

EMISSIONE	DATA	MODIFICHE
A	2017.11.10	PRIMA EMISSIONE
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## COMUNE DI CATANIA

### Completamento del Piano di Risanamento del Rione S. Berillo

Convenzione urbanistica del 16/11/2012 tra Comune di Catania e Istica s.p.a. - C.E.Co.S. s.r.l. -  
Risanamento San Berillo s.r.l.

OPERE DI URBANIZZAZIONE PRIMARIA - PARCHEGGI PUBBLICI INTERRATI CON SOVRASTANTE E  
ATTIGUA AREA A VERDE ATTREZZATO Vp1-Vp2

## PROGETTO ESECUTIVO

**STRUTTURE**  
Parcheggio interrato - Tabulato di calcolo 1/2

Tav: R16

Scala: --

### PROGETTAZIONE STRUTTURALE

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**Comune di Catania**  
Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

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San Berillo – Parcheggio Interrato Ottobre 2017\_var\_r3.dt

**En.Ex.Sys. WinStrand**  
Structural Analysis & Design

<b>Ditta produttrice:</b>	<b>En.Ex.Sys.</b> s.r.l. - Via Tizzano 46/2 - Casalecchio di Reno (Bologna)
<b>Sigla:</b>	WinStrand
<b>Piattaforma software:</b>	Microsoft Windows XP Home, Microsoft Windows XP Home Professional
<b>Documentazione in uso:</b>	Manuale teorico - Manuale d'uso
<b>Campo di applicazione:</b>	Analisi statica e dinamica di strutture in campo elastico lineare.

Elementi finiti implementati

- Truss.
- Beam (Modellazione di Travi e Pilastrini).
- Travi su suolo elastico alla Winckler.
- Plinti su suolo elastico alla Winckler.
- Elementi Shear Wall per la modellazione di pareti di taglio.
- Elementi shell (lastra/piastra) equivalenti.
- Elementi Isoparametrici a 8 Nodi Shell (lastra/piastra).

Schemi di Carico

- Carichi nodali concentrati.
- Carichi applicati direttamente agli elementi.
- Carichi Superficiali.

Tipo di Risoluzione

- Analisi statica e/o dinamica in campo lineare con il metodo dell'equilibrio.
- Fattorizzazione LDL<sup>T</sup>.
- Analisi Statica:
  - - modellazione generale 6 gradi di libertà per nodo.
    - ipotesi di solai infinitamente rigidi nel proprio piano (3 gradi di libertà per nodo + 3 per impalcato).
- Analisi dinamica. (Nel caso di analisi modale gli autovettori ed autovalori possono essere calcolati mediante *subspace iteration* oppure tramite il *metodo dei vettori di Ritz*):
  - - Via statica equivalente.
    - Modale con il metodo dello spettro di risposta.

Normativa di riferimento

La normativa italiana cui viene fatto riferimento nelle fasi di calcolo e progettazione è la seguente:

- Circolare del 2 Febbraio 2009, n. 617 "Istruzioni per l'applicazione delle "Norme tecniche per le costruzioni" di cui al D.M. 14 gennaio 2008"
- D.M. del 14 Gennaio 2008 "Approvazione delle nuove norme tecniche per le costruzioni"
- Legge n. 64 del 2 Febbraio 1974. "Provvedimenti per le costruzioni con particolari prescrizioni per le zone sismiche".
- Legge n. 1086 del 5 Novembre 1971. "Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso, ed a struttura metallica".

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**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

**Analisi dei carichi**

Piastra in c.a.- NTC08										San Berillo - Catania								
										Parcheggio - Analisi dei carichi								
PLATEA PARCHEGGIO										H tot [cm] = 60								
ANALISI DEI CARICHI																		
VALORI CARATTERISTICI																		
Calcestruzzo										0,60	x	2.500	=	1.500	kg/mq	$\gamma_{G1}$		
Permanenti strutt.												$G_{1K}$	=	1.500	x	1,3	1.950	kg/mq
Peso Iglu' H 80 cm													=	11	kg/mq			
Consumo calcestruzzo										0,118	x	2.400	=	283	kg/mq			
Caldana armata										0,10	x	2.500	=	250	kg/mq			
Pavimentazione industriale										0,20	x	2.400	=	480	kg/mq	$\gamma_{G2}$		
Permanenti non strutt.												$G_{2K}$	=	1.024	x	1,5	1.536	kg/mq
															$\gamma_Q$			
Carichi variabili												$Q_{2K}$	=	250	x	1,5	375	kg/mq
PLATEA RISERVA IDRICA										H tot [cm] = 60								
ANALISI DEI CARICHI																		
VALORI CARATTERISTICI																		
Calcestruzzo										0,60	x	2.500	=	1.500	kg/mq	$\gamma_{G1}$		
Permanenti strutt.												$G_{1K}$	=	1.500	x	1,3	1.950	kg/mq
Vespajo areato con igloo													=	250	kg/mq			
Pavimentazione industriale										0,20	x	2.400	=	480	kg/mq			
Peso dell'acqua										2,90	x	1.000	=	2.900	kg/mq	$\gamma_{G2}$		
Permanenti non strutt.												$G_{2K}$	=	3.630	x	1,5	5.445	kg/mq
															$\gamma_Q$			
Carichi variabili												$Q_{2K}$	=	0	x	1,5	0	kg/mq
PIASTRA PARCHEGGIO (Liv. -2 e -1)										H tot [cm] = 25								
ANALISI DEI CARICHI																		
VALORI CARATTERISTICI																		
Calcestruzzo										0,25	x	2.500	=	625	kg/mq	$\gamma_{G1}$		
Permanenti strutt.												$G_{1K}$	=	625	x	1,3	813	kg/mq
Pavimentazione industriale										0,20	x	2.400	=	480	kg/mq			
Intonaco													=	30	kg/mq			
Impianti													=	40	kg/mq	$\gamma_{G2}$		
Permanenti non strutt.												$G_{2K}$	=	550	x	1,5	825	kg/mq
															$\gamma_Q$			
Carichi variabili												$Q_{2K}$	=	250	x	1,5	375	kg/mq
PIASTRA PARCHEGGIO CON TERRENO H=1,00 ml (Liv. 0)										H tot [cm] = 50								
ANALISI DEI CARICHI																		
VALORI CARATTERISTICI																		
Calcestruzzo										0,50	x	2.500	=	1.250	kg/mq	$\gamma_{G1}$		
Permanenti strutt.												$G_{1K}$	=	1.250	x	1,3	1.625	kg/mq
Massetto										0,25	x	2.400	=	600	kg/mq			
Coibent + Imperm													=	20	kg/mq			
Terreno Vegetale										1,00	x	1.600	=	1.600	kg/mq			
Intonaco													=	30	kg/mq	$\gamma_{G2}$		
Permanenti non strutt.												$G_{2K}$	=	2.250	x	1,5	3.375	kg/mq
															$\gamma_Q$			
Carichi variabili												$Q_{2K}$	=	400	x	1,5	600	kg/mq

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<b>PIASTRA PARCHEGGIO CON TERRENO H=2,00 ml (Liv. 0)</b>						H tot [cm] =	50		
<b>ANALISI DEI CARICHI</b>									
	VALORI CARATTERISTICI								
	Calcestruzzo	0,50	x	2.500	=	1.250	kg/mq	$\gamma_{G1}$	
	<u>Permanenti strutt.</u>			<b>G<sub>1k</sub></b>	=	1.250	x	1,3	<b>1.625</b> kg/mq
	Massetto	0,25	x	2.400	=	600	kg/mq		
	Coibent + Imperm				=	20	kg/mq		
	Terreno Vegetale	2,00	x	1.600	=	3.200	kg/mq		
	Intonaco				=	30	kg/mq	$\gamma_{G2}$	
	<u>Permanenti non strutt.</u>			<b>G<sub>2k</sub></b>	=	3.850	x	1,5	<b>5.775</b> kg/mq
								$\gamma_Q$	
	<u>Carichi variabili</u>			<b>Q<sub>2k</sub></b>	=	400	x	1,5	<b>600</b> kg/mq
<b>PIASTRA PARCHEGGIO CON TERRENO H=3,00 ml (Liv. 0)</b>						H tot [cm] =	50		
<b>ANALISI DEI CARICHI</b>									
	VALORI CARATTERISTICI								
	Calcestruzzo	0,50	x	2.500	=	1.250	kg/mq	$\gamma_{G1}$	
	<u>Permanenti strutt.</u>			<b>G<sub>1k</sub></b>	=	1.250	x	1,3	<b>1.625</b> kg/mq
	Massetto	0,25	x	2.400	=	600	kg/mq		
	Coibent + Imperm				=	20	kg/mq		
	Terreno Vegetale	3,00	x	1.600	=	4.800	kg/mq		
	Intonaco				=	30	kg/mq	$\gamma_{G2}$	
	<u>Permanenti non strutt.</u>			<b>G<sub>2k</sub></b>	=	5.450	x	1,5	<b>8.175</b> kg/mq
								$\gamma_Q$	
	<u>Carichi variabili</u>			<b>Q<sub>2k</sub></b>	=	400	x	1,5	<b>600</b> kg/mq
<b>PIASTRA LIVELLO 0 LOC. TEC.</b>						H tot [cm] =	20		
<b>ANALISI DEI CARICHI</b>									
	VALORI CARATTERISTICI								
	Calcestruzzo	0,20	x	2.500	=	500	kg/mq	$\gamma_{G1}$	
	<u>Permanenti strutt.</u>			<b>G<sub>1k</sub></b>	=	500	x	1,3	<b>650</b> kg/mq
	Massetto	0,10	x	2.400	=	240	kg/mq		
	Pavimento					50	kg/mq		
	Intonaco				=	30	kg/mq	$\gamma_{G2}$	
	<u>Permanenti non strutt.</u>			<b>G<sub>2k</sub></b>	=	320	x	1,5	<b>480</b> kg/mq
								$\gamma_Q$	
	<u>Carichi variabili</u>			<b>Q<sub>2k</sub></b>	=	400	x	1,5	<b>600</b> kg/mq
<b>PIASTRA COPERTURA LOC. TEC.</b>						H tot [cm] =	20		
<b>ANALISI DEI CARICHI</b>									
	VALORI CARATTERISTICI								
	Calcestruzzo	0,20	x	2.500	=	500	kg/mq	$\gamma_{G1}$	
	<u>Permanenti strutt.</u>			<b>G<sub>1k</sub></b>	=	500	x	1,3	<b>650</b> kg/mq
	Massetto	0,15	x	2.400	=	360	kg/mq		
	Coibent + Imperm				=	10	kg/mq		
	Pavimento					50	kg/mq		
	Intonaco				=	30	kg/mq	$\gamma_{G2}$	
	<u>Permanenti non strutt.</u>			<b>G<sub>2k</sub></b>	=	450	x	1,5	<b>675</b> kg/mq
								$\gamma_Q$	
	<u>Carichi variabili</u>			<b>Q<sub>2k</sub></b>	=	100	x	1,5	<b>150</b> kg/mq
<b>SOLETTA RAMPA</b>						H tot [cm] =	25		
<b>ANALISI DEI CARICHI</b>									
	VALORI CARATTERISTICI								
	Calcestruzzo	0,25	x	2.500	=	625	kg/mq	$\gamma_{G1}$	
	<u>Permanenti strutt.</u>			<b>G<sub>1k</sub></b>	=	625	x	1,3	<b>813</b> kg/mq
	Paviment. Industr.	0,20	x	2.200	=	440	kg/mq		
	Intonaco				=	30	kg/mq	$\gamma_{G2}$	
	<u>Permanenti non strutt.</u>			<b>G<sub>2k</sub></b>	=	470	x	1,5	<b>705</b> kg/mq
								$\gamma_Q$	
	<u>Carichi variabili</u>			<b>Q<sub>2k</sub></b>	=	500	x	1,5	<b>750</b> kg/mq

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<b>SOLETTA COPERTURA RAMPA</b>						H tot [cm] =	20												
<b>ANALISI DEI CARICHI</b>																			
VALORI CARATTERISTICI																			
	Calcestruzzo	0,20	x	2.500	=	500	kg/mq	$\gamma_{G1}$											
	Permanenti strutt.			$G_{1k}$	=	500	x	1,3	650	kg/mq									
	Massetto	0,20	x	2.000	=	400	kg/mq												
	Coib. + Imperm.				=	20	kg/mq												
	Terreno vegetale	0,15	x	1.600	=	240	kg/mq												
	Intonaco				=	30	kg/mq	$\gamma_{G2}$											
	Permanenti non strutt.			$G_{2k}$	=	690	x	1,5	1.035	kg/mq									
	Carichi variabili			$Q_{2k}$	=	100	x	1,5	150	kg/mq									
<b>GRIGLIATO DI COPERTURA CANALI SHUNT</b>																			
<b>ANALISI DEI CARICHI</b>																			
VALORI CARATTERISTICI																			
	Trave in acciaio				=	14	kg/mq												
	Orsogrill				=	20	kg/mq	$\gamma_{G1}$											
	Permanenti strutt.			$G_{1k}$	=	34	x	1,3	44	kg/mq									
	Permanenti non strutt.			$G_{2k}$	=		x	1,5	0	kg/mq									
	Carichi variabili			$Q_{2k}$	=	500	x	1,5	750	kg/mq									
<b>GRIGLIATO IN LEGNO</b>																			
<b>ANALISI DEI CARICHI</b>		L'analisi dei carichi si riferisce al metro di sviluppo longitudinale del grigliato																	
<b>LISTELLI VERTICALI</b>										<b>LISTELLI ORIZZONTALI</b>									
Base	0,04	m				Base	0,08	m											
Profondità	0,06	m				Profondità	0,08	m											
Lunghezza	5,00	m				Lunghezza	1,00	m											
Passo	0,08	m				Numero	6,0	n/m											
<b>TRAVIA SBALZO IN ACCIAIO</b>																			
Numero travi	2	n																	
Listelli verticali	0,04	x	0,06	x	5,00	/	0,08	x	650	/	2	=	49	kg/m					
Listelli orizzontali	0,08	x	0,08	x	1,00	x	6,0	x	650	/	2	=	12	kg/m					
										<b>Permanenti non strutturali: <math>G_{2k}</math> 61 x 1,50 = 92 kg/m</b>									

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**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno					Setto H=14,25 ml		
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale	14,70	[ml]	H		
		Altezza terreno sul setto	14,70	[ml]	Ht		
		Larghezza elemento	1,00	[ml]	B		
DATI SISMICI		Categoria Terreno	B				
		Accelerazione al suolo	0,247		ag/g		
		Coeff. Topografico	1,000	[adim]	S <sub>T</sub>		
		Coeff. Stratigrafico	1,157	[adim]	S <sub>S</sub>		
		Coeff. di Amplificazione	1,157	[adim]	S		
		Coeff. di combinazione	0,600		ψ <sub>2</sub>		
		Coeff. di riduzione acc. max	0,31	[adim]	β <sub>m</sub>		
		Accelerazione massima	0,286		a <sub>max</sub>		
		Coeff. sismico orizzontale	0,089		k <sub>h</sub>		
		Coeff. sismico verticale	0,044		k <sub>v</sub>		
		Inclinazione risultante forza peso e d'inerzia	5,31	[°ses]	ι	Rivolta verso l'alto	
		Inclinazione risultante forza peso e d'inerzia	4,86	[°ses]	ι	Rivolta verso il basso	
		Coeff. spinta attiva in sisma	0,370	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto	
		Coeff. spinta attiva in sisma	0,364	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso	
DATI GEOTECNICI		Coeff. Parziale	1,25	[adim]	γ <sub>o</sub>		
		Angolo di pendio	0	[°ses]	β		
		Angolo paramento interno rispetto all'orizzontale	90	[°ses]	ψ		
		Angolo d'attrito	35	[°ses]	φ <sub>k</sub>		
		Angolo d'attrito ridotto	29,3	[°ses]	φ' <sub>k</sub>		
		Angolo d'attrito paratia-terreno	19,5	[°ses]	δ		
		Peso specifico	2,00	[t/mc]	γ		
		Coeff. spinta attiva	0,306	[adim]	K <sub>a</sub>		
DATI DI CARICO		Sovraccarico	2,00	[t/mq]	q		
PROFONDITA' (dalla testa) H		[ml]	14,70				
Quota di applicazione (dalla testa)		[ml]	7,35				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	66,13				
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	80,02		Componente verticale diretta verso l'alto	} Si considera tra le due la spinta maggiore	
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	78,71		Componente verticale diretta verso il basso		
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	13,89				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	9,00				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	5,40				
Pressione esercitata dal terreno fondo scavo					Spinta a mq		
		Da quota	0,00		Da quota	0,00	
		a quota	-14,70		a quota	-14,70	
Pressione P <sub>A</sub>		[t/m]	9,00		Spinta uniforme equivalente a S <sub>A</sub>	[t/mq]	4,50
Pressione dovuta al sisma Ps		[t/m]	1,89		Spinta uniforme equivalente a S <sub>s</sub>	[t/mq]	0,94
Pressione dovuta al sovraccarico Pq		[t/m]	0,61		Spinta uniforme equivalente a S <sub>q</sub>	[t/mq]	0,61
Pressione dovuta al sovracc. a Pq <sub>s</sub> in sisma		[t/m]	0,37		Spinta uniforme equivalente a S <sub>q<sub>s</sub></sub> in sisma	[t/mq]	0,37
Pressione in assenza di sisma		[t/m]	9,61		Spinta in assenza di sisma	[t/mq]	5,44
Pressione in presenza di sisma		[t/m]	11,25		Spinta in presenza di sisma	[t/mq]	5,81

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**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno				Setto H=14,25 ml			
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale		14,25	[ml]	H	
		Altezza terreno sul setto		14,25	[ml]	Ht	
		Larghezza elemento		1,00	[ml]	B	
DATI SISMICI		Categoria Terreno		B			
		Accelerazione al suolo		0,247		ag/g	
		Coeff. Topografico		1,000	[adim]	S <sub>T</sub>	
		Coeff. Stratigrafico		1,157	[adim]	S <sub>S</sub>	
		Coeff. di Amplificazione		1,157	[adim]	S	
		Coeff. di combinazione		0,600		ψ <sub>2</sub>	
		Coeff. di riduzione acc. max		0,31	[adim]	β <sub>m</sub>	
		Accelerazione massima		0,286		a <sub>max</sub>	
		Coeff. sismico orizzontale		0,089		k <sub>h</sub>	
		Coeff. sismico verticale		0,044		k <sub>v</sub>	
		Inclinazione risultante forza peso e d'inerzia		5,31	[°ses]	ι	Rivolta verso l'alto
		Inclinazione risultante forza peso e d'inerzia		4,86	[°ses]	ι	Rivolta verso il basso
		Coeff. spinta attiva in sisma		0,370	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto
		Coeff. spinta attiva in sisma		0,364	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso
DATI GEOTECNICI		Coeff. Parziale		1,25	[adim]	γ <sub>o</sub>	
		Angolo di pendio		0	[°ses]	β	
		Angolo paramento interno rispetto all'orizzontale		90	[°ses]	ψ	
		Angolo d'attrito		35	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito ridotto		29,3	[°ses]	φ' <sub>k</sub>	
		Angolo d'attrito paratia-terreno		19,5	[°ses]	δ	
		Peso specifico		2,00	[t/mc]	γ	
		Coeff. spinta attiva		0,306	[adim]	K <sub>a</sub>	
DATI DI CARICO		Sovraccarico		2,00	[t/mq]	q	
PROFONDITA' (dalla testa) H		[ml]	14,25				
Quota di applicazione (dalla testa)		[ml]	7,13				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	62,14				
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	75,19	Componente verticale diretta verso l'alto		}	Si considera tra le due la spinta maggiore
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	73,96	Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	13,05				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	8,72				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	5,23				
Pressione esercitata dal terreno fondo scavo				Spinta a mq			
		Da quota	0,00			Da quota	0,00
		a quota	-14,25			a quota	-14,25
Pressione P <sub>A</sub>		[t/m]	8,72	Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]	4,36
Pressione dovuta al sisma P <sub>s</sub>		[t/m]	1,83	Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]	0,92
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]	0,61	Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]	0,61
Pressione dovuta al sovracc. a P <sub>qs</sub> in sisma		[t/m]	0,37	Spinta uniforme equivalente a S <sub>qs</sub> in sisma		[t/mq]	0,37
Pressione in assenza di sisma		[t/m]	9,33	Spinta in assenza di sisma		[t/mq]	5,28
Pressione in presenza di sisma		[t/m]	10,92	Spinta in presenza di sisma		[t/mq]	5,64
<div>SCHEMA DI CARICO</div> <div></div>							



Calcolo delle spinte del terreno				Setto H=14,25 ml - folla compatta			
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale	14,25	[ml]	H		
		Altezza terreno sul setto	14,25	[ml]	Ht		
		Larghezza elemento	1,00	[ml]	B		
DATI SISMICI		Categoria Terreno	B				
		Accelerazione al suolo	0,247		ag/g		
		Coeff. Topografico	1,000	[adim]	S <sub>T</sub>		
		Coeff. Stratigrafico	1,157	[adim]	S <sub>S</sub>		
		Coeff. di Amplificazione	1,157	[adim]	S		
		Coeff. di combinazione	0,600		ψ <sub>2</sub>		
		Coeff. di riduzione acc. max	0,31	[adim]	β <sub>m</sub>		
		Accelerazione massima	0,286		a <sub>max</sub>		
		Coeff. sismico orizzontale	0,089		k <sub>h</sub>		
		Coeff. sismico verticale	0,044		k <sub>v</sub>		
		Inclinazione risultante forza peso e d'inerzia	5,31	[°ses]	ϑ	Rivolta verso l'alto	
		Inclinazione risultante forza peso e d'inerzia	4,86	[°ses]	ϑ	Rivolta verso il basso	
		Coeff. spinta attiva in sisma	0,370	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto	
		Coeff. spinta attiva in sisma	0,364	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso	
DATI GEOTECNICI		Coeff. Parziale	1,25	[adim]	γ <sub>o</sub>		
		Angolo di pendio	0	[°ses]	β		
		Angolo paramento interno rispetto all'orizzontale	90	[°ses]	ψ		
		Angolo d'attrito	35	[°ses]	φ <sub>k</sub>		
		Angolo d'attrito ridotto	29,3	[°ses]	φ' <sub>k</sub>		
		Angolo d'attrito paratia-terreno	19,5	[°ses]	δ		
		Peso specifico	2,00	[t/mc]	γ		
		Coeff. spinta attiva	0,306	[adim]	K <sub>a</sub>		
DATI DI CARICO		Sovraccarico	0,50	[t/mq]	q		
PROFONDITA' (dalla testa) H		[ml]	14,25				
Quota di applicazione (dalla testa)		[ml]	7,13				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x ka		[t]	62,14				
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	75,19		Componente verticale diretta verso l'alto		
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	73,96		Componente verticale diretta verso il basso		
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	13,05				
sq: spinta sovracc.							
B x q x Ht x Ka		[t]	2,18				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x Ka		[t]	1,31				
Pressione esercitata dal terreno fondo scavo					Spinta a mq		
		Da quota	0,00			Da quota	0,00
		a quota	-14,25			a quota	-14,25
Pressione P <sub>A</sub>		[t/m]	8,72		Spinta uniforme equivalente a S <sub>A</sub>	[t/mq]	4,36
Pressione dovuta al sisma Ps		[t/m]	1,83		Spinta uniforme equivalente a S <sub>s</sub>	[t/mq]	0,92
Pressione dovuta al sovraccarico Pq		[t/m]	0,15		Spinta uniforme equivalente a S <sub>q</sub>	[t/mq]	0,15
Pressione dovuta al sovracc. a Pq <sub>s</sub> in sisma		[t/m]	0,09		Spinta uniforme equivalente a S <sub>q<sub>s</sub></sub> in sisma	[t/mq]	0,09
Pressione in assenza di sisma		[t/m]	8,87		Spinta in assenza di sisma	[t/mq]	5,28
Pressione in presenza di sisma		[t/m]	10,65		Spinta in presenza di sisma	[t/mq]	5,37
<div style="text-align: center;"> <p>SCHEMA DI CARICO</p> </div>							

