEED:

1. **Project of the road, factory, warehouse, port, airport**
2. **Geotechnical Characterization of the soil;**
3. **Plan of maximum Static Loads expected;**
4. **Plan of maximum Dynamic/rolling loads expected**
5. **Soil load ability determined (C.B.R. or K):**
6. **Temperature high and low peaks and how it varies over the year.**

FINAL CONSIDERATIONS

- **No materials are to be imported.**
- **All materials are from Russia.**
- **General constructor should be from Russia.**
- **High Density Expanded Polystyrene (E.P.S) is to be produced at the site with a portable machine, no transportation should be involved.**
- For the pavement construction a team of 8 men should be enough.
- Our technology allow shortening deadlines up to 40%.
- **Huge economies on construction price up to 30%, on man power, on materials, on equipment and on transportation.**
- IS.COM is an engineering company and is not a general constructor

ADVANTAGES OF CONCRETE PAVEMENTS

- IS.COM concrete pavements construction technology (named SPWS) allows concrete slabs to accept soil settlements for more than 25 mm.
- **The Steel Load Transfer Plates allow horizontal and vertical movements of the slabs.**
- **With IS.COM technology the slabs may freely move without breaking.**
- **No expansion joint required due to the free horizontal moving of the slabs.**
- Concrete pavements accumulates less heat and generates less global warming
- Vehicles have an inferior consumption of fuel.
- At the end of its life all materials are fully recyclable.

WHAT DOES IS.COM OFFER:

- **the dimensioning project of the pavement and all mathematical calculations required**
- **the dimensions of steel load transfer plates**
- **the shapes of steel load transfer plates**
- **endurance required of steel load transfer plates**
- **supervises the making of the steel load transfer plates**
- **indicates shapes of the joint inductors**
- **the sizes of the joint inductors**
- **the materials to produce the joint inductors**
- **supervises the making and endurance of the joint inductors**
- **supervises and advise the construction works at the work's site and advise on formulas for high resilient concrete.**
- **guide the exact location of the steel transfer load plates as well the joint inductors along with other know how.**

COMPARATIVE ADVANTAGES

- **Asphalt pavements suffer with low and high temperatures**
- **Asphalt pavements absolve water and under negative temperatures open fissures on the surface of pavement.**
- **Concrete pavements resist better to high and low temperatures including snow and ice.**
- **Concrete slabs with load transfer bars cannot use E.P.S as a base once E.P.S. has 10% of elasticity and therefore concrete slabs with load transfer bars will break once they only just accept 2 mm maximum of differential settlements.**
- **Concrete is not pollutant, but bitumen is throughout its entire life pollutant and causes infiltration in the soil of hydrocarbons.**
- **Concrete pavements accumulate less heat and generate less global warming.**
- **IS.COM concrete pavements are 30% cheaper than asphalt, 40% faster to built and last for 40 years with no repairs**