## Contents

List of Tables	
List of Figures	
List of Charts	
1 INTRODUCTION	
2 HYPERBOLIC PARABOLOID	
2.1 Description of the structure	5
2.2 Loads	9
Snow load	9
Wind load	9
Partial factors for actions	12
2.3 Strand software	13
Brief program description	13
Design model	13
Output from the computation	15
Changing the shape	18
Conclusions	20
Design of cross-sections	21
2.4 Lira Software	29
Brief program description	29
Design model	29
Output from computation	31
Conclusions	35

i

2.5 RFEM Software	36
Brief program description	36
Form-finding process	36
Design model 1	37
Output from computation for design model 1	37
Conclusions	40
Design model 2	41
Design of cross-sections	44
2.6 Summary of the chapter 2	49
3 STADIUM ROOFING SYSTEM "KUNŠTAT"	50
3.1 Description of the structure	50
3.2 Loads	55
Snow load	55
Wind load	55
Load application	57
Load cases	59
3.3 Design model	60
3.4 Output from computation	62
Stress distribution in the membrane and internal force N before optimization	62
Substantiation of the preload value for pylon anchor ropes	s 64
Final design model after optimization	65
Stress distribution in the membrane and internal forces after optimization	66
3.5 Design of steel members	78
Cross-section of the membrane ropes	78

C	Cross-section of the membrane	79
C	Cross-section of the supporting columns, corner support	79
C	Cross-section of the supporting columns, central support	81
C	Cross-section of the anchor ropes, corner support	84
	Cross-section of the rafter supporting ropes, pylon and entral anchor ropes	85
C	Cross-section of the front anchor ropes	86
C	Cross-section of the pylon columns	87
R	after design	90
Si	teel consumption	99
3.6 Sum	nmary of the chapter 3	100
4 SUMMARY	Z .	101
Bibliography		103