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno				Setto H=13,50 ml			
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale		13,50	[ml]	H	
		Altezza terreno sul setto		13,50	[ml]	Ht	
		Larghezza elemento		1,00	[ml]	B	
DATI SISMICI		Categoria Terreno		B			
		Accelerazione al suolo		0,247		ag/g	
		Coeff. Topografico		1,000	[adim]	S <sub>T</sub>	
		Coeff. Stratigrafico		1,157	[adim]	S <sub>S</sub>	
		Coeff. di Amplificazione		1,157	[adim]	S	
		Coeff. di combinazione		0,600		ψ <sub>2</sub>	
		Coeff. di riduzione acc. max		0,31	[adim]	β <sub>m</sub>	
		Accelerazione massima		0,286		a <sub>max</sub>	
		Coeff. sismico orizzontale		0,089		k <sub>h</sub>	
		Coeff. sismico verticale		0,044		k <sub>v</sub>	
		Inclinazione risultante forza peso e d'inerzia		5,31	[°ses]	ι	Rivolta verso l'alto
		Inclinazione risultante forza peso e d'inerzia		4,86	[°ses]	ι	Rivolta verso il basso
		Coeff. spinta attiva in sisma		0,370	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto
		Coeff. spinta attiva in sisma		0,364	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso
DATI GEOTECNICI		Coeff. Parziale		1,25	[adim]	γ <sub>o</sub>	
		Angolo di pendio		0	[°ses]	β	
		Angolo paramento interno rispetto all'orizzontale		90	[°ses]	ψ	
		Angolo d'attrito		35	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito ridotto		29,3	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito paratia-terreno		19,5	[°ses]	δ	
		Peso specifico		2,00	[t/mc]	γ	
		Coeff. spinta attiva		0,306	[adim]	K <sub>a</sub>	
DATI DI CARICO		Sovraccarico		2,00	[t/mq]	q	
PROFONDITA' (dalla testa) H		[ml]	13,50				
Quota di applicazione (dalla testa)		[ml]	6,75				
S <sub>A</sub> : sp. attiva B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	55,77				
S <sub>AE</sub> : Spinta in sisma B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	67,48	Componente verticale diretta verso l'alto			Si considera tra le due la spinta maggiore
S <sub>AE</sub> : Spinta in sisma B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	66,38	Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma S <sub>AE</sub> - S <sub>A</sub>		[t]	11,71				
sq: spinta sovracc. B x q x Ht x K <sub>a</sub>		[t]	8,26				
sq <sub>s</sub> : spinta sovracc. in sisma B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	4,96				
Pressione esercitata dal terreno fondo scavo				Spinta a mq			
		Da quota	0,00			Da quota	0,00
		a quota	-13,50			a quota	-13,50
Pressione P <sub>A</sub>		[t/m]	8,26	Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]	4,13
Pressione dovuta al sisma P <sub>s</sub>		[t/m]	1,74	Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]	0,87
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]	0,61	Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]	0,61
Pressione dovuta al sovracc. a P <sub>qs</sub> in sisma		[t/m]	0,37	Spinta uniforme equivalente a S <sub>qs</sub> in sisma		[t/mq]	0,37
Pressione in assenza di sisma		[t/m]	8,87	Spinta in assenza di sisma		[t/mq]	5,00
Pressione in presenza di sisma		[t/m]	10,37	Spinta in presenza di sisma		[t/mq]	5,37

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**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno				Setto H=13,50 ml - folla compatta			
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale		13,50	[ml]	H	
		Altezza terreno sul setto		13,50	[ml]	Ht	
		Larghezza elemento		1,00	[ml]	B	
DATI SISMICI		Categoria Terreno		B			
		Accelerazione al suolo		0,247		ag/g	
		Coeff. Topografico		1,000	[adim]	S <sub>T</sub>	
		Coeff. Stratigrafico		1,157	[adim]	S <sub>S</sub>	
		Coeff. di Amplificazione		1,157	[adim]	S	
		Coeff. di combinazione		0,600		ψ <sub>2</sub>	
		Coeff. di riduzione acc. max		0,31	[adim]	β <sub>m</sub>	
		Accelerazione massima		0,286		a <sub>max</sub>	
		Coeff. sismico orizzontale		0,089		k <sub>h</sub>	
		Coeff. sismico verticale		0,044		k <sub>v</sub>	
		Inclinazione risultante forza peso e d'inerzia		5,31	[°ses]	ι	Rivolta verso l'alto
		Inclinazione risultante forza peso e d'inerzia		4,86	[°ses]	ι	Rivolta verso il basso
		Coeff. spinta attiva in sisma		0,370	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto
		Coeff. spinta attiva in sisma		0,364	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso
DATI GEOTECNICI		Coeff. Parziale		1,25	[adim]	γ <sub>o</sub>	
		Angolo di pendio		0	[°ses]	β	
		Angolo paramento interno rispetto all'orizzontale		90	[°ses]	ψ	
		Angolo d'attrito		35	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito ridotto		29,3	[°ses]	φ' <sub>k</sub>	
		Angolo d'attrito paratia-terreno		19,5	[°ses]	δ	
		Peso specifico		2,00	[t/mc]	γ	
		Coeff. spinta attiva		0,306	[adim]	K <sub>a</sub>	
DATI DI CARICO		Sovraccarico		0,50	[t/mq]	q	
PROFONDITA' (dalla testa) H		[ml]	13,50				
Quota di applicazione (dalla testa)		[ml]	6,75				
S <sub>A</sub> : sp.attiva B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	55,77				
S <sub>AE</sub> : Spinta in sisma B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	67,48	Componente verticale diretta verso l'alto		}	Si considera tra le due la spinta maggiore
S <sub>AE</sub> : Spinta in sisma B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	66,38	Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma S <sub>AE</sub> - S <sub>A</sub>		[t]	11,71				
sq: spinta sovracc. B x q x Ht x K <sub>a</sub>		[t]	2,07				
sq <sub>s</sub> : spinta sovracc. in sisma B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	1,24				
Pressione esercitata dal terreno fondo scavo				Spinta a mq			
		Da quota	0,00		Da quota	0,00	
		a quota	-13,50		a quota	-13,50	
Pressione P <sub>A</sub>		[t/m]	8,26	Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]	4,13
Pressione dovuta al sisma P <sub>s</sub>		[t/m]	1,74	Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]	0,87
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]	0,15	Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]	0,15
Pressione dovuta al sovracc. a P <sub>qs</sub> in sisma		[t/m]	0,09	Spinta uniforme equivalente a S <sub>qs</sub> in sisma		[t/mq]	0,09
Pressione in assenza di sisma		[t/m]	8,42	Spinta in assenza di sisma		[t/mq]	5,00
Pressione in presenza di sisma		[t/m]	10,09	Spinta in presenza di sisma		[t/mq]	5,09
<div>SCHEMA DI CARICO</div> <div></div>							

**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno										Setto H=12,40 ml	
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.											
DATI GEOMETRICI		Altezza totale		12,40		[ml]		H			
		Altezza terreno sul setto		12,40		[ml]		Ht			
		Larghezza elemento		1,00		[ml]		B			
DATI SISMICI		Categoria Terreno		B							
		Accelerazione al suolo		0,247				ag/g			
		Coeff. Topografico		1,000		[adim]		S <sub>T</sub>			
		Coeff. Stratigrafico		1,157		[adim]		S <sub>S</sub>			
		Coeff. di Amplificazione		1,157		[adim]		S			
		Coeff. di combinazione		0,600				ψ <sub>2</sub>			
		Coeff. di riduzione acc. max		0,31		[adim]		β <sub>m</sub>			
		Accelerazione massima		0,286				a <sub>max</sub>			
		Coeff. sismico orizzontale		0,089				k <sub>h</sub>			
		Coeff. sismico verticale		0,044				k <sub>v</sub>			
		Inclinazione risultante forza peso e d'inerzia		5,31		[°ses]		ι		Rivolta verso l'alto	
		Inclinazione risultante forza peso e d'inerzia		4,86		[°ses]		ι		Rivolta verso il basso	
		Coeff. spinta attiva in sisma		0,370		[adim]		K <sub>AE</sub>		Comp. vert. diretta verso l'alto	
		Coeff. spinta attiva in sisma		0,364		[adim]		K <sub>AE</sub>		Comp. vert. diretta verso il basso	
DATI GEOTECNICI		Coeff. Parziale		1,25		[adim]		γ <sub>o</sub>			
		Angolo di pendio		0		[°ses]		β			
		Angolo paramento interno rispetto all'orizzontale		90		[°ses]		ψ			
		Angolo d'attrito		35		[°ses]		φ <sub>k</sub>			
		Angolo d'attrito ridotto		29,3		[°ses]		φ' <sub>k</sub>			
		Angolo d'attrito paratia-terreno		19,5		[°ses]		δ			
		Peso specifico		2,00		[t/mc]		γ			
		Coeff. spinta attiva		0,306		[adim]		K <sub>a</sub>			
DATI DI CARICO		Sovraccarico		2,00		[t/mq]		q			
PROFONDITA' (dalla testa) H		[ml]		12,40							
Quota di applicazione (dalla testa)		[ml]		6,20							
S <sub>A</sub> : sp.attiva		B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]		47,05					
S <sub>AE</sub> : Spinta in sisma		B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]		56,94		Componente verticale diretta verso l'alto		} Si considera tra le due la spinta maggiore	
S <sub>AE</sub> : Spinta in sisma		B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]		56,00		Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma		S <sub>AE</sub> - S <sub>A</sub>		[t]		9,88					
sq: spinta sovracc.		B x q x Ht x K <sub>a</sub>		[t]		7,59					
sq <sub>s</sub> : spinta sovracc. in sisma		B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]		4,55					
Pressione esercitata dal terreno fondo scavo				Spinta a mq							
		Da quota		0,00				Da quota		0,00	
		a quota		-12,40				a quota		-12,40	
Pressione P <sub>A</sub>		[t/m]		7,59		Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]		3,79	
Pressione dovuta al sisma P <sub>s</sub>		[t/m]		1,59		Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]		0,80	
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]		0,61		Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]		0,61	
Pressione dovuta al sovracc. a P <sub>qs</sub> in sisma		[t/m]		0,37		Spinta uniforme equivalente a S <sub>qs</sub> in sisma		[t/mq]		0,37	
Pressione in assenza di sisma		[t/m]		8,20		Spinta in assenza di sisma		[t/mq]		4,59	
Pressione in presenza di sisma		[t/m]		9,55		Spinta in presenza di sisma		[t/mq]		4,96	

Calcolo delle spinte del terreno				Setto H=12,40 ml - folla compatta			
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale	12,40	[ml]	H		
		Altezza terreno sul setto	12,40	[ml]	Ht		
		Larghezza elemento	1,00	[ml]	B		
DATI SISMICI		Categoria Terreno	B				
		Accelerazione al suolo	0,247		ag/g		
		Coeff. Topografico	1,000	[adim]	S <sub>T</sub>		
		Coeff. Stratigrafico	1,157	[adim]	S <sub>S</sub>		
		Coeff. di Amplificazione	1,157	[adim]	S		
		Coeff. di combinazione	0,600		ψ <sub>2</sub>		
		Coeff. di riduzione acc. max	0,31	[adim]	β <sub>m</sub>		
		Accelerazione massima	0,286		a <sub>max</sub>		
		Coeff. sismico orizzontale	0,089		k <sub>h</sub>		
		Coeff. sismico verticale	0,044		k <sub>v</sub>		
		Inclinazione risultante forza peso e d'inerzia	5,31	[°ses]	ι	Rivolta verso l'alto	
		Inclinazione risultante forza peso e d'inerzia	4,86	[°ses]	ι	Rivolta verso il basso	
		Coeff. spinta attiva in sisma	0,370	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto	
		Coeff. spinta attiva in sisma	0,364	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso	
DATI GEOTECNICI		Coeff. Parziale	1,25	[adim]	γ <sub>o</sub>		
		Angolo di pendio	0	[°ses]	β		
		Angolo paramento interno rispetto all'orizzontale	90	[°ses]	ψ		
		Angolo d'attrito	35	[°ses]	φ <sub>k</sub>		
		Angolo d'attrito ridotto	29,3	[°ses]	φ' <sub>k</sub>		
		Angolo d'attrito paratia-terreno	19,5	[°ses]	δ		
		Peso specifico	2,00	[t/mc]	γ		
		Coeff. spinta attiva	0,306	[adim]	K <sub>a</sub>		
DATI DI CARICO		Sovraccarico	0,50	[t/mq]	q		
PROFONDITA' (dalla testa) H		[ml]	12,40				
Quota di applicazione (dalla testa)		[ml]	6,20				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht <sup>2</sup> x k <sub>a</sub>		[t]	47,05				
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht <sup>2</sup> x K <sub>AE</sub>		[t]	56,94		Componente verticale diretta verso l'alto		
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht <sup>2</sup> x K <sub>AE</sub>		[t]	56,00		Componente verticale diretta verso il basso		
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	9,88				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	1,90				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	1,14				
Pressione esercitata dal terreno fondo scavo					Spinta a mq		
		Da quota	0,00			Da quota	0,00
		a quota	-12,40			a quota	-12,40
Pressione P <sub>A</sub>		[t/m]	7,59		Spinta uniforme equivalente a S <sub>A</sub>	[t/mq]	3,79
Pressione dovuta al sisma Ps		[t/m]	1,59		Spinta uniforme equivalente a S <sub>s</sub>	[t/mq]	0,80
Pressione dovuta al sovraccarico Pq		[t/m]	0,15		Spinta uniforme equivalente a S <sub>q</sub>	[t/mq]	0,15
Pressione dovuta al sovracc. a Pq <sub>s</sub> in sisma		[t/m]	0,09		Spinta uniforme equivalente a Sq <sub>s</sub> in sisma	[t/mq]	0,09
Pressione in assenza di sisma		[t/m]	7,74		Spinta in assenza di sisma	[t/mq]	4,59
Pressione in presenza di sisma		[t/m]	9,27		Spinta in presenza di sisma	[t/mq]	4,68
<div style="text-align: center;"> <p>SCHEMA DI CARICO</p> </div>							



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**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno				Setto H=3,50 ml			
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale		3,50	[ml]	H	
		Altezza terreno sul setto		3,50	[ml]	Ht	
		Larghezza elemento		1,00	[ml]	B	
DATI SISMICI		Categoria Terreno		B			
		Accelerazione al suolo		0,247		ag/g	
		Coeff. Topografico		1,000	[adim]	S <sub>T</sub>	
		Coeff. Stratigrafico		1,157	[adim]	S <sub>S</sub>	
		Coeff. di Amplificazione		1,157	[adim]	S	
		Coeff. di combinazione		0,300		ψ <sub>2</sub>	
		Coeff. di riduzione acc. max		0,31	[adim]	β <sub>m</sub>	
		Accelerazione massima		0,286		a <sub>max</sub>	
		Coeff. sismico orizzontale		0,089		k <sub>h</sub>	
		Coeff. sismico verticale		0,044		k <sub>v</sub>	
		Inclinazione risultante forza peso e d'inerzia		5,31	[°ses]	ι	Rivolta verso l'alto
		Inclinazione risultante forza peso e d'inerzia		4,86	[°ses]	ι	Rivolta verso il basso
		Coeff. spinta attiva in sisma		0,435	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto
		Coeff. spinta attiva in sisma		0,428	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso
DATI GEOTECNICI		Coeff. Parziale		1,25	[adim]	γ <sub>o</sub>	
		Angolo di pendio		0	[°ses]	β	
		Angolo paramento interno rispetto all'orizzontale		90	[°ses]	ψ	
		Angolo d'attrito		30	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito ridotto		24,8	[°ses]	φ' <sub>k</sub>	
		Angolo d'attrito paratia-terreno		16,5	[°ses]	δ	
		Peso specifico		1,60	[t/mc]	γ	
		Coeff. spinta attiva		0,364	[adim]	K <sub>a</sub>	
DATI DI CARICO		Sovraccarico		0,50	[t/mq]	q	
PROFONDITA' (dalla testa) H		[ml]	3,50				
Quota di applicazione (dalla testa)		[ml]	1,75				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	3,56				
S <sub>AE</sub> : Spinta in sisma							Si considera tra le due la spinta maggiore
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	4,26	Componente verticale diretta verso l'alto			
S <sub>AE</sub> : Spinta in sisma							Si considera tra le due la spinta maggiore
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	4,20	Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	0,70				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	0,64				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	0,19				
Pressione esercitata dal terreno fondo scavo				Spinta a mq			
		Da quota	0,00			Da quota	0,00
		a quota	-3,50			a quota	-3,50
Pressione P <sub>A</sub>		[t/m]	2,04	Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]	1,02
Pressione dovuta al sisma Ps		[t/m]	0,40	Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]	0,20
Pressione dovuta al sovraccarico Pq		[t/m]	0,18	Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]	0,18
Pressione dovuta al sovracc. a Pq <sub>s</sub> in sisma		[t/m]	0,05	Spinta uniforme equivalente a S <sub>q<sub>s</sub></sub> in sisma		[t/mq]	0,05
Pressione in assenza di sisma		[t/m]	2,22	Spinta in assenza di sisma		[t/mq]	1,22
Pressione in presenza di sisma		[t/m]	2,49	Spinta in presenza di sisma		[t/mq]	1,27





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**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno					Setto H=2,80 ml		
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale	2,80	[ml]	H		
		Altezza terreno sul setto	2,80	[ml]	Ht		
		Larghezza elemento	1,00	[ml]	B		
DATI SISMICI		Categoria Terreno	B				
		Accelerazione al suolo	0,247		ag/g		
		Coeff. Topografico	1,000	[adim]	S <sub>T</sub>		
		Coeff. Stratigrafico	1,157	[adim]	S <sub>S</sub>		
		Coeff. di Amplificazione	1,157	[adim]	S		
		Coeff. di combinazione	0,600		ψ <sub>2</sub>		
		Coeff. di riduzione acc. max	0,31	[adim]	β <sub>m</sub>		
		Accelerazione massima	0,286		a <sub>max</sub>		
		Coeff. sismico orizzontale	0,089		k <sub>h</sub>		
		Coeff. sismico verticale	0,044		k <sub>v</sub>		
		Inclinazione risultante forza peso e d'inerzia	5,31	[°ses]	ι	Rivolta verso l'alto	
		Inclinazione risultante forza peso e d'inerzia	4,86	[°ses]	ι	Rivolta verso il basso	
		Coeff. spinta attiva in sisma	0,435	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto	
		Coeff. spinta attiva in sisma	0,428	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso	
DATI GEOTECNICI		Coeff. Parziale	1,25	[adim]	γ <sub>o</sub>		
		Angolo di pendio	0	[°ses]	β		
		Angolo paramento interno rispetto all'orizzontale	90	[°ses]	ψ		
		Angolo d'attrito	30	[°ses]	φ <sub>k</sub>		
		Angolo d'attrito ridotto	24,8	[°ses]	φ' <sub>k</sub>		
		Angolo d'attrito paratia-terreno	16,5	[°ses]	δ		
		Peso specifico	1,60	[t/mc]	γ		
		Coeff. spinta attiva	0,364	[adim]	K <sub>a</sub>		
DATI DI CARICO		Sovraccarico	0,50	[t/mq]	q		
PROFONDITA' (dalla testa) H		[ml]	2,80				
Quota di applicazione (dalla testa)		[ml]	1,40				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	2,28				
S <sub>AE</sub> : Spinta in sisma						} Si considera tra le due la spinta maggiore	
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	2,73	Componente verticale diretta verso l'alto			
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	2,69	Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	0,45				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	0,51				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	0,31				
Pressione esercitata dal terreno fondo scavo				Spinta a mq			
		Da quota	0,00		Da quota	0,00	
		a quota	-2,80		a quota	-2,80	
Pressione P <sub>A</sub>		[t/m]	1,63	Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]	0,81
Pressione dovuta al sisma P <sub>s</sub>		[t/m]	0,32	Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]	0,16
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]	0,18	Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]	0,18
Pressione dovuta al sovracc. a P <sub>q</sub> s in sisma		[t/m]	0,11	Spinta uniforme equivalente a S <sub>q</sub> s in sisma		[t/mq]	0,11
Pressione in assenza di sisma		[t/m]	1,81	Spinta in assenza di sisma		[t/mq]	0,97
Pressione in presenza di sisma		[t/m]	2,06	Spinta in presenza di sisma		[t/mq]	1,08

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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno					Setto H=2,40 ml		
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale	2,40	[ml]	H		
		Altezza terreno sul setto	2,40	[ml]	Ht		
		Larghezza elemento	1,00	[ml]	B		
DATI SISMICI		Categoria Terreno	B				
		Accelerazione al suolo	0,247		ag/g		
		Coeff. Topografico	1,000	[adim]	S <sub>T</sub>		
		Coeff. Stratigrafico	1,157	[adim]	S <sub>S</sub>		
		Coeff. di Amplificazione	1,157	[adim]	S		
		Coeff. di combinazione	0,600		ψ <sub>2</sub>		
		Coeff. di riduzione acc. max	0,31	[adim]	β <sub>m</sub>		
		Accelerazione massima	0,286		a <sub>max</sub>		
		Coeff. sismico orizzontale	0,089		k <sub>h</sub>		
		Coeff. sismico verticale	0,044		k <sub>v</sub>		
		Inclinazione risultante forza peso e d'inerzia	5,31	[°ses]	ι	Rivolta verso l'alto	
		Inclinazione risultante forza peso e d'inerzia	4,86	[°ses]	ι	Rivolta verso il basso	
		Coeff. spinta attiva in sisma	0,435	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto	
		Coeff. spinta attiva in sisma	0,428	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso	
DATI GEOTECNICI		Coeff. Parziale	1,25	[adim]	γ <sub>o</sub>		
		Angolo di pendio	0	[°ses]	β		
		Angolo paramento interno rispetto all'orizzontale	90	[°ses]	ψ		
		Angolo d'attrito	30	[°ses]	φ <sub>k</sub>		
		Angolo d'attrito ridotto	24,8	[°ses]	φ' <sub>k</sub>		
		Angolo d'attrito paratia-terreno	16,5	[°ses]	δ		
		Peso specifico	1,60	[t/mc]	γ		
		Coeff. spinta attiva	0,364	[adim]	K <sub>a</sub>		
DATI DI CARICO		Sovraccarico	0,50	[t/mq]	q		
PROFONDITA' (dalla testa) H		[ml]	2,40				
Quota di applicazione (dalla testa)		[ml]	1,20				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	1,68				
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	2,00		Componente verticale diretta verso l'alto	} Si considera tra le due la spinta maggiore	
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	1,97		Componente verticale diretta verso il basso		
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	0,33				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	0,44				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	0,26				
Pressione esercitata dal terreno fondo scavo					Spinta a mq		
		Da quota	0,00		Da quota	0,00	
		a quota	-2,40		a quota	-2,40	
Pressione P <sub>A</sub>		[t/m]	1,40		Spinta uniforme equivalente a S <sub>A</sub>	[t/mq]	0,70
Pressione dovuta al sisma P <sub>s</sub>		[t/m]	0,27		Spinta uniforme equivalente a S <sub>s</sub>	[t/mq]	0,14
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]	0,18		Spinta uniforme equivalente a S <sub>q</sub>	[t/mq]	0,18
Pressione dovuta al sovracc. a P <sub>q<sub>s</sub></sub> in sisma		[t/m]	0,11		Spinta uniforme equivalente a S <sub>q<sub>s</sub></sub> in sisma	[t/mq]	0,11
Pressione in assenza di sisma		[t/m]	1,58		Spinta in assenza di sisma	[t/mq]	0,83
Pressione in presenza di sisma		[t/m]	1,78		Spinta in presenza di sisma	[t/mq]	0,94

**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno						Setto H=2,00 ml	
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.							
DATI GEOMETRICI		Altezza totale		2,00	[ml]	H	
		Altezza terreno sul setto		2,00	[ml]	Ht	
		Larghezza elemento		1,00	[ml]	B	
DATI SISMICI		Categoria Terreno		B			
		Accelerazione al suolo		0,247		ag/g	
		Coeff. Topografico		1,000	[adim]	S <sub>T</sub>	
		Coeff. Stratigrafico		1,157	[adim]	S <sub>S</sub>	
		Coeff. di Amplificazione		1,157	[adim]	S	
		Coeff. di combinazione		0,600		ψ <sub>2</sub>	
		Coeff. di riduzione acc. max		0,31	[adim]	β <sub>m</sub>	
		Accelerazione massima		0,286		a <sub>max</sub>	
		Coeff. sismico orizzontale		0,089		k <sub>h</sub>	
		Coeff. sismico verticale		0,044		k <sub>v</sub>	
		Inclinazione risultante forza peso e d'inerzia		5,31	[°ses]	ι	Rivolta verso l'alto
		Inclinazione risultante forza peso e d'inerzia		4,86	[°ses]	ι	Rivolta verso il basso
		Coeff. spinta attiva in sisma		0,435	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso l'alto
		Coeff. spinta attiva in sisma		0,428	[adim]	K <sub>AE</sub>	Comp. vert. diretta verso il basso
DATI GEOTECNICI		Coeff. Parziale		1,25	[adim]	γ <sub>o</sub>	
		Angolo di pendio		0	[°ses]	β	
		Angolo paramento interno rispetto all'orizzontale		90	[°ses]	ψ	
		Angolo d'attrito		30	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito ridotto		24,8	[°ses]	φ' <sub>k</sub>	
		Angolo d'attrito paratia-terreno		16,5	[°ses]	δ	
		Peso specifico		1,60	[t/mc]	γ	
		Coeff. spinta attiva		0,364	[adim]	K <sub>a</sub>	
DATI DI CARICO		Sovraccarico		0,50	[t/mq]	q	
PROFONDITA' (dalla testa) H		[ml]	2,00				
Quota di applicazione (dalla testa)		[ml]	1,00				
S <sub>A</sub> : sp. attiva							
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	1,16				
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	1,39	Componente verticale diretta verso l'alto		}	Si considera tra le due la spinta maggiore
S <sub>AE</sub> : Spinta in sisma							
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	1,37	Componente verticale diretta verso il basso			
ss: incremento di spinta in sisma							
S <sub>AE</sub> - S <sub>A</sub>		[t]	0,23				
sq: spinta sovracc.							
B x q x Ht x K <sub>a</sub>		[t]	0,36				
sq <sub>s</sub> : spinta sovracc. in sisma							
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	0,22				
Pressione esercitata dal terreno fondo scavo				Spinta a mq			
		Da quota	0,00			Da quota	0,00
		a quota	-2,00			a quota	-2,00
Pressione P <sub>A</sub>		[t/m]	1,16	Spinta uniforme equivalente a S <sub>A</sub>		[t/mq]	0,58
Pressione dovuta al sisma P <sub>s</sub>		[t/m]	0,23	Spinta uniforme equivalente a S <sub>s</sub>		[t/mq]	0,11
Pressione dovuta al sovraccarico P <sub>q</sub>		[t/m]	0,18	Spinta uniforme equivalente a S <sub>q</sub>		[t/mq]	0,18
Pressione dovuta al sovracc. a P <sub>q</sub> s in sisma		[t/m]	0,11	Spinta uniforme equivalente a S <sub>q</sub> s in sisma		[t/mq]	0,11
Pressione in assenza di sisma		[t/m]	1,35	Spinta in assenza di sisma		[t/mq]	0,70
Pressione in presenza di sisma		[t/m]	1,50	Spinta in presenza di sisma		[t/mq]	0,80

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Calcolo delle spinte del terreno				Setto H=1,20 ml				
Di seguito vengono calcolate le spinte del terreno sulle pareti della struttura.								
DATI GEOMETRICI		Altezza totale			1,20	[ml]	H	
		Altezza terreno sul setto			1,20	[ml]	Ht	
		Larghezza elemento			1,00	[ml]	B	
DATI SISMICI		Categoria Terreno			B			
		Accelerazione al suolo			0,247		ag/g	
		Coeff. Topografico			1,000	[adim]	S <sub>T</sub>	
		Coeff. Stratigrafico			1,157	[adim]	S <sub>S</sub>	
		Coeff. di Amplificazione			1,157	[adim]	S	
		Coeff. di combinazione			0,300		ψ <sub>2</sub>	
		Coeff. di riduzione acc. max			0,31	[adim]	β <sub>m</sub>	
		Acceelerazione massima			0,286		a <sub>max</sub>	
		Coeff. sismico orizzontale			0,089		k <sub>h</sub>	
		Coeff. sismico verticale			0,044		k <sub>v</sub>	
		Inclinazione risultante forza peso e d'inerzia			5,31	[°ses]	ι	
		Inclinazione risultante forza peso e d'inerzia			4,86	[°ses]	ι	
		Coeff. spinta attiva in sisma			0,435	[adim]	K <sub>AE</sub>	
		Coeff. spinta attiva in sisma			0,428	[adim]	K <sub>AE</sub>	
DATI GEOTECNICI		Coeff. Parziale			1,25	[adim]	γ <sub>o</sub>	
		Angolo di pendio			0	[°ses]	β	
		Angolo paramento interno rispetto all'orizzontale			90	[°ses]	ψ	
		Angolo d'attrito			30	[°ses]	φ <sub>k</sub>	
		Angolo d'attrito ridotto			24,8	[°ses]	φ' <sub>k</sub>	
		Angolo d'attrito paratia-terreno			16,5	[°ses]	δ	
		Peso specifico			1,60	[t/mc]	γ	
		Coeff. spinta attiva			0,364	[adim]	K <sub>a</sub>	
DATI DI CARICO		Sovraccarico			0,50	[t/mq]	q	
PROFONDITA' (dalla testa) H		[ml]	1,20					
Quota di applicazione (dalla testa)		[ml]	0,60					
S <sub>A</sub> : sp. attiva								
B x 0,5 x γ x Ht^2 x k <sub>a</sub>		[t]	0,42					
S <sub>AE</sub> : Spinta in sisma								
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	0,50					
							Componente verticale diretta verso l'alto	
S <sub>AE</sub> : Spinta in sisma								
B x 0,5 x γ x Ht^2 x K <sub>AE</sub>		[t]	0,49					
							Componente verticale diretta verso il basso	
ss: incremento di spinta in sisma								
S <sub>AE</sub> - S <sub>A</sub>		[t]	0,08					
sq: spinta sovracc.								
B x q x Ht x K <sub>a</sub>		[t]	0,22					
sq <sub>s</sub> : spinta sovracc. in sisma								
B x q x ψ <sub>2</sub> x Ht x K <sub>a</sub>		[t]	0,07					
Pressione esercitata dal terreno fondo scavo				Spinta a mq				
		Da quota	0,00			Da quota	0,00	
		a quota	-1,20			a quota	-1,20	
Pressione P <sub>A</sub>		[t/m]	0,70			Spinta uniforme equivalente a S <sub>A</sub>	[t/mq]	0,35
Pressione dovuta al sisma Ps		[t/m]	0,14			Spinta uniforme equivalente a S <sub>s</sub>	[t/mq]	0,07
Pressione dovuta al sovraccarico Pq		[t/m]	0,18			Spinta uniforme equivalente a S <sub>q</sub>	[t/mq]	0,18
Pressione dovuta al sovracc. a Pq <sub>s</sub> in sisma		[t/m]	0,05			Spinta uniforme equivalente a S <sub>q<sub>s</sub></sub> in sisma	[t/mq]	0,05
Pressione in assenza di sisma		[t/m]	0,88			Spinta in assenza di sisma	[t/mq]	0,42
Pressione in presenza di sisma		[t/m]	0,89			Spinta in presenza di sisma	[t/mq]	0,47
<div>SCHEMA DI CARICO</div> <div></div>								

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

**Verifiche elementi secondari**

Soletta in c.a. - NTC08										PARCHEGGIO	
DATI SEZIONE										Soletta Rampa carrabile	
H tot [cm] =		25		Larghezza trav e [cm] =		40		Lb			
MATERIALI											
CALCESTRUZZO		C32/40				Rck	=	400	kg/cmq		
		f <sub>ck</sub>	=	0,83	x	400	=	332	kg/cmq		
		f <sub>cm</sub>	=	332	+	80	=	412	kg/cmq		
		f <sub>ctm</sub>	=				=	17	kg/cmq		
	(γ <sub>c</sub> =1,5 - α <sub>cc</sub> =0,85)	f <sub>cd</sub>	=	332	/	1,76	=	188	kg/cmq		
		E <sub>cm</sub>	=				=	336.428	kg/cmq		
ACCIAIO		B450C									
		f <sub>yk</sub>	=	4.300	kg/cmq						
	(γ <sub>s</sub> =1,15)	f <sub>yd</sub>	=	4.300	/	1,15	=	3.739	kg/cmq		
ANALISI DEI CARICHI											
VALORI CARATTERISTICI											
Calcestruzzo		0,25	x	2.500	=	625	kg/mq	γ <sub>G1</sub>			
Permanenti strutt.				G <sub>1k</sub>	=	625	x	1,3	813	kg/mq	
Paviment. Industr.		0,20	x	2.200	=	440	kg/mq				
Intonaco					=	30	kg/mq	γ <sub>G2</sub>			
Permanenti non strutt.				G <sub>2k</sub>	=	470	x	1,5	705	kg/mq	
Carichi variabili				G <sub>2k</sub>	=	500	x	1,5	750	kg/mq	
VALORI DI CALCOLO		Gd	=	813	+	705	=	1.518	kg/mq		
		Qd	=				=	750	kg/mq		
						Carico Totale Qt	=	2.268	kg/mq		
DATI GEOMETRICI											
Luce di calcolo		Lc	=	4,35	ml	(in asse trav i)					
Larghezza di calcolo		b	=	1,00	ml						
Copri ferro		c	=	3,0	cm						
Altezza utile della sezione		d	=	22,0	cm						
DATI DI CARICO											
Carico lineare q:		Qt x b	=	2.268	kg/ml						
CARATTERISTICHE DI SOLLECITAZIONE											
Coefficiente Km				10	12						
Md = (q x Lc²) / Km			=	4.291	3.576	kgm					
Vsd = (q x (Lc-Lb) ) / 2			=		4.478	kg					
VERIFICHE SLV											
		Campata						Bordo			
Armatura minima		7,5	cmq			Asmin1 = Md / (0,9 x d x f <sub>yd</sub> )		7,5	cmq		
		φ	n	Area			Asmin2 = 0,3% H x b		φ	n	Area
Armatura in progetto		16	3	6,0					16	3	6,0
		16	2	4,0					16	2	4,0
		Totale As =		10,1	>	7,5	7,5	<	Totale As =		10,1
MOMENTI RESISTENTI											
		M <sub>rs</sub>						M <sub>d</sub>	K		
Acciaio		7.443	kgm	Mrs = 0,9 x d x f <sub>yd</sub> x As				>	4.291	1,7	Camp
		7.443	kgm	Mrs = 0,9 x d x f <sub>yd</sub> x As				>	3.576	2,1	Bordo
Calcestruzzo		b		Mrc	=	(d / r) <sup>2</sup> / b				K	
Sezione piena		100	cm	12.100	kgm			>	4.291	2,8	
TAGLIO											
				V <sub>Rd1</sub>	K	p <sub>1</sub>	v <sub>min</sub>	V <sub>Rd1</sub>		V <sub>R2</sub>	
Sezione piena		100	cm	10.852	kg	1,95	0,005	0,326	10.852	>	7.166
				V <sub>sd</sub>			V <sub>Rd1</sub>	K			
				4.478	kg	<	10.852	2,4			
VERIFICHE SLE - Deformazione											
							f [cm]	f [cm]	Lc / f	Min	
Permanenti strutturali		625	x	1,0	=	625	kg/ml	0,07	0,12	3.733	250
Permanenti non strutt.		470	x	1,0	=	470	kg/ml	0,05			
Variabili		500	x	1,0	=	500	kg/ml	0,05	0,05	8.174	300
Controllo verifiche:		Acciaio: Verificato									
		Calcestruzzo: Verificato									
		Taglio: Verificato									
		Deformazione: Verificato									

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

Soletta in c.a. - NTC08										<a href="#">PARCHEGGIO</a>	
DATI SEZIONE										Soletta Copertura Rampa	
H tot [cm] =		20		Larghezza trave [cm] =		40		Lb			
MATERIALI											
CALCESTRUZZO		C32/ 40				Rck	=	400	kg/cmq		
		f <sub>ck</sub>	=	0,83	x	400	=	332	kg/cmq		
		f <sub>cm</sub>	=	332	+	80	=	412	kg/cmq		
		f <sub>ctm</sub>	=				=	17	kg/cmq		
(γ <sub>c</sub> =1,5 - α <sub>cc</sub> =0,85)		f <sub>cd</sub>	=	332	/	1,76	=	188	kg/cmq		
		E <sub>cm</sub>	=				=	336.428	kg/cmq		
ACCIAIO		B450C									
		f <sub>yk</sub>	=	4.300	kg/cmq						
(γ <sub>s</sub> =1,15)		f <sub>yd</sub>	=	4.300	/	1,15	=	3.739	kg/cmq		
ANALISI DEI CARICHI											
VALORI CARATTERISTICI											
Calcestruzzo		0,20	x	2.500	=	500	kg/mq	γ <sub>G1</sub>			
Permanenti strutt.				G <sub>1k</sub>	=	500	x	1,3	650	kg/mq	
Massetto		0,20	x	2.000	=	400	kg/mq				
Coiben. + Imperm.					=	20	kg/mq				
Terreno vegetale		0,15	x	1.600	=	240	kg/mq				
Intonaco					=	30	kg/mq	γ <sub>G2</sub>			
Permanenti non strutt.				G <sub>2k</sub>	=	690	x	1,5	1.035	kg/mq	
								γ <sub>Q</sub>			
Carichi variabili				G <sub>2k</sub>	=	100	x	1,5	150	kg/mq	
VALORI DI CALCOLO		Gd	=	650	+	1.035	=	1.685	kg/mq		
		Qd	=				=	150	kg/mq		
						Carico Totale Qt	=	1.835	kg/mq		
DATI GEOMETRICI											
Luce di calcolo		Lc	=	4,35	ml	(in asse travi)					
Larghezza di calcolo		b	=	1,00	ml						
Copriferro		c	=	4,0	cm						
Altezza utile della sezione		d	=	16,0	cm						
DATI DI CARICO											
Carico lineare q:		Qt x b	=	1.835	kg/ml						
CARATTERISTICHE DI SOLLECITAZIONE											
				Camp	Bordo						
Coefficiente Km				10	12						
Md = (q x Lc²) / Km			=	3.472	2.894	kgm					
Vsd = (q x (Lc-Lb) ) / 2			=		3.624	kg					
VERIFICHE SLV											
		Campata						Bordo			
Armatura minima		6,4	cmq	Asmin1 = Md / (0,9 x d x fyd)		6,0	cmq				
		φ	n	Area	Asmin2 = 0,3% H x b	φ	n	Area			
Armatura in progetto		14	3	4,6			14	3	4,6		
		14	2	3,1			14	2	3,1		
		Totale As =		7,7	>	6,4	6,0	<	Totale As =		7,7
MOMENTI RESISTENTI											
		M <sub>rs</sub>						M <sub>d</sub>	K		
Acciaio		4.144	kgm	Mrs = 0,9 x d x fyd x As				>	3.472	1,2	Camp
		4.144	kgm	Mrs = 0,9 x d x fyd x As				>	2.894	1,4	Bordo
Calcestruzzo		b		Mrc	=	(d / r)^2 / b				K	
Sezione piena		100	cm	6.400	kgm			>	3.472	1,8	
TAGLIO											
				V <sub>Rd1</sub>	K	ρ <sub>1</sub>	v <sub>min</sub>	V <sub>Rd1</sub>		V <sub>R2</sub>	
Sezione piena		100	cm	8.220	kg	2,00	0,005	0,337	8.220	>	5.399
				V <sub>sd</sub>		V <sub>Rd1</sub>		K			
				3.624	kg	<	8.220	2,3			
VERIFICHE SLE - Deformazione											
							f [cm]	f [cm]	Lc / f	Min	
Permanenti strutturali		500	x	1,0	=	500	kg/ml	0,10			
Permanenti non strutt.		690	x	1,0	=	690	kg/ml	0,14	0,25	1.759	250
Variabili		100	x	1,0	=	100	kg/ml	0,02	0,02	20.926	300
Controllo verifiche:		Acciaio: Verificato									
		Calcestruzzo: Verificato									
		Taglio: Verificato									
		Deformazione: Verificato									

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Gradino a sbalzo in c.a. - NTC08</b>									
<b>DATI SEZIONE</b>									
<a href="#">PARCHEGGIO</a>									
Sbalzo Gradino Ln 155									
Alzata [cm] =	16,75			Pedata [cm] =	30				
Spessore soletta [cm] =	15								
H tot [cm] =	15,0			Larghezza trav e [cm] =	30	Lb			
<b>MATERIALI</b>									
CALCESTRUZZO	<b>C32/40</b>			Rck	=	400	kg/cm <sup>2</sup>		
	$f_{ck}$	=	0,83	x	400	=	332	kg/cm <sup>2</sup>	
	$f_{cm}$	=	332	+	80	=	412	kg/cm <sup>2</sup>	
	$f_{ctm}$	=				=	17	kg/cm <sup>2</sup>	
$(\gamma_c = 1,5 - \alpha_{cc} = 0,85)$	$f_{cd}$	=	332	/	1,76	=	188	kg/cm <sup>2</sup>	
	$E_{cm}$	=				=	336.428	kg/cm <sup>2</sup>	
ACCIAIO	<b>B450C</b>								
	$f_{yk}$	=	4.300	kg/cm <sup>2</sup>					
$(\gamma_s = 1,15)$	$f_{yd}$	=	4.300	/	1,15	=	3.739	kg/cm <sup>2</sup>	
<b>ANALISI DEI CARICHI</b>									
<b>VALORI CARATTERISTICI</b>									
Calcestruzzo soletta	0,15	x	2.500	=	375	kg/mq			
Calcestruzzo gradino	0,08	x	2.500	=	209	kg/mq	$\gamma_{G1}$		
<u>Permanenti strutt.</u>			<b>G<sub>1K</sub></b>	=	584	x	1,3	<b>760</b>	kg/mq
Grado e sottogrado				=	100	kg/mq			
Intonaco				=	30	kg/mq			
Incidenza parapetto				=	50	kg/mq	$\gamma_{G2}$		
<u>Permanenti non strutt.</u>			<b>G<sub>2K</sub></b>	=	180	x	1,5	<b>270</b>	kg/mq
							$\gamma_Q$		
<u>Carichi variabili</u>			<b>G<sub>2K</sub></b>	=	400	x	1,5	<b>600</b>	kg/mq
<b>VALORI DI CALCOLO</b>	<b>Gd</b>	=	<b>760</b>	+	<b>270</b>	=	<b>1.030</b>	kg/mq	
	<b>Qd</b>	=				=	<b>600</b>	kg/mq	
						=	<b>1.630</b>	kg/mq	
						Carico Totale Qt			
<b>DATI GEOMETRICI</b>									
Luce di calcolo	Lc	=	1,55	ml					
Larghezza di calcolo	b	=	0,30	ml					
Copriferro	c	=	3,0	cm					
Altezza utile della sezione	d	=	12,0	cm					
<b>DATI DI CARICO</b>									
Carico lineare q:	Qt x b	=	489	kg/ml					
<b>CARATTERISTICHE DI SOLLECITAZIONE</b>									
			Incastro						
Coefficiente Km			<b>2</b>						
Md = 1,4 x (q x Lc <sup>2</sup> ) / Km		=	822	kgm					
Vsd = 1,4 x (q x Lc)		=	1.061	kg					
<b>VERIFICHE SLV</b>									
Armatura minima	Asmin1 = Md / (0,9 x d x fyd)				Asmin =	2,0	cmq		
	Asmin2 = 0,3% H x b					$\phi$	n	Area	
Armatura in progetto						<b>12</b>	<b>1</b>	1,1	
						<b>12</b>	<b>1</b>	1,1	
					2,0	<	Totale As =	2,3	
<b>MOMENTI RESISTENTI</b>									
	$M_{rs}$						$M_d$	K	
Acciaio	913	kgm	Mrs = 0,9 x d x fyd x As			>	822	1,1	Incastro
Calcestruzzo	b		Mrc =	[d / r] <sup>2</sup> / b				K	
Sezione piena	30	cm	1.080	kgm		>	822	1,3	
<b>TAGLIO</b>									
Sezione piena	30	cm	$V_{Rd1}$	K	$\rho_1$	$v_{min}$	$V_{Rd1}$		$V_{R2}$
			2.022	kg	2,00	0,006	0,337	2.022	>
			$V_{sd}$		$V_{Rd1}$		K		
			1.061	kg	<	2.022	1,9		
Controllo verifiche:			Acciaio: Verificato						
			Calcestruzzo: Verificato						
			Taglio: Verificato						

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Soletta in c.a. - NTC08										PARCHEGGIO	
DATI SEZIONE											
H tot [cm] =		15		Larghezza trave [cm] =		30		Lb			
MATERIALI											
CALCESTRUZZO		C32/40		Rck		=		400		kg/cmq	
		f <sub>ck</sub>		=		0,83		x		400	
		f <sub>cm</sub>		=		332		+		80	
		f <sub>ctm</sub>		=						17	
(γ <sub>c</sub> =1,5 - α <sub>cc</sub> =0,85)		f <sub>cd</sub>		=		332		/		1,76	
		E <sub>cm</sub>		=						336.428	
ACCIAIO		B450C									
		f <sub>yk</sub>		=		4.300		kg/cmq			
(γ <sub>s</sub> =1,15)		f <sub>yd</sub>		=		4.300		/		1,15	
ANALISI DEI CARICHI											
VALORI CARATTERISTICI											
Calcestruzzo		0,15		x		2.500		=		375	
Permanenti strutt.						G <sub>1k</sub>		=		375	
Massetto		0,10		x		2.000		=		200	
Pavimento								=		60	
Intonaco								=		30	
Incidenza parapetti								=		50	
Permanenti non strutt.						G <sub>2k</sub>		=		340	
										γ <sub>G2</sub>	
Carichi variabili						G <sub>2k</sub>		=		400	
VALORI DI CALCOLO		Gd		=		488		+		510	
		Qd		=						600	
										1.598	
DATI GEOMETRICI											
Luce di calcolo		Lc		=		3,60		ml		(in asse travi)	
Larghezza di calcolo		b		=		1,00		ml			
Copriferro		c		=		3,0		cm			
Altezza utile della sezione		d		=		12,0		cm			
DATI DI CARICO											
Carico lineare q:		Qt x b		=		1.598		kg/ml			
CARATTERISTICHE DI SOLLECITAZIONE											
Coefficiente Km				Camp		Bordo					
Md = (q x Lc²) / Km				=		2.070		1.725		kgm	
Vsd = (q x (Lc-Lb) ) / 2				=		2.636		kg			
VERIFICHE SLV											
		Campata								Bordo	
Armatura minima		5,1		cmq		Asmin1 = Md / (0,9 x d x f <sub>yd</sub> )				4,5	
		φ		n		Asmin2 = 0,3% H x b				φ	
Armatura in progetto		14		2						14	
		14		2						14	
		Totale As =		6,2		>		5,1		4,5	
MOMENTI RESISTENTI											
		M <sub>rs</sub>								M <sub>d</sub>	
Acciaio		2.487		kgm		Mrs = 0,9 x d x f <sub>yd</sub> x As				>	
		2.487		kgm		Mrs = 0,9 x d x f <sub>yd</sub> x As				>	
Calcestruzzo		b		Mrc		=		(d / r)^2 / b			
Sezione piena		100		cm		3.600		kgm		>	
TAGLIO											
				V <sub>Rd1</sub>		K		ρ <sub>1</sub>		V <sub>min</sub>	
Sezione piena		100		cm		6.299		kg		2,00	
				V <sub>sd</sub>				V <sub>Rd1</sub>		K	
				2.636		kg		<		6.299	
VERIFICHE SLE - Deformazione											
								f [cm]		f [cm]	
Permanenti strutturali		375		x		1,0		=		375	
Permanenti non strutt.		340		x		1,0		=		340	
Variabili		400		x		1,0		=		400	
Controllo verifiche:		Acciaio:		Verificato							
		Calcestruzzo:		Verificato							
		Taglio:		Verificato							
		Deformazione:		Verificato							



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Soletta Scala in c.a. - NTC08										PARCHEGGIO	
DATI SEZIONE										Soletta Scala Tipo - Rampa lunga	
	H tot [cm] =		25		Larghezza trav e [cm] =		30		Lb		
MATERIALI											
	CALCESTRUZZO	C32/ 40				Rck	=	400	kg/cmq		
		f <sub>ck</sub>	=	0,83	x	400	=	332	kg/cmq		
		f <sub>cm</sub>	=	332	+	80	=	412	kg/cmq		
		f <sub>ctm</sub>	=				=	17	kg/cmq		
	(γ <sub>c</sub> =1,5 - α <sub>cc</sub> =0,85)	f <sub>cd</sub>	=	332	/	1,76	=	188	kg/cmq		
		E <sub>cm</sub>	=				=	336.428	kg/cmq		
	ACCIAIO	B450C									
		f <sub>yk</sub>	=	4.300	kg/cmq						
	(γ <sub>s</sub> =1,15)	f <sub>yd</sub>	=	4.300	/	1,15	=	3.739	kg/cmq		
ANALISI DEI CARICHI											
	VALORI CARATTERISTICI										
	Calcestruzzo soletta	0,25	x	2.500	=	625	kg/mq	γ <sub>G1</sub>			
	<u>Permanenti strutt.</u>			G <sub>1K</sub>	=	625	x	1,3	813	kg/mq	
	Calcestruzzo gradino	0,08	x	2.500	=	201	kg/mq				
	Grado e sottogrado				=	100	kg/mq				
	Pavimento				=	60	kg/mq				
	Intonaco				=	30	kg/mq				
	Incidenza parapetto				=	50	kg/mq	γ <sub>G2</sub>			
	<u>Permanenti non strutt.</u>			G <sub>2K</sub>	=	441	x	1,5	662	kg/mq	
								γ <sub>Q</sub>			
	<u>Carichi variabili</u>			G <sub>2K</sub>	=	400	x	1,5	600	kg/mq	
	VALORI DI CALCOLO	G <sub>d</sub>	=	813	+	662	=	1.474	kg/mq		
		Q <sub>d</sub>	=				=	600	kg/mq		
						Carico Totale Q <sub>t</sub>	=	2.074	kg/mq		
DATI GEOMETRICI											
	Lunghezza pianerottolo 1	Lc	=	0,95	ml		Alzata	=	0,161	ml	
	Lunghezza rampa	Lc	=	4,20	ml		Pedata	=	0,30	ml	
	Lunghezza pianerottolo 2	Lc	=	0,95	ml		Inclinazione	=	28	°se	
	Luce di calcolo	Lc	=	6,67	ml						
	Larghezza di calcolo	b	=	0,85	ml						
	Copriferro	c	=	3,0	cm						
	Altezza utile della sezione	d	=	22,0	cm						
DATI DI CARICO											
	Carico lineare q:	Q <sub>t</sub> x b	=	1.763	kg/ml						
CARATTERISTICHE DI SOLLECITAZIONE											
				Camp	Bordo						
	Coefficiente Km			10	12						
	Md = (q x Lc²) / Km		=	7.836	6.530	kgm					
	Vsd = (q x (Lc-Lb) ) / 2		=		5.613	kg					
VERIFICHE SLV											
		Campata						Bordo			
	Armatura minima	10,6	cmq		Asmin1 = Md / (0,9 x d x fyd)		8,8	cmq			
		φ	n	Area	Asmin2 = 0,3% H x b		φ	n	Area		
	Armatura in progetto	16	3	6,0			16	3	6,0		
		16	3	6,0			16	3	6,0		
		Totale As =		12,1	>	10,6	8,8	<	Totale As =		12,1
MOMENTI RESISTENTI											
		M <sub>rs</sub>						M <sub>d</sub>		K	
	Acciaio	8.931	kgm	Mrs = 0,9 x d x fyd x As			>	7.836	1,1	Camp	
		8.931	kgm	Mrs = 0,9 x d x fyd x As			>	6.530	1,4	Bordo	
	Calcestruzzo	b		Mrc	=	(d / r)^2 / b					
	Sezione piena	85	cm	10.285	kgm			>	7.836	1,3	
TAGLIO											
	Sezione piena	85	cm	10.348	kg	1,95	0,006	0,326	10.348	>	6.091
				V <sub>sd</sub>			V <sub>Rd1</sub>		K		
				5.613	kg	<	10.348		1,8		
	Controllo verifiche:	Acciaio: Verificato									
		Calcestruzzo: Verificato									
		Taglio: Verificato									

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**Parcheggio interrato - Tabulato di calcolo**

Soletta Scala in c.a. - NTC08										PARCHEGGIO	
DATI SEZIONE										Soletta Scala Servi zi - Rampa corta	
H tot [cm] =		20		Larghezza trav e [cm] =		30		Lb			
MATERIALI											
CALCESTRUZZO		C32/ 40				Rck	=	400	kg/cm <sup>q</sup>		
		f <sub>ck</sub>	=	0,83	x	400	=	332	kg/cm <sup>q</sup>		
		f <sub>cm</sub>	=	332	+	80	=	412	kg/cm <sup>q</sup>		
		f <sub>ctm</sub>	=				=	17	kg/cm <sup>q</sup>		
(γ <sub>c</sub> =1,5 - α <sub>cc</sub> =0,85)		f <sub>cd</sub>	=	332	/	1,76	=	188	kg/cm <sup>q</sup>		
		E <sub>cm</sub>	=				=	336.428	kg/cm <sup>q</sup>		
ACCIAIO		B450C									
		f <sub>yk</sub>	=	4.300	kg/cm <sup>q</sup>						
(γ <sub>s</sub> =1,15)		f <sub>yd</sub>	=	4.300	/	1,15	=	3.739	kg/cm <sup>q</sup>		
ANALISI DEI CARICHI											
VALORI CARATTERISTICI											
Calcestruzzo soletta		0,20	x	2.500	=	500	kg/m <sup>q</sup>	γ <sub>G1</sub>			
Permanenti strutt.				G <sub>1K</sub>	=	500	x	1,3	650	kg/m <sup>q</sup>	
Calcestruzzo gradino		0,08	x	2.500	=	201	kg/m <sup>q</sup>				
Grado e sottogrado					=	100	kg/m <sup>q</sup>				
Pavimento					=	60	kg/m <sup>q</sup>				
Intonaco					=	30	kg/m <sup>q</sup>				
Incidenza parapetto					=	50	kg/m <sup>q</sup>	γ <sub>G2</sub>			
Permanenti non strutt.				G <sub>2K</sub>	=	441	x	1,5	662	kg/m <sup>q</sup>	
								γ <sub>Q</sub>			
Carichi v variabili				G <sub>2K</sub>	=	400	x	1,5	600	kg/m <sup>q</sup>	
VALORI DI CALCOLO		G <sub>d</sub>	=	650	+	662	=	1.312	kg/m <sup>q</sup>		
		Q <sub>d</sub>	=				=	600	kg/m <sup>q</sup>		
						Carico Totale Q <sub>t</sub>	=	1.912	kg/m <sup>q</sup>		
DATI GEOMETRICI											
Lunghezza pianerottolo 1		Lc	=	0,95	ml		Alzata	=	0,161	ml	
Lunghezza rampa		Lc	=	2,40	ml		Pedata	=	0,30	ml	
Lunghezza pianerottolo 2		Lc	=	1,05	ml		Inclinazione	=	28	°se	
Luce di calcolo		Lc	=	4,72	ml						
Larghezza di calcolo		b	=	0,85	ml						
Copriferro		c	=	3,0	cm						
Altezza utile della sezione		d	=	17,0	cm						
DATI DI CARICO											
Carico lineare q:		Q <sub>t</sub> x b	=	1.625	kg/ml						
CARATTERISTICHE DI SOLLECITAZIONE											
Coefficiente Km				10	12						
M <sub>d</sub> = (q x Lc <sup>2</sup> ) / Km			=	3.626	3.022	kgm					
V <sub>sd</sub> = (q x (Lc-Lb) ) / 2			=		3.595	kg					
VERIFICHE SLV											
		Campata					Bordo				
Armatura minima		6,3	cm <sup>q</sup>		As <sub>min1</sub> = M <sub>d</sub> / (0,9 x d x f <sub>yd</sub> )	5,3	cm <sup>q</sup>				
		φ	n	Area	As <sub>min2</sub> = 0,3% H x b		φ	n	Area		
Armatura in progetto		16	2	4,0			16	2	4,0		
		16	2	4,0			16	2	4,0		
		Totale As =		8,0	>	6,3	5,3	<	Totale As =		8,0
MOMENTI RESISTENTI											
		M <sub>rs</sub>						M <sub>d</sub>	K		
Acciaio		4.601	kgm	M <sub>rs</sub> = 0,9 x d x f <sub>yd</sub> x As			>	3.626	1,3	Camp	
		4.601	kgm	M <sub>rs</sub> = 0,9 x d x f <sub>yd</sub> x As			>	3.022	1,5	Bordo	
Calcestruzzo		b		M <sub>rc</sub>	=	(d / r) <sup>2</sup> / b					
Sezione piena		85	cm	6.141	kgm			>	3.626	1,7	
TAGLIO											
Sezione piena		85	cm	V <sub>Rd1</sub>	kg	2,00	0,006	V <sub>min</sub>	V <sub>Rd1</sub>	>	V <sub>R2</sub>
				V <sub>sd</sub>	kg		V <sub>Rd1</sub>		K		
				3.595		<	7.793		2,2		
Controllo verifiche:		Acciaio: Verificato									
		Calcestruzzo: Verificato									
		Taglio: Verificato									

**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

CLASSIFICAZIONE DELLE SEZIONI IN ACCIAIO - NTC08						
PROFILI AD H						
IPE 120						
Altezza della sezione trasversale				h	120,00	[mm]
Larghezza della sezione trasversale				b	64,00	[mm]
Spessore dell'anima				t <sub>w</sub>	4,40	[mm]
Spessore delle ali				t <sub>f</sub>	6,30	[mm]
Raggio di raccordo				r	7,00	[mm]
Eventuale spessore della saldatura delle ali con l'anima				s	0,00	[mm]
CARATTERISTICHE MECCANICHE						
Altezza tra le ali				h <sub>i</sub>	107,40	[mm]
Altezza della porzione saldabile				d	93,40	[mm]
Area della sezione trasversale				A	13,2	[cm²]
Area della sezione resistente al taglio agente lungo z				A <sub>vz</sub>	6,31	[cm²]
Area della sezione resistente al taglio agente lungo y				A <sub>vy</sub>	8,06	[cm²]
Momento d'inerzia attorno all'asse forte				I <sub>yy</sub>	318	[cm⁴]
Momento d'inerzia attorno all'asse debole				I <sub>zz</sub>	28	[cm⁴]
Raggio d'inerzia attorno all'asse forte				i <sub>yy</sub>	4,90	[cm]
Raggio d'inerzia attorno all'asse debole				i <sub>zz</sub>	1,45	[cm]
Modulo di resistenza elastico attorno all'asse forte				W <sub>el,yy</sub>	53,0	[cm³]
Modulo di resistenza elastico attorno all'asse debole				W <sub>el,zz</sub>	8,6	[cm³]
Modulo di resistenza plastico attorno all'asse forte				W <sub>pl,yy</sub>	60,7	[cm³]
Modulo di resistenza plastico attorno all'asse debole				W <sub>pl,zz</sub>	13,6	[cm³]
Momento d'inerzia torsionale				I <sub>t</sub>	1,7	[cm⁴]
Costante di warping				I <sub>w</sub>	890	[cm⁶]
CLASSIFICAZIONE DELLA SEZIONE						
Valore di snervamento dell'acciaio				f <sub>y</sub>	275	[MPa]
Coefficiente ε				ε	0,92	[-]
<u>Classificazione dell'anima</u>						
Altezza dell'anima depurata dei raccordi o delle saldature				c	93,40	[mm]
Spessore dell'anima				t <sub>w</sub>	4,40	[mm]
Rapporto tra altezza e spessore				c/t <sub>w</sub>	21,23	[-]
Classificazione dell'anima per flessione				CLASSE 1		
Classificazione dell'anima per compressione				CLASSE 1		
<u>Classificazione delle ali</u>						
Semi larghezza delle ali depurata dei raccordi o delle saldature				c	22,8	[mm]
Spessore delle ali				t <sub>f</sub>	6,30	[mm]
Rapporto tra semi larghezza e spessore				c/t <sub>f</sub>	3,62	[-]
Classificazione delle ali per flessione				CLASSE 1		

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

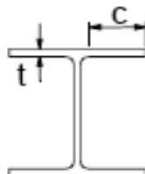
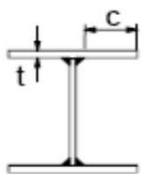
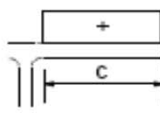
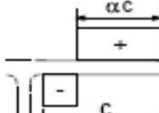
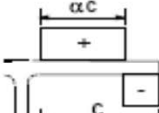
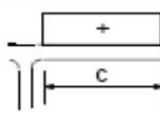
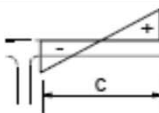
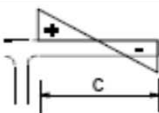
CLASSIFICAZIONE DELLE SEZIONI IN ACCIAIO - NTC08						
PROFILI AD H						
IPE 140						
Altezza della sezione trasversale				h	140,00	[mm]
Larghezza della sezione trasversale				b	73,00	[mm]
Spessore dell'anima				t <sub>w</sub>	4,70	[mm]
Spessore delle ali				t <sub>f</sub>	6,90	[mm]
Raggio di raccordo				r	7,00	[mm]
Eventuale spessore della saldatura delle ali con l'anima				s	0,00	[mm]
CARATTERISTICHE MECCANICHE						
Altezza tra le ali				h <sub>i</sub>	126,20	[mm]
Altezza della porzione saldabile				d	112,20	[mm]
Area della sezione trasversale				A	16,4	[cm²]
Area della sezione resistente al taglio agente lungo z				A <sub>vz</sub>	7,64	[cm²]
Area della sezione resistente al taglio agente lungo y				A <sub>vy</sub>	10,07	[cm²]
Momento d'inerzia attorno all'asse forte				I <sub>yy</sub>	541	[cm⁴]
Momento d'inerzia attorno all'asse debole				I <sub>zz</sub>	45	[cm⁴]
Raggio d'inerzia attorno all'asse forte				i <sub>yy</sub>	5,74	[cm]
Raggio d'inerzia attorno all'asse debole				i <sub>zz</sub>	1,65	[cm]
Modulo di resistenza elastico attorno all'asse forte				W <sub>el,yy</sub>	77,3	[cm³]
Modulo di resistenza elastico attorno all'asse debole				W <sub>el,zz</sub>	12,3	[cm³]
Modulo di resistenza plastico attorno all'asse forte				W <sub>pl,yy</sub>	88,3	[cm³]
Modulo di resistenza plastico attorno all'asse debole				W <sub>pl,zz</sub>	19,2	[cm³]
Momento d'inerzia torsionale				I <sub>t</sub>	2,4	[cm⁴]
Costante di warping				I <sub>w</sub>	1981	[cm⁶]
CLASSIFICAZIONE DELLA SEZIONE						
Valore di snervamento dell'acciaio				f <sub>y</sub>	275	[MPa]
Coefficiente ε				ε	0,92	[-]
<u>Classificazione dell'anima</u>						
Altezza dell'anima depurata dei raccordi o delle saldature				c	112,20	[mm]
Spessore dell'anima				t <sub>w</sub>	4,70	[mm]
Rapporto tra altezza e spessore				c/t <sub>w</sub>	23,87	[-]
Classificazione dell'anima per flessione				CLASSE 1		
Classificazione dell'anima per compressione				CLASSE 1		
<u>Classificazione delle ali</u>						
Semi larghezza delle ali depurata dei raccordi o delle saldature				c	27,15	[mm]
Spessore delle ali				t <sub>f</sub>	6,90	[mm]
Rapporto tra semi larghezza e spessore				c/t <sub>f</sub>	3,93	[-]
Classificazione delle ali per flessione				CLASSE 1		

**Table 5.2 (sheet 1 of 3): Maximum width-to-thickness ratios for compression parts**

Internal compression parts						
Class	Part subject to bending	Part subject to compression	Part subject to bending and compression			
Stress distribution in parts (compression positive)						
1	$c/t \leq 72\varepsilon$	$c/t \leq 33\varepsilon$	when $\alpha > 0,5$ : $c/t \leq \frac{396\varepsilon}{13\alpha - 1}$ when $\alpha \leq 0,5$ : $c/t \leq \frac{36\varepsilon}{\alpha}$			
2	$c/t \leq 83\varepsilon$	$c/t \leq 38\varepsilon$	when $\alpha > 0,5$ : $c/t \leq \frac{456\varepsilon}{13\alpha - 1}$ when $\alpha \leq 0,5$ : $c/t \leq \frac{41,5\varepsilon}{\alpha}$			
Stress distribution in parts (compression positive)						
3	$c/t \leq 124\varepsilon$	$c/t \leq 42\varepsilon$	when $\psi > -1$ : $c/t \leq \frac{42\varepsilon}{0,67 + 0,33\psi}$ when $\psi \leq -1^{*)}$ : $c/t \leq 62\varepsilon(1 - \psi)\sqrt{(-\psi)}$			
$\varepsilon = \sqrt{235/f_y}$	$f_y$	235	275	355	420	460
	$\varepsilon$	1,00	0,92	0,81	0,75	0,71

\*)  $\psi \leq -1$  applies where either the compression stress  $\sigma \leq f_y$  or the tensile strain  $\epsilon_y > f_y/E$

**Table 5.2 (sheet 2 of 3): Maximum width-to-thickness ratios for compression parts**

Outstand flanges						
						
Rolled sections			Welded sections			
Class	Part subject to compression	Part subject to bending and compression				
		Tip in compression		Tip in tension		
Stress distribution in parts (compression positive)						
1	$c/t \leq 9\epsilon$	$c/t \leq \frac{9\epsilon}{\alpha}$		$c/t \leq \frac{9\epsilon}{\alpha\sqrt{\alpha}}$		
2	$c/t \leq 10\epsilon$	$c/t \leq \frac{10\epsilon}{\alpha}$		$c/t \leq \frac{10\epsilon}{\alpha\sqrt{\alpha}}$		
Stress distribution in parts (compression positive)						
3	$c/t \leq 14\epsilon$	$c/t \leq 21\epsilon\sqrt{k_\sigma}$				
For $k_\sigma$ see EN 1993-1-5						
$\epsilon = \sqrt{235/f_y}$	$f_y$	235	275	355	420	460
	$\epsilon$	1,00	0,92	0,81	0,75	0,71

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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

TRAVE IN ACCIAIO - NTC08									
TRAVE Ln =		2,75	ml						
MATERIALI									
ACCIAIO				S275	(Tab. 11.3.IX)				
Modulo di elasticità		E	=	2.100.000	kg/cmq				
Tensione snerv . car.		f <sub>yk</sub>	=	2.750	kg/cmq				
Tensione rottura car.		f <sub>tk</sub>	=	4.300	kg/cmq				
Peso specifico		ρ <sub>k</sub>	=	7.850	kg/mc				
Classificazione della sezione				Classe 1					
Coeff. di sicurezza		γ <sub>M0</sub>	=	1,05					
ANALISI DEI CARICHI									
Peso proprio trav e				=	11	kg/mq			
Orsogrill				=	20	kg/mq	γ <sub>G1</sub>	G <sub>1</sub>	
		Permanenti strutturali:		G <sub>1k</sub>	31	x	1,30	=	40
						kg/mq	γ <sub>G2</sub>	G <sub>2</sub>	kg/ mq
		Permanenti non strutturali:		G <sub>2k</sub>	0	x	1,50	=	0
							γ <sub>Q</sub>	Q <sub>1</sub>	kg/ mq
		Variabili:		Q <sub>1k</sub>	500	x	1,50	=	750
DATI GEOMETRICI									
Luce netta in pianta		Ln	=	2,75	ml				
Inclinazione		α	=	0	°s				
Luce di calcolo		Lc	=	2,89	ml				
Interasse		Int	=	1,20	ml				
PROFILATO		IPE140							
Area sezione		A	=	16,4	cm²				
Area di taglio		Av	=	6,6	cm²				
Modulo di resistenza		W	=	77,3	cm³				
Modulo di resistenza plastico		Wpl	=	88,3	cm³				
Momento di inerzia		J	=	541	cm⁴				
DATI DI CARICO									
SLU - Carico lineare		q: Q <sub>SLU</sub> x Int	=	948	kg/ml	(G <sub>1</sub> + G <sub>2</sub> + Q <sub>1</sub> ) x Int			
SLE - Carico lineare		q: Q <sub>SLE</sub> x Int	=	637	kg/ml	(G <sub>1k</sub> + G <sub>2k</sub> + Q <sub>1k</sub> ) x Int			
CARATTERISTICHE DI SOLLECITAZIONE									
SLU - M <sub>ED</sub> = (q x Lc²) / 12			=	659	kgm				
SLU - V <sub>ED</sub> = (q x Lc ) / 2			=	1.369	kg				
VERIFICHE SLU - SECONDO PUNTO 4.2.4.1.2 NTC 2008									
FLESSIONE									
Momento Resistente		M <sub>C,Rd</sub>	=	2.313	kgm	M <sub>C,Rd</sub> = M <sub>PL,Rd</sub> = (W <sub>pl</sub> X f <sub>yk</sub> ) / γ <sub>M0</sub>			
M <sub>ED</sub> / M <sub>C,Rd</sub> ≤ 1			=	0,28	<	1	Verificato		
TAGLIO									
Taglio Resistente		V <sub>C,Rd</sub>	=	9.950	kg	V <sub>C,Rd</sub> = (A <sub>v</sub> X f <sub>yk</sub> ) / (√3 x γ <sub>M0</sub> )			
V <sub>ED</sub> / V <sub>C,Rd</sub> ≤ 1			=	0,14	<	1	Verificato		
VERIFICHE SLE									
DEFORMAZIONE									
Freccia massima = Lc /		250	=	1,16	cm	Carichi permanenti e v variabili SLE Freq.			
Freccia massima = Lc /		350	=	0,83	cm	Carichi v variabili SLE Rare			
Freccia (Appoggio)				Perm.		Var.		Totale	
U = 5/384 x q x Lc⁴ / (E x J)			=	0,03	+	0,33	=	0,36	cm
Carichi Perm. + Var.		U / Lc	=	9.829		863		793	> 250
Carichi Var.		U / Lc	=			0,48	=	0,48	cm
								604	> 350

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

TRAVE IN ACCIAIO - NTC08										
TRAVE Ln =		3,35	ml							
MATERIALI										
ACCIAIO			S275	(Tab. 11.3.IX)						
Modulo di elasticità		E	=	2.100.000	kg/cmq					
Tensione snerv . car.		f <sub>yk</sub>	=	2.750	kg/cmq					
Tensione rottura car.		f <sub>tk</sub>	=	4.300	kg/cmq					
Peso specifico		ρ <sub>k</sub>	=	7.850	kg/mc					
Classificazione della sezione				Classe 1						
Coeff. di sicurezza		γ <sub>M0</sub>	=	1,05						
ANALISI DEI CARICHI										
Peso proprio trav e				=	13	kg/mq				
Orsogrill				=	20	kg/mq	γ <sub>G1</sub>	G <sub>1</sub>		
		Permanenti strutturali:		G <sub>1k</sub>	33	x	1,30	=	43	kg/ mq
						kg/mq	γ <sub>G2</sub>	G <sub>2</sub>		
		Permanenti non strutturali:		G <sub>2k</sub>	0	x	1,50	=	0	kg/ mq
							γ <sub>Q</sub>	Q <sub>i</sub>		
		Variabili:		Q <sub>1k</sub>	500	x	1,50	=	750	kg/ mq
DATI GEOMETRICI										
Luce netta in pianta		Ln	=	3,35	ml					
Inclinazione		α	=	0	°s					
Luce di calcolo		Lc	=	3,52	ml					
Interasse		Int	=	1,00	ml					
PROFILATO		IPE140								
Area sezione		A	=	16,4	cm²					
Area di taglio		Av	=	6,6	cm²					
Modulo di resistenza		W	=	77,3	cm³					
Modulo di resistenza plastico		Wpl	=	88,3	cm³					
Momento di inerzia		J	=	541	cm⁴					
DATI DI CARICO										
SLU - Carico lineare		q: Q <sub>SLU</sub> x Int	=	793	kg/ml	(G <sub>1</sub> + G <sub>2</sub> + Q <sub>1</sub> ) x Int				
SLE - Carico lineare		q: Q <sub>SLE</sub> x Int	=	533	kg/ml	(G <sub>1k</sub> + G <sub>2k</sub> + Q <sub>1k</sub> ) x Int				
CARATTERISTICHE DI SOLLECITAZIONE										
SLU - M <sub>ED</sub> = (q x Lc²) / 12			=	817	kgm					
SLU - V <sub>ED</sub> = (q x Lc ) / 2			=	1.394	kg					
VERIFICHE SLU - SECONDO PUNTO 4.2.4.1.2 NTC 2008										
FLESSIONE										
Momento Resisistente		M <sub>C,Rd</sub>	=	2.313	kgm	M <sub>C,Rd</sub> = M <sub>Pl,Rd</sub> = (W <sub>pl</sub> X f <sub>yk</sub> ) / γ <sub>M0</sub>				
M <sub>ED</sub> / M <sub>C,Rd</sub> ≤ 1			=	0,35	<	1	Verificato			
TAGLIO										
Taglio Resistente		V <sub>C,Rd</sub>	=	9.950	kg	V <sub>C,Rd</sub> = (A <sub>v</sub> X f <sub>yk</sub> ) / (√3 x γ <sub>M0</sub> )				
V <sub>ED</sub> / V <sub>C,Rd</sub> ≤ 1			=	0,14	<	1	Verificato			
VERIFICHE SLE										
DEFORMAZIONE										
Freccia massima = Lc /		250	=	1,41	cm	Carichi permanenti e v ariabili SLE Freq.				
Freccia massima = Lc /		350	=	1,01	cm	Carichi v ariabili SLE Rare				
Freccia (Appoggio)				Perm.		Var.		Totale		
U = 5/384 x q x Lc⁴ / (E x J)			=	0,06	+	0,61	=	0,67	cm	
Carichi Perm. + Var.		U / Lc	=	6.098		573		524	> 250	
Carichi Var.		U / Lc	=			0,88	=	0,88	cm	
								401	> 350	



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

SBALZO IN ACCIAIO - NTC08									
SBALZO Lc =		2,20	ml						
MATERIALI									
ACCIAIO				S275	(Tab. 11.3.IX)				
Modulo di elasticità		E	=	2.100.000	kg/cmq				
Tensione snerv. car.		f <sub>yk</sub>	=	2.750	kg/cmq				
Tensione rottura car.		f <sub>tk</sub>	=	4.300	kg/cmq				
Peso specifico		ρ <sub>k</sub>	=	7.850	kg/mc				
Coeff. di sicurezza		γ <sub>M0</sub>	=	1,05					
ANALISI DEI CARICHI									
Peso proprio				=	15	kg			
Permanenti strutturali:				G <sub>1k</sub>	15	x	1,30	=	20 kg/ m
Permanenti non strutturali:				G <sub>2k</sub>	61	x	1,50	=	92 kg/ m
							γ <sub>Q</sub>		Q <sub>1</sub> kg/ m
Variabili:				Q <sub>1k</sub>	50	x	1,50	=	75 kg/ m
DATI GEOMETRICI									
Luce di calcolo		Lc	=	2,20	ml				
Interasse		Int	=	1,50	ml				
PROFILATO		IPE120							
Area sezione		A	=	13,2	cm <sup>2</sup>				
Area di taglio		Av	=	6,3	cm <sup>2</sup>				
Modulo di resistenza		W	=	53,0	cm <sup>3</sup>				
Modulo di resistenza plastico		Wpl	=	60,8	cm <sup>3</sup>				
Momento di inerzia		J	=	318	cm <sup>4</sup>				
DATI DI CARICO									
SLU - in punta		N: Q <sub>SLU</sub> x Int	=	280	kg/ml	(G <sub>1</sub> + G <sub>2</sub> + Q <sub>1</sub> ) x Int			
SLE - in punta		N: Q <sub>SLE</sub> x Int	=	190	kg/ml	(G <sub>1k</sub> + G <sub>2k</sub> + Q <sub>1k</sub> ) x Int			
CARATTERISTICHE DI SOLLECITAZIONE									
SLU - M <sub>ED</sub> = 1,4 x N x Lc			=	862	kgm				
SLU - V <sub>ED</sub> = 1,4 x N			=	392	kg				
VERIFICHE SLU - SECONDO PUNTO 4.2.4.1.2 NTC 2008									
FLESSIONE									
Momento Resistente		M <sub>C,Rd</sub>	=	1.592	kgm	M <sub>C,Rd</sub> = M <sub>Pl,Rd</sub> = (W <sub>pl</sub> X f <sub>yk</sub> ) / γ <sub>M0</sub>			
M <sub>ED</sub> / M <sub>C,Rd</sub> ≤ 1			=	0,54	<	1	Verificato		
TAGLIO									
Taglio Resistente		V <sub>C,Rd</sub>	=	9.541	kg	V <sub>C,Rd</sub> = (A <sub>v</sub> X f <sub>yk</sub> ) / (√3 x γ <sub>M0</sub> )			
V <sub>ED</sub> / V <sub>C,Rd</sub> ≤ 1			=	0,04	<	1	Verificato		
VERIFICHE SLE									
DEFORMAZIONE									
Freccia massima = Lc /		200	=	3,16	cm	Carichi permanenti e v ariabili SLE Freq.			
Freccia massima = Lc /		300	=	2,10	cm	Carichi v ariabili SLE Rare			
Freccia				Perm.		Var.		Totale	
U = 1/3 x N x Lc <sup>3</sup> / (E x J)			=	0,61	+	0,28	=	0,89	cm
Carichi Perm. + Var.		U / Lc	=	361		788		248	> 200
Carichi Var.		U / Lc	=			0,40	=	0,40	cm
								552	> 300

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>SBALZO IN ACCIAIO - NTC08</b>									
<b>SBALZO Lc =</b>	<b>3,00</b>	<b>ml</b>							
<b>MATERIALI</b>									
ACCIAIO			<b>\$275</b>	(Tab. 11.3.IX)					
Modulo di elasticità	E	=	2.100.000	kg/cmq					
Tensione snerv. car.	$f_{yk}$	=	2.750	kg/cmq					
Tensione rottura car.	$f_{tk}$	=	4.300	kg/cmq					
Peso specifico	$\rho_k$	=	7.850	kg/mc					
Coeff. di sicurezza	$\gamma_{M0}$	=	1,05						
<b>ANALISI DEI CARICHI</b>									
Peso proprio				=	26	kg			
	<b>Permanenti strutturali:</b>	<b>G<sub>1k</sub></b>	<b>26</b>	<b>x</b>	<b>1,30</b>	=	<b>33</b>	<b>kg/ m</b>	
	<b>Permanenti non strutturali:</b>	<b>G<sub>2k</sub></b>	<b>61</b>	<b>x</b>	<b>1,50</b>	=	<b>92</b>	<b>kg/ m</b>	
					$\gamma_Q$		<b>Q<sub>1</sub></b>	<b>kg/ m</b>	
	<b>Variabili:</b>	<b>Q<sub>1k</sub></b>	<b>50</b>	<b>x</b>	<b>1,50</b>	=	<b>75</b>	<b>kg/ m</b>	
<b>DATI GEOMETRICI</b>									
Luce di calcolo	Lc	=	<b>3,00</b>	ml					
Interasse	Int	=	<b>1,50</b>	ml					
PROFILATO	<b>IPE140</b>								
Area sezione	A	=	<b>16,4</b>	cm <sup>2</sup>					
Area di taglio	Av	=	<b>6,6</b>	cm <sup>2</sup>					
Modulo di resistenza	W	=	<b>77,3</b>	cm <sup>3</sup>					
Modulo di resistenza plastico	Wpl	=	<b>88,3</b>	cm <sup>3</sup>					
Momento di inerzia	J	=	<b>541</b>	cm <sup>4</sup>					
<b>DATI DI CARICO</b>									
SLU - in punta	N: Q <sub>SLU</sub> x Int	=	300	kg/ml		(G <sub>1</sub> + G <sub>2</sub> + Q <sub>1</sub> ) x Int			
SLE - in punta	N: Q <sub>SLE</sub> x Int	=	205	kg/ml		(G <sub>1k</sub> + G <sub>2k</sub> + Q <sub>1k</sub> ) x Int			
<b>CARATTERISTICHE DI SOLLECITAZIONE</b>									
SLU - M <sub>ED</sub> = 1,4 x N x Lc		=	1.262	kgm					
SLU - V <sub>ED</sub> = 1,4 x N		=	421	kg					
<b>VERIFICHE SLU - SECONDO PUNTO 4.2.4.1.2 NTC 2008</b>									
<b>FLESSIONE</b>									
Momento Resistente	M <sub>C,Rd</sub>	=	2.313	kgm	M <sub>C,Rd</sub> = M <sub>pl,Rd</sub> = (W <sub>pl</sub> x f <sub>yk</sub> ) / $\gamma_{M0}$				
M <sub>ED</sub> / M <sub>C,Rd</sub> ≤ 1		=	<b>0,55</b>	<	1	<b>Verificato</b>			
<b>TAGLIO</b>									
Taglio Resistente	V <sub>C,Rd</sub>	=	9.950	kg	V <sub>C,Rd</sub> = (A <sub>v</sub> x f <sub>yk</sub> ) / (√3 x $\gamma_{M0}$ )				
V <sub>ED</sub> / V <sub>C,Rd</sub> ≤ 1		=	<b>0,04</b>	<	1	<b>Verificato</b>			
<b>VERIFICHE SLE</b>									
<b>DEFORMAZIONE</b>									
Freccia massima = Lc /	<b>200</b>	=	3,29	cm	Carichi permanenti e v variabili SLE Freq.				
Freccia massima = Lc /	<b>300</b>	=	2,19	cm	Carichi v variabili SLE Rare				
Freccia			Perm.		Var.		Totale		
U = 1/3 x N x Lc <sup>3</sup> / (E x J)		=	1,03	+	0,42	=	1,45	cm	
Carichi Perm. + Var.	U / Lc	=	290		721		<b>207</b>	<b>&gt;</b>	<b>200</b>
Carichi Var.	U / Lc	=			0,59	=	0,59	cm	
							<b>505</b>	<b>&gt;</b>	<b>300</b>

### **Tabulato di calcolo**

#### **Dati relativi ai nodi della struttura**

Convenzioni adottate

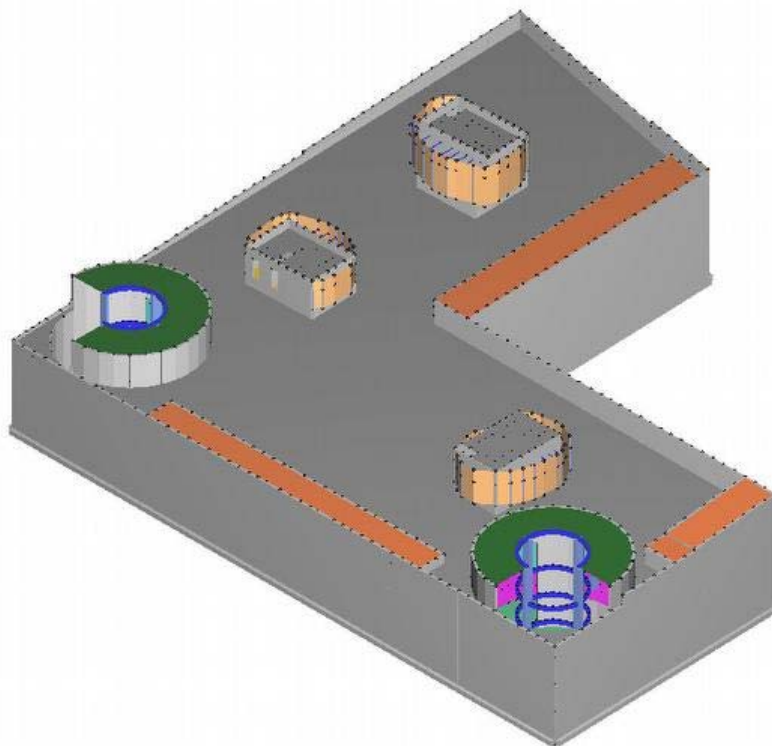
La terna di riferimento generale è destrorsa.

I nodi vengono numerati, con riferimento a una sezione orizzontale, da sinistra a destra, dal basso verso l'alto e per quote crescenti.

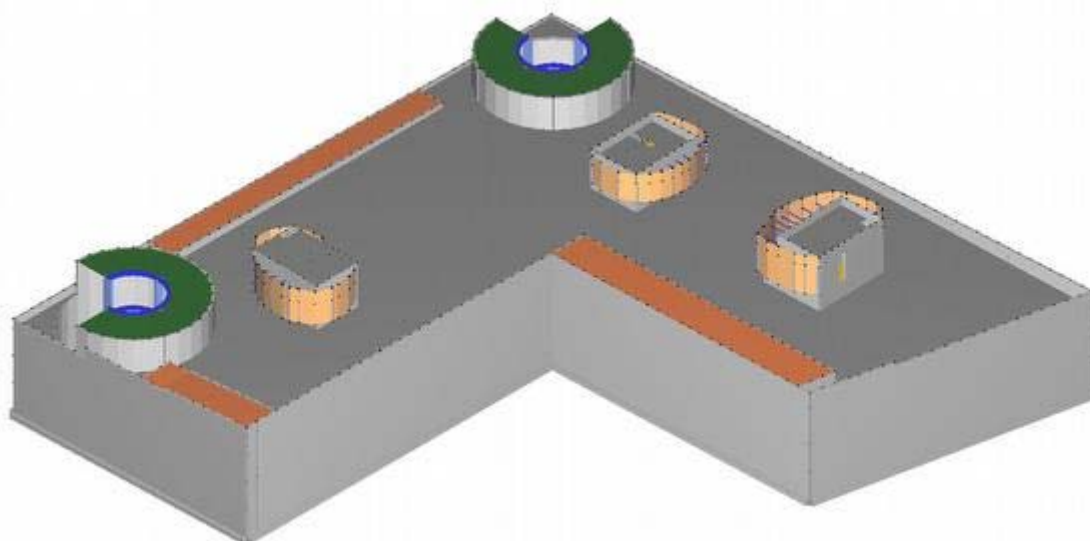
L'impalcato di appartenenza di un nodo è definito, in generale, dalla prima delle tre cifre che ne definiscono il numero, possono tuttavia presentarsi casi in cui si hanno più di 100 nodi per solaio nel qual caso il solaio di appartenenza è specificato dall'ultimo valore stampato nella riga dei dati relativi al nodo.

La maschera dei vincoli è costituita dai valori 0 e 1. Il valore 1 indica che per il nodo in riferimento il grado di libertà correlativo è soppresso mentre il valore 0 indica che è libero.

Nel caso di edifici civili multipiano l'asse z generale coincide con l'asse verticale rivolto verso l'alto.



Mesh solida della struttura – Vista 1



Mesh solida della struttura – Vista 2

#### Elementi tipo pilastro

Convenzioni adottate

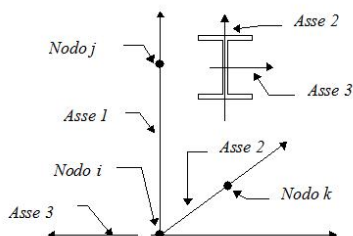
Ogni elemento tipo pilastro viene identificato da:

Il nodo iniziale **i**;

Il nodo finale **j**;

Il nodo **k** che definisce l'orientamento nello spazio della terna riferimento locale dell'elemento.

La terna di riferimento locale del pilastro risulta quindi essere così disposta:



Sistema di riferimento locale

Vengono riportati i valori di efficacia dei vincoli flessionali alle estremità dell'elemento (variabili fra lo **0%** e il **100%**), nei due piani **1-2** e **1-3** del pilastro in corrispondenza dei nodi, dando quindi la possibilità di considerare aste non perfettamente incastrate alle estremità (coefficienti **V<sub>i12</sub> - V<sub>j12</sub> - V<sub>i13</sub> - V<sub>j13</sub>**).

In generale, se non diversamente disposto, l'asse 2 coincide, per i pilastri, con l'asse **y** globale e pertanto la disposizione della sezione coincide con quella che si avrebbe in una vista in pianta.

Caratteristiche dei Materiali:

Tipo	Modulo Elastico [kg/cm <sup>2</sup> ]	$\nu$	alfa [1/°C]	Peso Specifico [kg/m <sup>3</sup> ]	Commento
1	314760.000	0.120	0.000012	2500.0	C25/30
2	336428.000	0.120	0.000012	2500.0	C32/40
3	2100000.000	0.330	0.000010	7850.0	S275JR

Sezioni Impiegate:

Sezione	Materiale	Tipo di Sezione	Parametri Dimensionali Commenti
1	2	Rett.	B= 40 H= 100 [cm]
2	2	Rett.	B= 100 H= 40 [cm]
3	2	Rett.	B= 30 H= 100 [cm]
4	2	Rett.	B= 30 H= 40 [cm]

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Sezione	Materiale	Tipo di Sezione	Parametri Dimensionali Commenti
5	2	Rett.	B= 30 H= 30 [cm]
6	2	Rett.	B= 40 H= 30 [cm]
7	3	IPE 120	Montante

Caratteristiche Inerziali:

Sezione	Materiale	Area [cm <sup>2</sup> ]	Jt [cm <sup>4</sup> ]	J2 [cm <sup>4</sup> ]	J3 [cm <sup>4</sup> ]	J23 [cm <sup>4</sup> ]	Xx	Xy
1	2	4000.00	1661314	3333333	533333	0	1.2	1.2
2	2	4000.00	1661314	533333	3333333	0	1.2	1.2
3	2	3000.00	789387	2500000	225000	0	1.2	1.2
4	2	1200.00	186385	160000	90000	0	1.2	1.2
5	2	900.00	113866	67500	67500	0	1.2	1.2
6	2	1200.00	186385	90000	160000	0	1.2	1.2
7	3	13.23	2	318	28	0	2.5	1.6

#### Elementi tipo trave

Convenzioni adottate

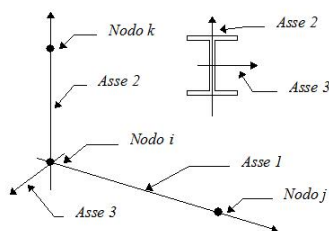
Ogni elemento tipo trave viene identificato da:

Il nodo iniziale **i**;

Il nodo finale **j**;

Il nodo **k** che definisce l'orientamento nello spazio della terna riferimento locale dell'elemento.

La terna di riferimento locale della trave risulta essere così disposta:



Vengono riportati i valori di efficacia dei vincoli alle estremità dello elemento (variabili fra 0 e 100%), nei due piani **1-2** e **1-3** della trave in corrispondenza dei nodi, dando quindi la possibilità di considerare aste non perfettamente incastrate (coefficienti **Vi12**, **Vj12**, **Vi13**, **Vj13**).

Caratteristiche dei Materiali:

Tipo	Modulo Elastico [kg/cm <sup>2</sup> ]	$\nu$	alfa [1/°C]	Peso Specifico [kg/m <sup>3</sup> ]	Commento
1	314760.000	0.120	0.000012	2500.0	C25/30
2	336428.000	0.120	0.000012	2500.0	C32/40
3	2100000.000	0.330	0.000010	7850.0	S275JR

Sezioni Impiegate:

Sezione	Materiale	Tipo di Sezione	Parametri Dimensionali Commenti
1	2	Rett.	B= 40 H= 40 [cm]
2	2	Rett.	B= 40 H= 40 [cm]
3	2	Rett.	B= 30 H= 60 [cm]
4	2	Rett.	B= 40 H= 60 [cm]
5	2	Rett.	B= 40 H= 50 [cm]
6	2	Rett.	B= 30 H= 40 [cm]
7	2	Rett.	B= 30 H= 80 [cm]
8	3	IPE 120	
9	3	IPE 140	

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

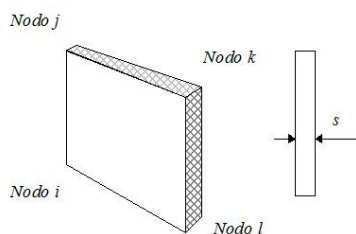
Caratteristiche Inerziali:

Sezione	Materiale	Area [cm <sup>2</sup> ]	Jt [cm <sup>4</sup> ]	J2 [cm <sup>4</sup> ]	J3 [cm <sup>4</sup> ]	J23 [cm <sup>4</sup> ]	Xx	Xy
1	2	1600.00	359874	213333	213333	0	1.2	1.2
2	2	1600.00	359874	213333	213333	0	1.2	1.2
3	2	1800.00	370716	540000	135000	0	1.2	1.2
4	2	2400.00	722134	720000	320000	0	1.2	1.2
5	2	2000.00	526803	416667	266667	0	1.2	1.2
6	2	1200.00	186385	160000	90000	0	1.2	1.2
7	2	2400.00	578360	1280000	180000	-0	1.2	1.2
8	3	13.23	2	318	28	0	2.5	1.6
9	3	16.44	2.45	542	45	0	2.5	1.6

**Elementi setto**

Convenzioni adottate

L'elemento setto viene identificato mediante i quattro nodi (i, j, k, l) di bordo.



Numerazione dei nodi cui fa capo l'elemento

Caratteristiche dei Materiali:

Tipo	Modulo Elastico [kg/cm <sup>2</sup> ]	$\nu$	alfa [1/°C]	Peso Specifico [kg/m <sup>3</sup> ]	Commento
1	314760.000	0.120	0.000012	2500.0	C25/30
2	336428.000	0.120	0.000012	2500.0	C32/40
3	2100000.000	0.330	0.000010	7850.0	S275JR

Caratteristiche dei Terreni di Fondazione:

Tipo	Costante di Sottofondo [kg/cm <sup>3</sup> ]	Commento
1	4.0	Lave

Sezioni Impiegate:

Sezione	Materiale	Tipo di Sezione	Parametri Dimensionali Commenti
1	2	Muro fondazione	B= 120 H= 60 s= 30 [cm] Terreno numero 1 Lave
2	2	Muro	s= 30 [cm]
3	2	Muro	s= 30 [cm]
4	2	Muro	s= 30 [cm] Cordolo
5	2	Muro	s= 30 [cm] Corpo scala
6	2	Muro	s= 30 [cm] Riserva idrica
7	2	Muro	s= 30 [cm]
8	2	Muro	s= 40 [cm] Riserva Idrica 2
9	2	Muro	s= 40 [cm] Locale Tecnico
10	2	Muro	s= 30 [cm] Locale Tecnico
11	2	Muro	s= 15 [cm] Locale Tecnico

**Elementi a 4 nodi**

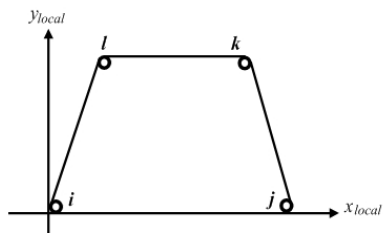
Convenzioni adottate

L'elemento a 4 nodi è individuato tramite il numero dei quattro nodi di vertice dello stesso.

## Comune di Catania

### Completamento del piano di risanamento del rione San Berillo PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2 Parcheggio interrato - Tabulato di calcolo

Gli assi del sistema di riferimento locale risultano così disposti:



L'asse  $x_{locale}$  ha direzione parallela alla retta congiungente i nodi  $i$  e  $j$ , è passante per i medesimi nodi ed ha verso positivo da  $i$  a  $j$ .

L'asse  $y_{locale}$  è ortogonale all'asse  $x_{locale}$ , passa per il nodo  $i$  ed ha verso positivo dalla parte del nodo  $l$ .

L'asse  $z_{locale}$  è ottenuto per prodotto vettoriale fra  $x_{locale}$  e  $y_{locale}$ .

Caratteristiche dei Materiali:

Tipo	Modulo Elastico [kg/cm <sup>2</sup> ]	$\nu$	alfa [1/°C]	Peso Specifico [kg/m <sup>3</sup> ]	Commento
1	314760.000	0.120	0.000012	2500.0	C25/30
2	336428.000	0.120	0.000012	2500.0	C32/40
3	2100000.000	0.330	0.000010	7850.0	S275JR

Caratteristiche dei Terreni di Fondazione:

Tipo	Costante di Sottofondo [kg/cm <sup>3</sup> ]	Commento
1	4.0	Lave

Sezioni Impiegate:

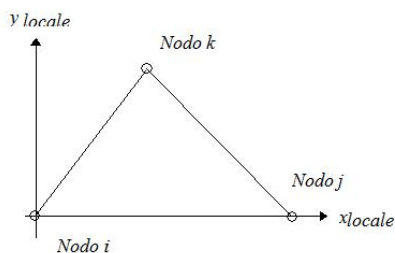
Sezione	Materiale	Tipo di Sezione	Parametri Dimensionali Commenti
1	1	Mesh platea	s= 60 [cm] Terreno numero 1 Lave
2	2	Mesh isotropa	s= 25 [cm] Livello -2
3	2	Mesh isotropa	s= 25 [cm] Livello -1
4	2	Mesh isotropa	s= 50 [cm] Livello Copertura
5	2	Mesh isotropa	s= 20 [cm] Livello Copertura Loc Tec
6	2	Mesh isotropa	s= 20 [cm] Livello Copertura Rampe
7	2	Mesh isotropa	s= 25 [cm] Copertura Inclinata
8	2	Mesh isotropa	s= 30 [cm] Riserva Idrica
9	2	Mesh isotropa	s= 25 [cm] Livello -2 - Corpi Scala
10	2	Mesh isotropa	s= 25 [cm] Livello -1 - Corpi Scala
11	2	Mesh isotropa	s= 20 [cm] Livello Copertura - Corpi Scala
12	2	Mesh isotropa	s= 30 [cm]
13	1	Mesh platea	s= 30 [cm] Terreno numero 1 Lave
14	2	Mesh isotropa	s= 25 [cm]

## Elementi triangolari

Convenzioni adottate

L'elemento triangolare è individuato tramite il numero dei nodi di vertice dello stesso.

Gli assi del sistema di riferimento locale risultano così disposti:



L'asse  $x_{locale}$  ha direzione parallela alla retta congiungente i nodi  $i$  e  $j$ , è passante per i medesimi nodi ed ha verso positivo da  $i$  a  $j$ .

L'asse  $y_{locale}$  è ortogonale all'asse  $x_{locale}$ , passa per il nodo  $i$  ed ha verso positivo dalla parte del nodo  $k$ .

L'asse  $z_{locale}$  è ottenuto per prodotto vettoriale fra  $x_{locale}$  e  $y_{locale}$ .

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Caratteristiche dei Materiali:

Tipo	Modulo Elastico [kg/cm <sup>2</sup> ]	$\nu$	alfa [1/°C]	Peso Specifico [kg/m <sup>3</sup> ]	Commento
1	314760.000	0.120	0.000012	2500.0	C25/30
2	336428.000	0.120	0.000012	2500.0	C32/40
3	2100000.000	0.330	0.000010	7850.0	S275JR

Caratteristiche dei Terreni di Fondazione:

Tipo	Costante di Sottofondo [kg/cm <sup>3</sup> ]	Commento
1	4.0	Lave

Sezioni Impiegate:

Sezione	Materiale	Tipo di Sezione	Parametri Dimensionali Commenti
1	1	Mesh platea	s= 60 [cm] Terreno numero 1 Lave
2	2	Mesh isotropa	s= 25 [cm] Livello -2
3	2	Mesh isotropa	s= 25 [cm] Livello -1
4	2	Mesh isotropa	s= 50 [cm] Livello Copertura
5	2	Mesh isotropa	s= 20 [cm] Livello Copertura Loc Tec
6	2	Mesh isotropa	s= 20 [cm] Livello Copertura Rampe
7	2	Mesh isotropa	s= 25 [cm] Copertura Inclinata
8	2	Mesh isotropa	s= 30 [cm] Riserva Idrica
9	2	Mesh isotropa	s= 25 [cm] Livello -2 - Corpi Scala
10	2	Mesh isotropa	s= 25 [cm] Livello -1 - Corpi Scala
11	2	Mesh isotropa	s= 20 [cm] Livello Copertura - Corpi Scala
12	2	Mesh isotropa	s= 30 [cm]
13	1	Mesh platea	s= 30 [cm] Terreno numero 1 Lave
14	2	Mesh isotropa	s= 25 [cm]

#### Condizioni e combinazioni di carico

Convenzioni adottate

Nel seguito vengono riportate le condizioni di carico statiche e dinamiche che sollecitano la struttura. Si noti che: Per quanto riguarda le condizioni di carico dinamiche, il programma assimila ogni direzione di ingresso del sisma, definita dal progettista, ad una condizione di carico. Pertanto qualora agiscano sulla struttura  $n$  condizioni di carico statiche e il progettista abbia supposto che la struttura venga sollecitata da un sisma entrante in  $m$  direzioni, la struttura stessa viene considerata dal programma come soggetta ad  $n + m$  condizioni di carico.

Le combinazioni di carico, definite dal progettista, combinano fra loro le  $n + m$  condizioni di carico ognuna partecipante alla combinazione  $i$ -esima secondo i fattori di partecipazione nel seguito riportati. N.B.: se la condizione  $j$ -esima ha fattore di partecipazione unitario, allora partecipa per intero alla combinazione  $i$ -esima.

Le prime  $n$  condizioni sono sempre statiche mentre sono di origine dinamica le (eventuali) condizioni da  $n+1$  a  $n+m$ .

Condizioni di carico definite:

Condizione	
1	Permanente strutturale
2	Permanente non strutturale
3	Variabile Parcheggio
4	Variabile amb. susc. di affollamento
5	Variabile Copertura non praticabile
6	Spinta delle terre in X+
7	Spinta delle terre in X-
8	Spinta delle terre in Y+
9	Spinta delle terre in Y-
10	Peso + Spinta dell'acqua
11	Spinta dovuta al sovraccarico in X+
12	Spinta dovuta al sovraccarico in X-
13	Spinta dovuta al sovraccarico in Y+
14	Spinta dovuta al sovraccarico in Y-



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Condizione	
15	Incremento sismico della spinta in X+
16	Incremento sismico della spinta in X-
17	Incremento sismico della spinta in Y+
18	Incremento sismico della spinta in Y-
19	Mezzi d'opera

Combinazioni agli Stati Limite Ultimi

Combinazione di carico numero	
1	STR 1
2	STR 2
3	STR 3
4	GEO 1
5	GEO 2
6	GEO 3
7	SLV_ SISMA X+ / 30% Y+
8	SLV_ SISMA X+ / 30% Y-
9	SLV_ SISMA X- / 30% Y+
10	SLV_ SISMA X- / 30% Y-
11	SLV_ SISMA Y+ / 30% X+
12	SLV_ SISMA Y+ / 30% X-
13	SLV_ SISMA Y- / 30% X+
14	SLV_ SISMA Y- / 30% X-

Comb.\Cond	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1.3	1.5	1.5	1.5	0.75	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5					
2	1.3	1.5	1.05	1.05		1.5	1.5	1.5	1.5	1.5	1.05	1.05	1.05	1.05					
3	1.3	1.5	1.5			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5					1.5
4	1	1.3	1.3	1.3	0.65	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3					
5	1	1.3	0.91	0.91	1.3	1.3	1.3	1.3	1.3	1.3	0.91	0.91	0.91	0.91					
6	1	1.3	1.3			1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3					1.3
7	1	1	0.6	0.6		1		0.3		1.2	0.6		0.18		1		0.3		
8	1	1	0.6	0.6		1			0.3	1.2	0.6			0.18	1			0.3	
9	1	1	0.6	0.6			1	0.3		1.2		0.6	0.18			1	0.3		
10	1	1	0.6	0.6			1		0.3	1.2		0.6		0.18		1		0.3	
11	1	1	0.6	0.6		0.3		1		1.2	0.18		0.6		0.3		1		
12	1	1	0.6	0.6			0.3	1		1.2		0.18	0.6			0.3	1		
13	1	1	0.6	0.6		0.3			1	1.2	0.18			0.6	0.3			1	
14	1	1	0.6	0.6			0.3		1	1.2		0.18		0.6		0.3		1	

Combinazioni RARE Stati Limite di Esercizio

Combinazione di carico numero	
15	Rare 1
16	Rare 2
17	Rare 3

Comb.\Cond	1	2	3	4	5	6	7	8	9	10	11	12	13	14	19
15	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	
16	1	1	0.7	0.7	1	1	1	1	1	1	0.7	0.7	0.7	0.7	
17	1	1	1			1	1	1	1	1	1	1	1	1	1

Combinazioni FREQUENTI Stati Limite di Esercizio

Combinazione di carico numero	
18	Freq. 1
19	Freq. 2
20	Freq. 3

**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Comb.\Cond	1	2	3	4	5	6	7	8	9	10	11	12	13	14	19
18	1	1	0.7	0.7		1	1	1	1	1	0.7	0.7	0.7	0.7	
19	1	1	0.6	0.6	0.2	1	1	1	1	1	0.6	0.6	0.6	0.6	
20	1	1	0.7			1	1	1	1	1	0.7	0.7	0.7	0.7	1

Combinazioni QUASI PERMANENTI Stati Limite di Esercizio

Combinazione di carico numero	
21	Quasi Perm. 1
22	Quasi Perm. 2

Comb.\Cond	1	2	3	4	6	7	8	9	10	11	12	13	14	19
21	1	1	0.6	0.6	1	1	1	1	1	0.6	0.6	0.6	0.6	
22	1	1	0.6		1	1	1	1	1	0.6	0.6	0.6	0.6	1

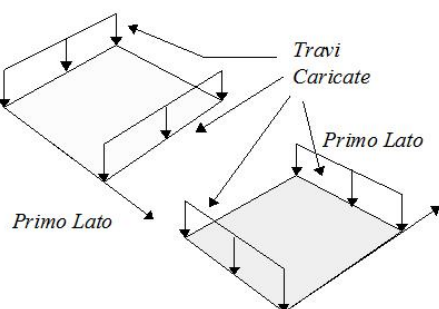
**Dati relativi alle aree di carico**

Convenzioni adottate

Nel seguito sono riportate le *aree di carico* definite nel progetto.

Un'area di carico è definita da una superficie contornata da travi di bordo ed i carichi superficiali su essa agenti vengono riportati dal programma sulle travi perimetrali in ragione dell'area di influenza relativa ad ogni trave e della direzione di orditura della superficie.

È importante rilevare che **la direzione di orditura viene assunta dal programma con riferimento al primo lato della superficie di carico e non con riferimento all'asse x globale della struttura.**



Esempio: direzione di orditura 0 gradi.

In particolare ricordiamo che le *aree di carico* fungono esclusivamente da supporto per il calcolo dei carichi di tipo superficiale in quanto i carichi definiti tramite tali *aree di carico* in effetti vengono trasferiti (sotto forma di carichi lineari o carichi nodali concentrati nei nodi) sulle travi perimetrali che contornano l'area di carico stessa.

A seguire vengono riportati per ogni tipologia definita i carichi agenti nelle varie condizioni di carico. La dizione:

**Globale** indica che il carico è definito nel sistema di riferimento globale della struttura.

**Globale Proiettato** indica che il carico è definito nel sistema di riferimento globale della struttura ma il valore viene computato in proiezione.

**Locale** indica che il carico è definito nel sistema di riferimento locale della superficie di carico.

Area di Carico Numero	Commento
3	Frangisole
4	Soletta Copertura Rampa
5	Grigliato LocaleTecnico
6	Grigliato Canali Shunt

Tipo	Alfa	Condizione	Carico Trasmesso	Riferimento	qx [kg/m²] Qx [kg]	qy [kg/m²] Qy [kg]	qz [kg/m²] Qz [kg]
3	0.00	2	Alle Travi	Globale	0.0 -0.0	0.0 -0.0	20.0 7044.8
4	0.00	2	Alle Travi	Globale	0.0	0.0	1190.0
					0.0	-0.0	314564.4
4	0.00	5	Alle Travi	Globale	0.0	0.0	100.0
					0.0	0.0	26434.0

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
*Parcheggio interrato - Tabulato di calcolo*

Tipo	Alfa	Condizione	Carico Trasmesso	Riferimento	qx [kg/m <sup>2</sup> ] Qx [kg]	qy [kg/m <sup>2</sup> ] Qy [kg]	qz [kg/m <sup>2</sup> ] Qz [kg]
5	0.00	2	Alle Travi	Globale	0.0	0.0	34.0
					0.0	0.0	280.0
5	0.00	3	Alle Travi	Globale	0.0	0.0	500.0
					0.0	0.0	4118.3
6	0.00	2	Alle Travi	Globale	0.0	0.0	34.0
					-0.0	-0.0	12652.8
6	0.00	4	Alle Travi	Globale	0.0	0.0	500.0
					-0.0	-0.0	186071.2

#### Carichi applicati agli elementi

Convenzioni adottate

I carichi applicati vengono raccolti nella tabella riportata alla fine del paragrafo e si intendono applicati nel sistema di riferimento locale dell'elemento.

Per la lettura della tabella si definiscono:

**Nodol, NodoJ** I nodi iniziale/finale dell'asta o lato dell'elemento cui afferisce il carico

**L** La distanza fra i suddetti nodi.

**qxi, ..., qxj** Le componenti di un carico distribuito costante o variabile linearmente iniziali (indice i) e finale (indice j).

**xi, xj** Le distanze, misurate a partire dal Nodol, dei punti di applicazione dei carichi qxi..qxj relativi a carichi distribuiti applicati su porzioni di un'asta.

**Px, ..., Pz xApp** Le componenti di un Carico Concentrato applicato a distanza xApp dal Nodol.

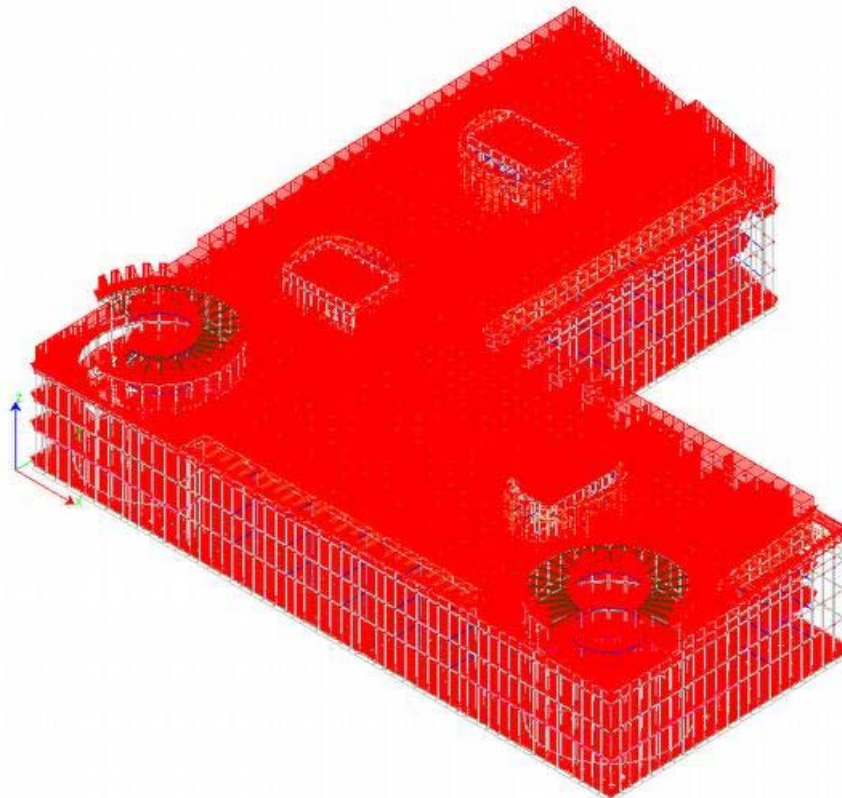
**Mx, ..., Mz xApp** Le componenti di una Coppia Concentrata applicata a distanza xApp dal Nodol.

**Var Termica Assiale, ..., Var Termica Farfalla 13** Le variazioni termiche (Assiali ed a Farfalla) misurate in gradi Celsius.

**mxi, ..., mxj** Le componenti di coppie distribuite costanti o variabili linearmente iniziali (indice i) e finale (indice j).

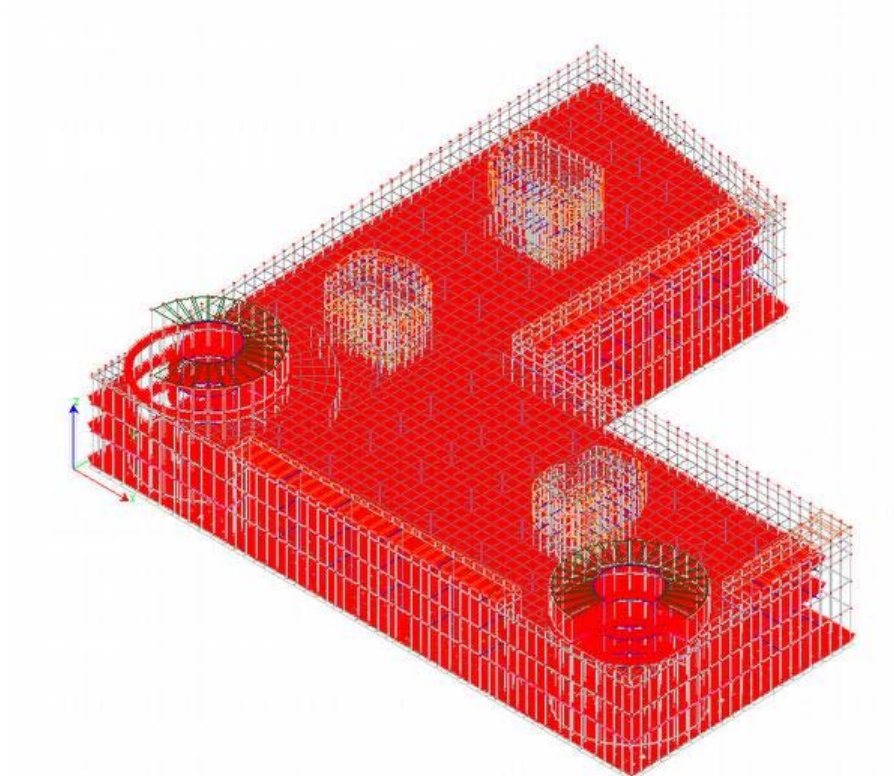
**qS<sub>x</sub>, qS<sub>y</sub>, qS<sub>z</sub>** carichi, per unità di superficie, applicati su elementi superficiali o facce di elementi solidi

**Peso Proprio** Il valore del carico derivante dal peso proprio dell'elemento

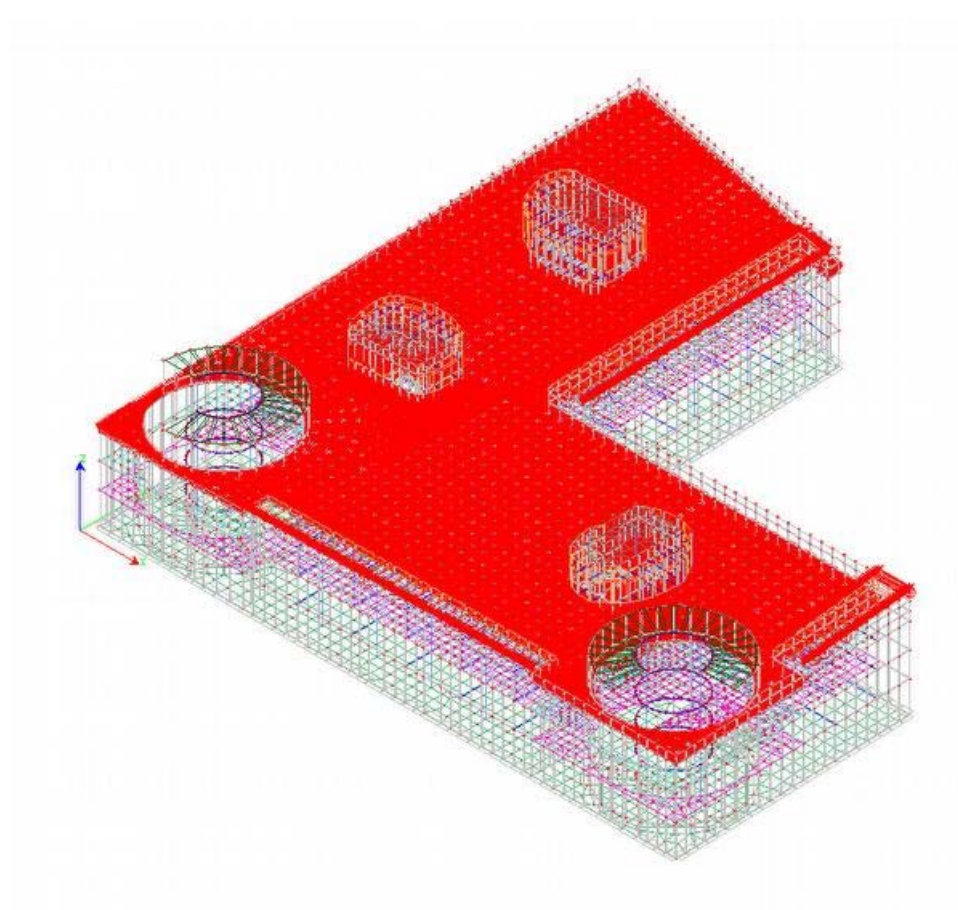


Distribuzione carichi permanenti non strutturali

Platea zona parcheggio (Livello -3):	1.024 kg/mq;
Platea zona Riserva Idrica (Livello -3):	3.693 kg/mq;
Piastra Livello -2 e -1:	550 kg/mq;
Piastra Livello 0:	2.250 kg/mq (con presenza di terreno vegetale H=1,00 ml);
Piastra Livello 0:	3.850 kg/mq (con presenza di terreno vegetale H=2,00 ml);
Piastra Livello 0:	5.450 kg/mq (con presenza di terreno vegetale H=3,00 ml);
Piastra Livello 0 zona Locali Tecnici (Corpi scala):	320 kg/mq;
Piastra copertura Locali Tecnici (Corpi scala):	450 kg/mq;
Grigliato zone areazione e loc. tec.:	34 kg/mq;
Soletta rampa:	1.095 kg/mq;
Soletta copertita rampa:	1.190 kg/mq.



Variabile Parcheggio



Variabile ambienti suscettibili di affollamento

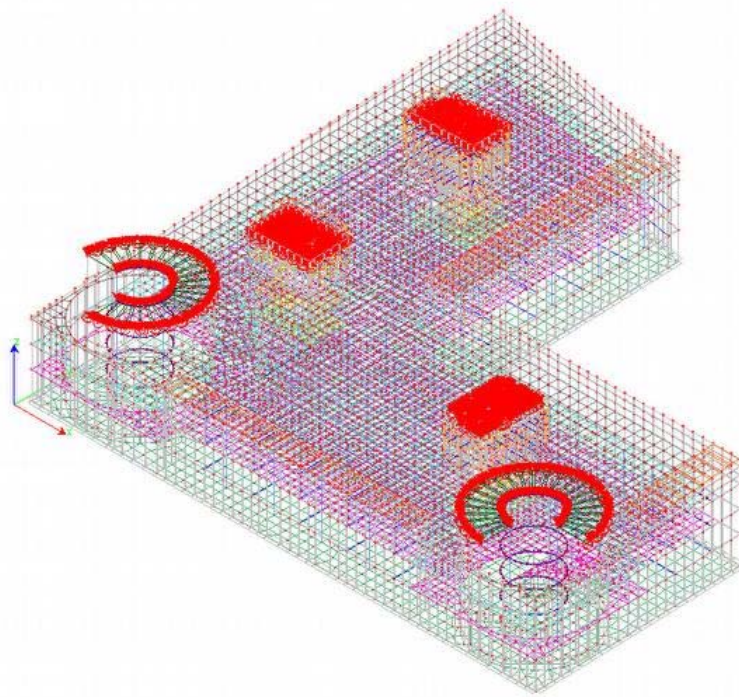
**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

*PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2*

*Parcheggio interrato - Tabulato di calcolo*

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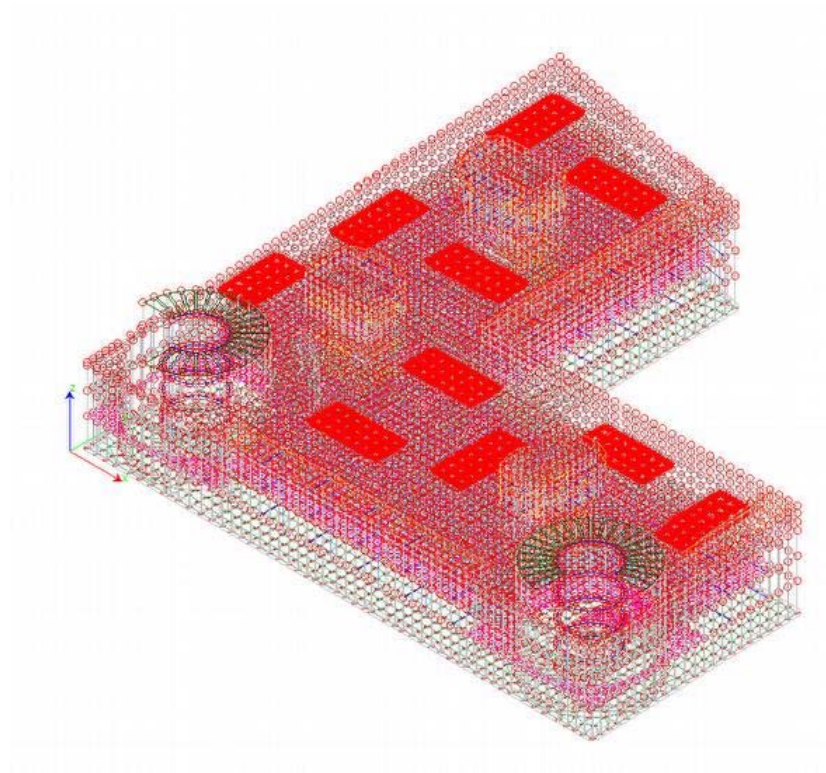


Variabile coperture non praticabili

Distribuzione dei carichi variabili

Platea e Piastre Livelli -2 e -1:	250 kg/mq
Piastra Livello 0 e Scale:	400 kg/mq
Piastre e Solette non praticabili:	100 kg/mq

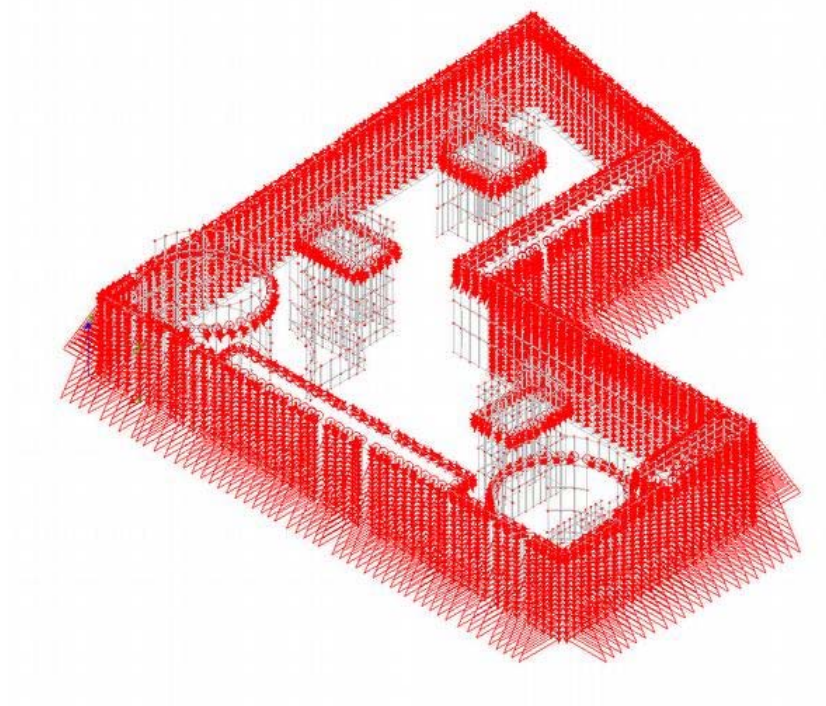




Distribuzione carichi mezzi d'opera sul Livello 0

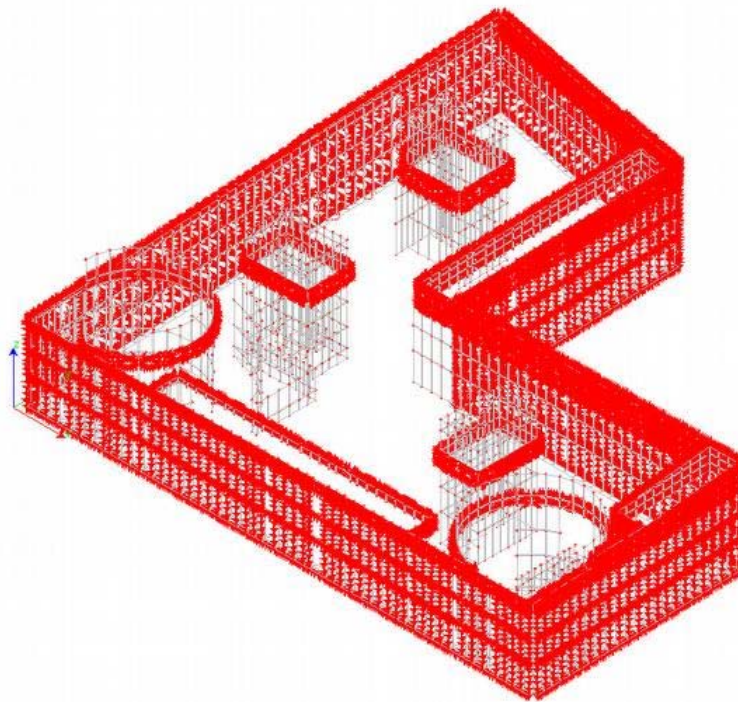
Piastra Livello 0 (Mezzi d'opera):      1.000 kg/mq

Superficie di carico 10,0 m x 4,0 m x 1.000 kg/mq = 40.000 kg



Distribuzione Spinta delle terre

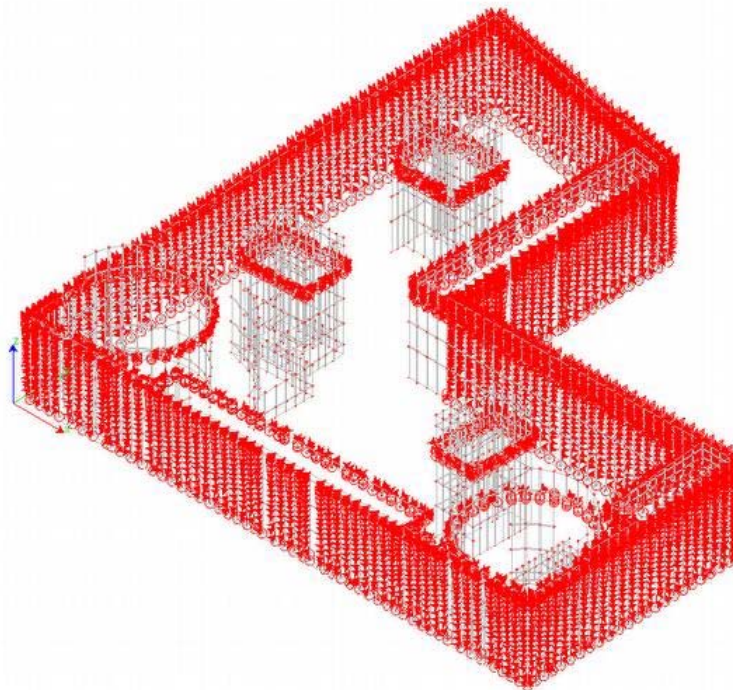
Spinta delle terre:                              da 0 a 9.000 kg/mq



Distribuzione Spinta delle terre dovuta al sovraccarico

Spinta delle terre dovuta al sovraccarico:

610 kg/mq per sovraccarico pari a 2.000 kg/mq  
150 kg/mq per sovraccarico pari a 500 kg/mq

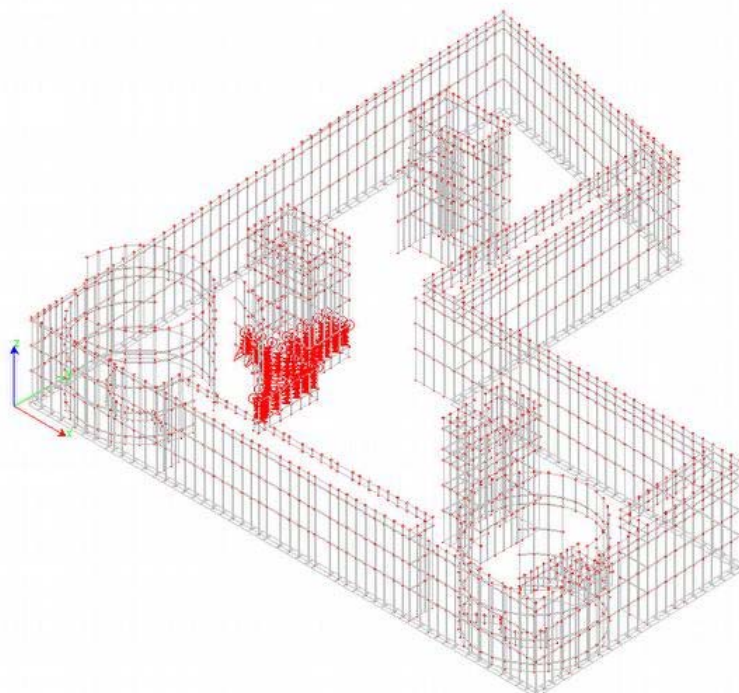


Distribuzione incremento di Spinta delle terre dovuta al sisma

Incremento di spinta delle terre :

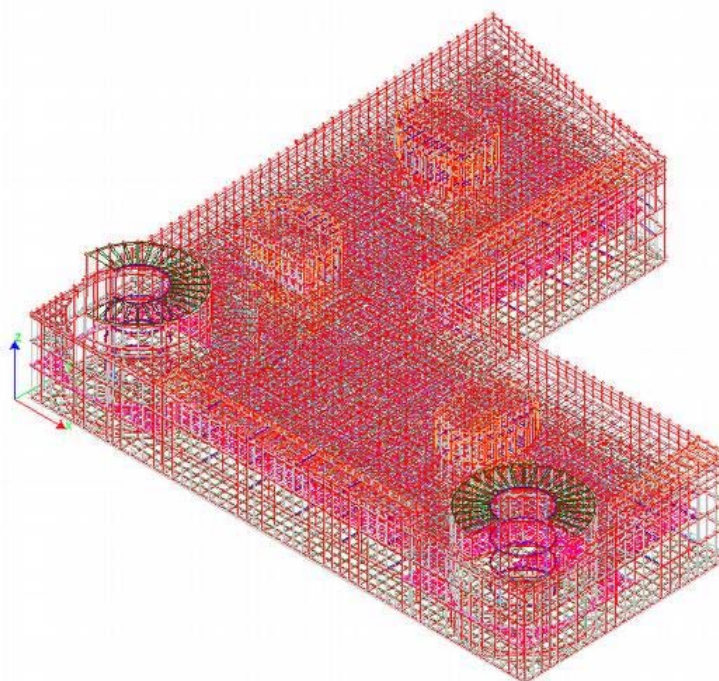
da 1.890 a 0 kg/mq



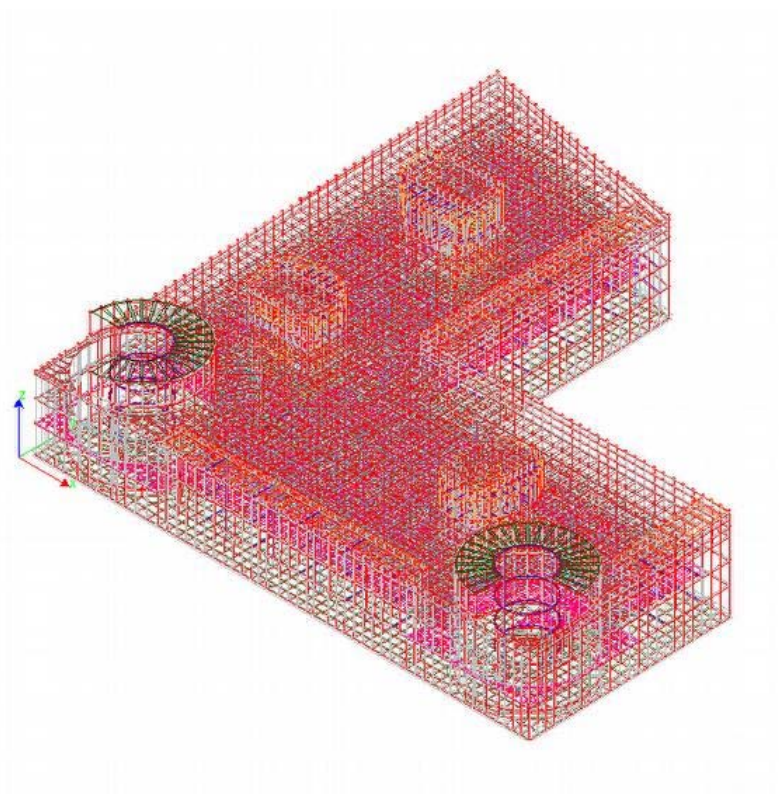


Distribuzione Peso e Spinta dell'acqua

Peso dell'acqua :  $\gamma_{xh} = 1.000 \times 2,90 = 2.900 \text{ kg/mq}$   
Spinta dell'acqua : da 0 kg/mq a 2.900 kg/mq



Deformata sisma X+ (0+/90+)



Deformata sisma Y+ (90+/0+)

#### Spostamenti differenziali massimi

##### Livello -3 / Livello -2

Massimi Interpiano

$\Delta x$  Stilata 66 .. 166

- $H = 4.35$  [m]
- Combinazione 9
- $\Delta = -0.08$  [cm]
- $H / \Delta = 5377.3$

$\Delta y$  Stilata 47A .. 147A

- $H = 4.35$  [m]
- Combinazione 13
- $\Delta = -0.12$  [cm]
- $H / \Delta = 3715.3$

$\Delta xy$  Stilata 48 .. 148

- $H = 4.35$  [m]
- Combinazione 14
- $\Delta = 0.12$  [cm]
- $H / \Delta = 3617.7$

Dettaglio

Stilata Nodi	H [m]	Totali								
		$\Delta x$			$\Delta y$			$\Delta xy$		
		$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$
1 .. 101	4.35	0.01	11	30784.3	0.02	11	22404.8	0.02	11	18115.0
3 .. 103	4.35	-0.05	14	9599.0	0.07	12	6612.9	0.07	11	6279.1
4 .. 104	4.35	-0.05	14	9149.0	0.08	12	5568.3	0.08	11	5461.4
5 .. 105	4.35	-0.04	14	9806.7	0.08	12	5202.0	0.08	12	5187.6

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

7 .. 107	4.35	-0.04	14	11066.8	0.09	12	5048.7	0.09	14	4965.7
8 .. 108	4.35	-0.03	14	13689.5	-0.09	13	4986.3	0.09	14	4744.2
9 .. 109	4.35	-0.01	9	34525.2	0.02	12	22364.4	0.02	12	19290.3
10 .. 110	4.35	0.02	7	21649.5	0.04	11	10235.7	0.05	11	9283.0
11 .. 111	4.35	0.03	11	17167.9	0.02	11	23749.7	0.03	11	13913.4
12 .. 112	4.35	-0.04	14	11389.2	0.04	11	11376.1	0.05	14	8103.3
13 .. 113	4.35	-0.04	14	10636.2	0.05	12	8746.4	0.06	14	7111.2
14 .. 114	4.35	-0.04	14	10345.4	0.06	12	7094.3	0.07	14	5962.6
15 .. 115	4.35	-0.04	14	10792.3	-0.07	13	5920.7	0.08	14	5287.0
16 .. 116	4.35	-0.04	14	11767.0	-0.08	13	5414.2	0.09	14	5004.5
17 .. 117	4.35	-0.03	14	12695.8	-0.09	13	5091.2	0.09	14	4792.8
18 .. 118	4.35	-0.02	9	23943.6	0.02	12	19395.8	0.03	12	15672.1
19 .. 119	4.35	-0.02	9	23225.0	0.04	12	10049.6	0.05	12	9435.7
20 .. 120	4.35	0.03	11	14747.7	0.04	7	11136.3	0.05	11	8914.6
21 .. 121	4.35	-0.04	14	11915.1	-0.05	13	9494.4	0.06	14	7491.7
22 .. 122	4.35	-0.04	14	11922.7	-0.06	13	7026.3	0.07	14	6163.6
23 .. 123	4.35	-0.04	14	12243.1	-0.08	13	5792.4	0.08	14	5339.9
24 .. 124	4.35	-0.03	14	12920.8	-0.08	13	5408.4	0.09	14	5090.0
25 .. 125	4.35	-0.02	9	17651.2	0.05	12	9616.5	0.05	12	8709.4
26 .. 126	4.35	0.03	7	12773.2	-0.02	14	23402.7	0.04	7	11986.1
27 .. 127	4.35	-0.03	10	12722.1	-0.05	13	9505.2	0.06	14	7858.0
28 .. 128	4.35	-0.03	10	12674.5	-0.06	13	6837.4	0.07	14	6197.6
29 .. 129	4.35	-0.03	10	12582.7	-0.08	13	5560.1	0.08	14	5241.3
30 .. 130	4.35	-0.04	10	12409.3	-0.08	13	5222.1	0.09	14	4987.5
31 .. 131	4.35	-0.04	10	11438.3	-0.09	13	4669.3	0.10	14	4556.1
32 .. 132	4.35	-0.04	10	11837.7	-0.10	13	4368.3	0.10	13	4342.6
34 .. 134	4.35	0.04	7	11423.4	-0.02	14	23072.9	0.04	7	10864.0
35 .. 135	4.35	-0.03	10	12915.6	-0.05	13	9479.3	0.05	14	8290.2
36 .. 136	4.35	-0.03	10	12755.5	-0.07	13	6621.5	0.07	14	6203.3
37 .. 137	4.35	-0.03	10	12556.7	-0.08	13	5244.4	0.09	14	5059.6
38 .. 138	4.35	-0.04	10	11955.4	-0.09	13	4888.1	0.09	14	4737.3
39 .. 139	4.35	-0.04	10	10487.4	-0.10	13	4321.1	0.10	14	4232.1
40 .. 140	4.35	-0.04	10	9881.9	-0.10	13	4232.5	0.10	14	4163.2
41 .. 141	4.35	-0.06	10	6827.1	-0.10	13	4164.3	0.11	14	4058.3
42 .. 142	4.35	-0.03	10	13287.0	-0.04	13	9702.6	0.05	14	9213.6
43 .. 143	4.35	-0.03	10	13519.8	-0.07	13	6437.3	0.07	14	6292.2
44 .. 144	4.35	-0.03	10	13257.7	-0.09	13	4752.6	0.09	14	4732.2
45 .. 145	4.35	-0.03	10	12623.7	-0.10	13	4344.4	0.10	14	4317.9
46 .. 146	4.35	-0.04	10	11775.6	-0.11	13	4075.0	0.11	14	4049.7
47 .. 147	4.35	-0.04	10	10615.1	-0.11	13	3795.5	0.12	14	3770.6
48 .. 148	4.35	-0.06	10	6942.5	-0.12	14	3727.4	0.12	14	3617.7
49 .. 149	4.35	0.05	7	9281.9	-0.02	14	21595.8	0.05	7	8955.8
52 .. 152	4.35	0.05	7	7952.1	-0.02	14	20288.9	0.06	7	7755.9
53 .. 153	4.35	0.05	7	8914.7	-0.03	14	16186.4	0.05	7	8636.6
54 .. 154	4.35	-0.05	10	9485.5	-0.03	14	13949.4	0.05	10	9158.7
55 .. 155	4.35	-0.05	10	9124.2	-0.04	14	11892.7	0.05	10	8765.1
56 .. 156	4.35	-0.05	10	8383.1	-0.04	14	10525.1	0.05	10	8142.5
57 .. 157	4.35	-0.07	10	6281.6	-0.04	13	10052.9	0.07	9	6184.6
58 .. 158	4.35	0.06	8	7634.3	-0.02	14	18889.5	0.06	7	7529.7
59 .. 159	4.35	0.05	8	8417.7	-0.03	14	16347.0	0.05	7	8273.1
60 .. 160	4.35	-0.05	9	8620.8	-0.03	14	13647.9	0.05	10	8562.5
61 .. 161	4.35	-0.05	9	8031.3	-0.04	14	11232.1	0.05	10	7924.5
62 .. 162	4.35	-0.06	9	7154.5	-0.04	14	9875.7	0.06	10	7047.6
63 .. 163	4.35	-0.08	9	5490.9	-0.04	14	9692.2	0.08	10	5456.9
64 .. 164	4.35	0.05	8	8037.3	-0.03	14	16286.0	0.05	7	7945.3

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

65 .. 165	4.35	-0.06	9	7168.3	-0.05	14	8722.8	0.06	10	6991.2
66 .. 166	4.35	-0.08	9	5377.3	-0.05	14	8530.6	0.08	10	5287.4
67 .. 167	4.35	0.05	8	8212.2	-0.03	14	13444.9	0.05	7	8110.7
68 .. 168	4.35	-0.05	9	9215.7	-0.04	14	10672.7	0.05	10	9071.1
69 .. 169	4.35	-0.05	9	8822.8	-0.05	14	8901.2	0.05	14	8286.7
70 .. 170	4.35	-0.05	9	8287.5	-0.05	14	7998.3	0.06	14	7522.3
71 .. 171	4.35	-0.06	9	7400.8	-0.06	14	7127.2	0.06	14	6778.3
72 .. 172	4.35	-0.08	9	5638.8	-0.06	14	6984.2	0.08	10	5391.2
73 .. 173	4.35	0.05	8	9034.7	-0.04	13	11133.1	0.05	8	8942.5
74 .. 174	4.35	-0.04	9	9858.5	-0.05	14	8405.0	0.05	14	8013.1
75 .. 175	4.35	-0.05	9	9609.1	-0.06	14	7411.1	0.06	14	7125.9
76 .. 176	4.35	-0.05	9	9034.5	-0.06	14	6737.4	0.07	14	6481.9
77 .. 177	4.35	-0.05	9	8869.0	-0.08	14	5676.5	0.08	14	5502.8
78 .. 178	4.35	-0.06	9	7311.6	-0.08	14	5446.4	0.08	14	5265.8
79 .. 179	4.35	-0.04	9	10547.4	-0.04	13	9798.4	0.05	14	9494.0
87 .. 187	4.35	-0.03	10	12626.7	-0.03	14	13626.7	0.04	14	10243.2
47A .. 147A	4.35	-0.05	10	9551.7	-0.12	13	3715.3	0.12	14	3671.1
60A .. 160A	4.35	-0.05	9	8463.5	-0.03	14	13633.1	0.05	9	8427.0

**Dalla tabella si evince che in condizioni sismiche non si sono rilevati spostamenti di interpiano superiori a  $2/3$  di  $0.005 H$  (in quanto costruzione in classe d'uso III) e pi precisamente lo spostamento di interpiano massimo risulta essere pari a  $0,12 \text{ cm}$   $< 2/3 \times 0,005 \times 435 = 1,43 \text{ cm}$ .**

**Livello -2 / Livello -1**

Massimi Interpiano

$\Delta x$  Stilata 158 .. 258

- $H = 3.45 \text{ [m]}$
- Combinazione 9
- $\Delta = -0.04 \text{ [cm]}$
- $H / \Delta = 8150.2$

$\Delta y$  Stilata 132 .. 232

- $H = 3.45 \text{ [m]}$
- Combinazione 13
- $\Delta = -0.08 \text{ [cm]}$
- $H / \Delta = 4555.9$

$\Delta xy$  Stilata 132 .. 232

- $H = 3.45 \text{ [m]}$
- Combinazione 14
- $\Delta = 0.08 \text{ [cm]}$
- $H / \Delta = 4449.4$

Dettaglio

Stilata Nodi	H [m]	Totali								
		$\Delta x$			$\Delta y$			$\Delta xy$		
		$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$
179 .. 279	3.45	-0.03	9	11520.3	-0.01	14	25998.7	0.03	9	11461.0
160A .. 260A	3.45	-0.04	9	8862.7	-0.02	14	14515.4	0.04	9	8821.1
147A .. 247A	3.45	-0.03	10	11359.6	0.06	12	5605.5	0.06	12	5572.7
187 .. 287	3.45	-0.03	10	12426.6	-0.03	14	11410.0	0.04	14	9565.8
140 .. 240	3.45	-0.03	10	10391.9	-0.07	13	4954.3	0.07	14	4797.2
139 .. 239	3.45	-0.03	10	10608.6	-0.07	13	5056.8	0.07	14	4934.0
132 .. 232	3.45	-0.04	10	9734.3	-0.08	13	4555.9	0.08	14	4449.4
131 .. 231	3.45	-0.03	10	10168.2	-0.07	13	4739.1	0.07	14	4619.3
178 .. 278	3.45	-0.03	9	12224.2	0.04	11	9755.7	0.04	12	9372.7

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

177 .. 277	3.45	-0.03	9	12256.2	0.03	11	10233.7	0.03	9	9858.7
176 .. 276	3.45	-0.03	9	11195.5	0.03	11	13589.2	0.03	9	10424.2
175 .. 275	3.45	-0.03	9	11116.0	0.02	11	17658.1	0.03	9	10811.1
174 .. 274	3.45	-0.03	9	10691.6	0.02	11	22653.8	0.03	9	10574.1
173 .. 273	3.45	-0.03	9	10030.0	-0.02	13	22442.7	0.03	9	9970.6
172 .. 272	3.45	0.03	8	11146.4	0.03	11	11616.8	0.04	7	9640.9
171 .. 271	3.45	-0.03	9	10875.3	0.03	11	12331.0	0.03	9	10122.0
170 .. 270	3.45	-0.03	9	10092.2	0.02	11	14984.1	0.04	9	9777.8
169 .. 269	3.45	-0.03	9	10143.6	-0.02	14	17788.8	0.03	9	9969.8
168 .. 268	3.45	-0.04	9	9755.5	-0.02	14	19075.2	0.04	9	9675.2
167 .. 267	3.45	-0.04	9	8848.1	-0.02	14	20443.1	0.04	9	8803.8
166 .. 266	3.45	0.03	8	10333.9	0.03	11	13170.2	0.04	7	9826.4
165 .. 265	3.45	-0.04	9	9433.5	0.03	11	13674.4	0.04	9	9152.8
164 .. 264	3.45	-0.04	9	8583.2	-0.02	14	19478.5	0.04	9	8558.3
163 .. 263	3.45	0.03	8	10711.7	0.03	11	13104.6	0.03	9	10406.4
162 .. 262	3.45	-0.04	9	9762.9	0.03	11	13518.6	0.04	9	9433.1
161 .. 261	3.45	-0.04	9	9026.0	-0.03	14	13445.0	0.04	9	8918.5
160 .. 260	3.45	-0.04	9	8969.2	-0.02	14	14509.6	0.04	9	8928.1
159 .. 259	3.45	-0.04	9	8774.2	-0.02	14	16395.5	0.04	9	8758.3
158 .. 258	3.45	-0.04	9	8150.2	-0.02	14	19816.4	0.04	9	8143.4
157 .. 257	3.45	-0.03	10	11726.4	0.03	12	11388.7	0.03	9	10738.0
156 .. 256	3.45	-0.03	10	10889.2	-0.03	14	12362.9	0.03	9	10389.8
155 .. 255	3.45	-0.03	10	9916.0	-0.03	14	13182.0	0.04	10	9658.2
154 .. 254	3.45	-0.04	10	9739.4	-0.02	14	14744.3	0.04	10	9482.2
153 .. 253	3.45	-0.04	10	9313.9	-0.02	14	16624.3	0.04	10	9103.7
152 .. 252	3.45	-0.04	10	8397.3	-0.02	14	20996.2	0.04	10	8271.7
149 .. 249	3.45	-0.04	10	9759.2	-0.01	14	23098.7	0.04	10	9588.0
148 .. 248	3.45	-0.03	10	12350.7	-0.06	13	5311.4	0.07	14	5126.0
147 .. 247	3.45	-0.03	10	11577.1	0.06	12	5465.2	0.06	12	5439.4
146 .. 246	3.45	-0.03	10	12538.9	0.06	12	5578.3	0.06	12	5560.6
145 .. 245	3.45	-0.03	10	13624.3	0.06	12	5785.7	0.06	12	5774.0
144 .. 244	3.45	-0.02	10	13940.3	0.06	12	6133.2	0.06	12	6122.5
143 .. 243	3.45	-0.03	10	13413.3	0.04	12	7794.3	0.04	11	7692.4
142 .. 242	3.45	-0.03	10	12034.1	0.04	11	9455.4	0.04	11	9233.2
141 .. 241	3.45	-0.03	10	11099.4	-0.07	14	5148.3	0.07	14	4730.6
138 .. 238	3.45	-0.03	10	13104.6	-0.06	13	6154.9	0.06	14	5989.4
137 .. 237	3.45	-0.03	10	13400.0	0.05	12	7046.9	0.05	12	7046.9
136 .. 236	3.45	-0.03	10	13114.6	0.04	12	8282.0	0.04	14	7965.6
135 .. 235	3.45	-0.03	10	12449.2	-0.04	14	9628.5	0.04	14	8358.2
134 .. 234	3.45	-0.03	10	11136.3	0.02	11	22014.6	0.03	10	10957.6
130 .. 230	3.45	-0.03	10	12745.9	-0.06	13	5939.9	0.06	14	5627.6
129 .. 229	3.45	-0.03	10	13081.2	-0.05	13	6995.7	0.05	14	6491.4
128 .. 228	3.45	-0.03	10	12993.4	-0.04	13	8181.1	0.05	14	7318.4
127 .. 227	3.45	-0.03	10	12595.1	-0.04	13	9282.8	0.04	14	7852.7
126 .. 226	3.45	-0.03	10	10838.9	0.02	11	21895.6	0.03	10	10728.4
125 .. 225	3.45	-0.02	9	15550.9	0.02	12	15366.0	0.03	12	11223.2
124 .. 224	3.45	-0.03	10	12900.8	-0.06	13	5739.6	0.06	14	5360.6
123 .. 223	3.45	-0.03	10	12884.1	-0.05	13	6613.2	0.06	14	6027.4
122 .. 222	3.45	-0.03	10	12872.8	-0.04	13	7777.2	0.05	14	6803.3
121 .. 221	3.45	-0.03	10	12694.9	-0.04	13	9248.6	0.05	14	7551.4
120 .. 220	3.45	0.03	11	13466.0	0.02	11	16363.8	0.03	11	10397.9
119 .. 219	3.45	-0.03	9	12067.5	0.02	12	15545.1	0.04	12	9764.0
118 .. 218	3.45	-0.01	9	26349.9	0.03	12	11349.4	0.03	12	10580.6
117 .. 217	3.45	-0.03	14	11611.2	-0.07	13	5069.5	0.07	14	4726.4
116 .. 216	3.45	-0.03	14	11362.6	-0.06	13	5416.9	0.07	14	4981.2

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

115 .. 215	3.45	-0.03	14	11010.2	-0.06	13	6144.3	0.06	14	5474.1
114 .. 214	3.45	-0.03	14	10925.5	-0.05	13	7206.4	0.06	14	6111.5
113 .. 213	3.45	-0.03	14	11017.1	-0.04	13	8896.7	0.05	14	6959.4
112 .. 212	3.45	-0.03	14	11100.1	0.03	11	10794.3	0.04	14	8233.9
111 .. 211	3.45	0.02	11	21789.7	0.03	11	12683.8	0.03	11	10961.9
110 .. 210	3.45	0.03	11	10964.4	0.02	11	16869.3	0.04	11	9193.2
109 .. 209	3.45	-0.01	9	∞	0.04	12	8850.5	0.04	12	8655.4
108 .. 208	3.45	-0.03	14	12799.8	-0.07	13	5049.6	0.07	14	4776.5
107 .. 207	3.45	-0.03	14	10401.8	-0.07	13	5228.9	0.07	14	4764.9
105 .. 205	3.45	-0.04	14	9841.3	-0.06	13	5829.5	0.07	14	5114.6
104 .. 204	3.45	-0.04	14	9694.6	-0.05	13	6820.5	0.06	14	5657.9
103 .. 203	3.45	-0.04	14	9632.6	-0.04	13	8555.3	0.05	14	6420.8
101 .. 201	3.45	0.01	11	26109.3	0.04	11	9397.7	0.04	11	8842.4

**Dalla tabella si evince che in condizioni sismiche non si sono rilevati spostamenti di interpiano superiori a 2/3 di 0.005 H (in quanto costruzione in classe d'uso III) e pi precisamente lo spostamento di interpiano massimo risulta essere pari a 0,08 cm < 2/3 x 0,005 x 345 = 1,14 cm.**

**Livello -1 / Livello 0**

Massimi Interpiano

$\Delta x$  Stilata 211 .. 311

- H = 3.45 [m]
- Combinazione 11
- $\Delta = 0.04$  [cm]
- H /  $\Delta = 8808.5$

$\Delta y$  Stilata 246 .. 346

- H = 3.45 [m]
- Combinazione 13
- $\Delta = -0.05$  [cm]
- H /  $\Delta = 6476.1$

$\Delta xy$  Stilata 211 .. 311

- H = 3.45 [m]
- Combinazione 11
- $\Delta = 0.06$  [cm]
- H /  $\Delta = 6083.8$

Dettaglio

Stilata Nodi	H [m]	Totali								
		$\Delta x$			$\Delta y$			$\Delta xy$		
		$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$
201 .. 301	3.45	0.02	11	17644.9	0.02	7	14722.3	0.03	11	11322.4
203 .. 303	3.45	-0.02	14	15695.9	-0.02	13	21127.8	0.03	14	12678.7
204 .. 304	3.45	-0.02	14	14730.6	-0.02	13	16008.9	0.03	14	11017.5
205 .. 305	3.45	-0.02	14	13933.9	-0.03	13	12081.6	0.04	14	9292.1
207 .. 307	3.45	-0.02	14	14891.7	-0.04	13	9301.6	0.04	14	8020.4
209 .. 309	3.45	-0.02	9	21068.3	0.03	12	13220.3	0.03	12	11371.8
210 .. 310	3.45	0.02	11	21601.2	0.02	11	14630.6	0.03	11	12113.6
211 .. 311	3.45	0.04	11	8808.5	0.04	11	8412.6	0.06	11	6083.8
212 .. 312	3.45	-0.02	14	18535.9	0.02	11	13982.5	0.03	11	11471.5
213 .. 313	3.45	-0.02	14	17958.3	-0.02	13	16888.7	0.03	14	12386.9
214 .. 314	3.45	-0.02	14	16890.5	-0.03	13	13441.9	0.03	14	10712.5
215 .. 315	3.45	-0.02	14	16278.7	-0.03	13	10526.7	0.04	14	9021.6
216 .. 316	3.45	-0.02	14	16602.2	-0.04	13	8287.8	0.05	14	7554.6



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

217 .. 317	3.45	-0.02	10	16701.3	-0.04	13	7931.2	0.05	14	7359.7
218 .. 318	3.45	-0.04	9	9359.2	0.04	12	8047.2	0.06	12	6173.2
219 .. 319	3.45	-0.01	9	27794.7	0.03	12	13441.6	0.03	12	12254.3
220 .. 320	3.45	0.04	11	9450.4	0.04	11	8183.4	0.06	11	6186.3
221 .. 321	3.45	0.02	7	18427.4	-0.02	13	14143.5	0.03	14	12129.5
222 .. 322	3.45	-0.02	10	18646.1	-0.03	13	11414.9	0.03	14	10112.4
223 .. 323	3.45	-0.02	10	17930.8	-0.04	13	9200.1	0.04	14	8469.4
224 .. 324	3.45	-0.02	10	16587.4	-0.05	13	7313.9	0.05	14	6913.7
225 .. 325	3.45	-0.03	9	10254.6	0.04	12	7956.0	0.05	12	6352.4
226 .. 326	3.45	0.02	7	16190.0	0.02	11	19858.6	0.03	11	13012.4
227 .. 327	3.45	0.02	7	19141.9	-0.02	13	14132.8	0.03	14	12357.5
228 .. 328	3.45	-0.02	10	18028.4	-0.03	13	11161.6	0.03	14	10168.1
229 .. 329	3.45	-0.02	10	17631.0	-0.04	13	8982.9	0.04	14	8465.0
230 .. 330	3.45	-0.02	10	17660.0	-0.05	13	7262.9	0.05	14	7000.9
234 .. 334	3.45	0.02	7	15492.9	0.02	11	21396.9	0.03	7	13423.5
235 .. 335	3.45	-0.02	10	17737.7	-0.02	13	13988.5	0.03	14	12320.5
236 .. 336	3.45	-0.02	10	17032.7	-0.03	13	10999.4	0.03	14	10179.2
237 .. 337	3.45	-0.02	10	17011.0	-0.04	13	8806.9	0.04	14	8428.7
238 .. 338	3.45	-0.02	10	16734.1	-0.05	13	7438.9	0.05	14	7170.6
242 .. 342	3.45	-0.02	10	15436.2	-0.03	14	11664.7	0.03	14	10582.4
243 .. 343	3.45	-0.02	10	15575.7	-0.04	13	9109.6	0.04	14	8703.4
244 .. 344	3.45	-0.02	10	16750.9	-0.05	13	7413.8	0.05	14	7309.6
245 .. 345	3.45	-0.02	10	16725.5	-0.05	13	6680.4	0.05	14	6577.7
246 .. 346	3.45	-0.02	10	16412.9	-0.05	13	6476.1	0.05	14	6291.2
247 .. 347	3.45	-0.02	10	16387.2	-0.05	14	6830.6	0.05	14	6520.9
249 .. 349	3.45	0.02	7	14581.3	0.01	11	23424.2	0.03	7	13221.8
252 .. 352	3.45	0.02	7	14489.4	0.01	11	26876.8	0.03	7	13630.3
253 .. 353	3.45	0.02	7	16681.4	0.02	11	21173.6	0.02	7	15046.3
254 .. 354	3.45	0.02	7	16145.0	0.02	11	19537.2	0.02	7	14523.5
255 .. 355	3.45	0.02	7	16066.5	-0.02	14	18009.6	0.02	7	14652.1
256 .. 356	3.45	-0.02	10	18396.6	-0.02	14	14279.2	0.03	14	13328.7
257 .. 357	3.45	-0.01	10	24953.4	-0.03	14	11773.0	0.03	14	11130.5
258 .. 358	3.45	0.02	8	15509.6	-0.01	14	25973.0	0.02	7	15327.9
259 .. 359	3.45	0.02	8	16509.0	-0.02	14	21415.2	0.02	7	16122.4
260 .. 360	3.45	0.02	8	15711.5	-0.02	14	19421.4	0.02	7	15031.6
261 .. 361	3.45	0.02	8	15147.0	-0.02	14	16626.8	0.02	7	14622.9
262 .. 362	3.45	0.02	8	18096.0	-0.02	14	14602.4	0.02	14	14253.2
263 .. 363	3.45	0.02	7	22387.7	-0.03	14	13610.6	0.03	14	12985.6
264 .. 364	3.45	0.02	8	15374.1	-0.02	13	22871.4	0.02	8	15031.8
265 .. 365	3.45	0.02	8	15013.0	-0.02	14	15427.7	0.02	8	14397.3
266 .. 366	3.45	0.02	8	18655.5	-0.02	14	14295.3	0.03	14	13727.1
267 .. 367	3.45	0.02	8	14767.8	-0.02	13	20880.2	0.03	13	13487.8
268 .. 368	3.45	-0.02	9	14068.0	-0.02	13	19832.5	0.02	9	14058.9
269 .. 369	3.45	-0.03	9	13799.7	-0.02	14	19276.3	0.03	9	13755.8
270 .. 370	3.45	0.02	8	14728.0	-0.02	14	17527.7	0.02	8	13984.7
271 .. 371	3.45	-0.02	9	14242.0	-0.02	14	16467.5	0.03	10	13462.0
272 .. 372	3.45	-0.02	9	17163.7	-0.02	14	15984.8	0.02	14	15247.1
273 .. 373	3.45	0.02	8	16837.0	-0.02	13	19223.7	0.03	13	13093.0
274 .. 374	3.45	-0.02	9	14278.3	-0.02	13	17933.1	0.02	9	14174.6
275 .. 375	3.45	-0.03	9	13613.8	-0.02	13	16972.1	0.03	9	13187.9
276 .. 376	3.45	-0.03	9	13286.8	-0.02	14	15406.8	0.03	10	12055.4
277 .. 377	3.45	-0.03	9	11277.8	-0.02	14	14985.3	0.03	10	10081.6
278 .. 378	3.45	-0.03	9	12601.8	-0.01	10	27505.4	0.03	9	12203.2
231 .. 331	3.45	-0.03	10	12946.3	-0.04	13	8059.2	0.05	14	7409.8
232 .. 332	3.45	-0.03	10	11674.3	0.04	12	8430.0	0.05	14	7510.9

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

239 .. 339	3.45	-0.02	10	15169.3	-0.04	13	7967.5	0.05	14	7476.3
240 .. 340	3.45	-0.02	10	15547.4	-0.04	14	8365.7	0.04	14	7783.0
287 .. 387	3.45	0.02	7	15067.6	-0.02	14	16559.8	0.03	11	13557.1
247A .. 347A	3.45	-0.02	10	18339.9	-0.05	14	7620.3	0.05	14	7283.9
260A .. 360A	3.45	0.02	8	14965.6	-0.02	14	19205.2	0.02	7	14702.8
279 .. 379	3.45	-0.02	9	16719.9	-0.02	13	19069.5	0.02	13	14728.1

**Dalla tabella si evince che in condizioni sismiche non si sono rilevati spostamenti di interpiano superiori a  $2/3$  di  $0.005 H$  (in quanto costruzione in classe d'uso III) e pi precisamente lo spostamento di interpiano massimo risulta essere pari a  $0.06 \text{ cm}$   $< 2/3 \times 0.005 \times 345 = 1.14 \text{ cm}$ .**

**Livello 0 / Livello Copertura scale e rampe**

Massimi Interpiano

$\Delta x$  Stilata 301 .. 401

- $H = 4.30 \text{ [m]}$
- Combinazione 11
- $\Delta = 0.27 \text{ [cm]}$
- $H / \Delta = 1585.7$

$\Delta y$  Stilata 319 .. 419

- $H = 4.30 \text{ [m]}$
- Combinazione 12
- $\Delta = 0.28 \text{ [cm]}$
- $H / \Delta = 1532.6$

$\Delta xy$  Stilata 319 .. 419

- $H = 4.30 \text{ [m]}$
- Combinazione 12
- $\Delta = 0.28 \text{ [cm]}$
- $H / \Delta = 1517.6$

Dettaglio

Stilata Nodi	H [m]	Totali								
		$\Delta x$			$\Delta y$			$\Delta xy$		
		$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$	$\Delta$ [cm]	Comb	H/ $\Delta$
301 .. 401	4.30	0.27	11	1585.7	-0.03	14	12420.2	0.27	11	1579.1
309 .. 409	4.30	-0.27	9	1621.2	-0.04	13	12066.1	0.27	9	1615.0
310 .. 410	4.30	-0.05	14	8283.1	0.28	7	1548.1	0.28	7	1535.4
311 .. 411	4.30	0.09	11	4764.8	0.07	11	6179.8	0.11	11	3773.4
318 .. 418	4.30	-0.09	9	4947.1	0.07	12	5966.2	0.11	12	3834.2
319 .. 419	4.30	0.05	13	8607.3	0.28	12	1532.6	0.28	12	1517.6
320 .. 420	4.30	0.06	11	6805.3	0.09	11	4608.3	0.11	11	3815.8
325 .. 425	4.30	-0.06	9	7197.1	0.10	12	4514.1	0.11	12	3842.1
383 .. 483	4.27	0.02	7	19056.3	-0.06	13	7014.1	0.06	13	7014.0
384 .. 484	3.67	0.03	8	12337.2	-0.02	14	21991.0	0.03	8	12304.0

**Dalla tabella si evince che in condizioni sismiche non si sono rilevati spostamenti di interpiano superiori a  $2/3$  di  $0.005 H$  (in quanto costruzione in classe d'uso III) e pi precisamente lo spostamento di interpiano massimo risulta essere pari a  $0.28 \text{ cm}$   $< 2/3 \times 0.005 \times 430 = 1.42 \text{ cm}$ .**

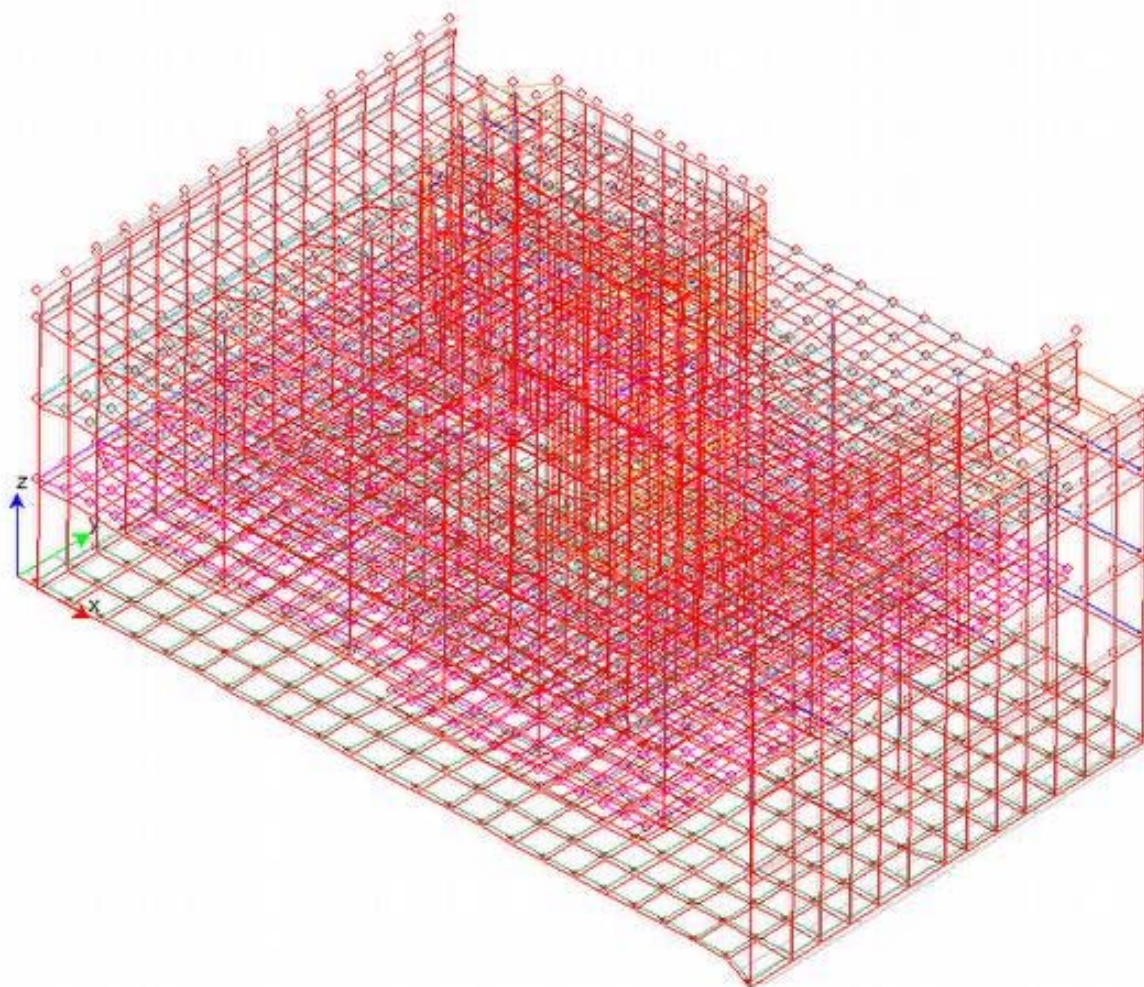
**In definitiva dalle tabelle precedenti si evince che in condizioni sismiche non si sono rilevati spostamenti di interpiano superiori a  $2/3 \times 0.005 H$ .**



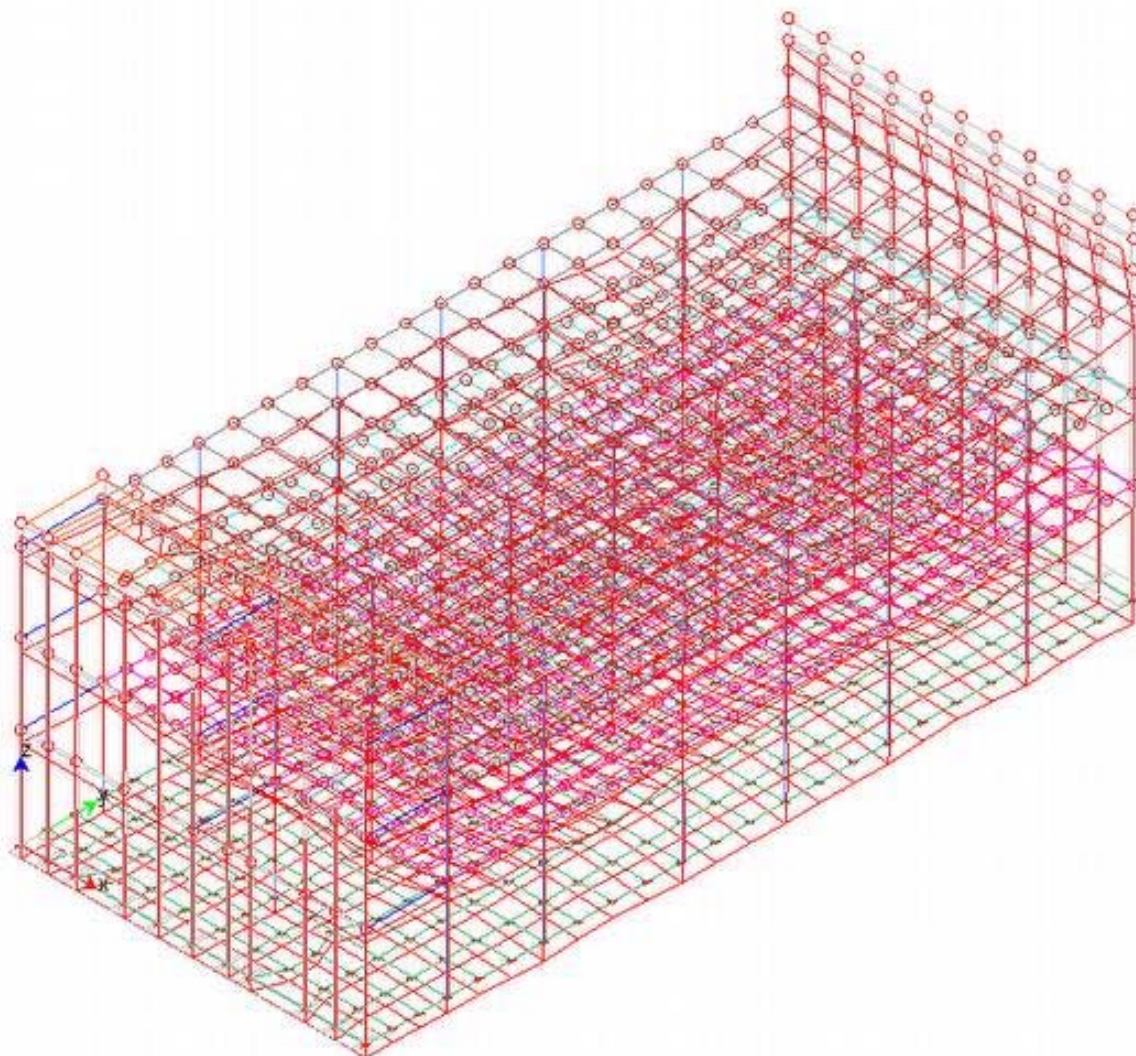
**Tensioni sul terreno**

- ❑ 1,97 kg/cmq in assenza di sisma SLV GEO – Combinazione geotecnica 2 – Approccio 1 (Tab. 6.2.1 del DM 14.01.08) (A2+M2+R2) (v.6.4.2.1)
- ❑ 1,64 kg/cmq in presenza di sisma SLV GEO – Combinazione geotecnica 2 – Approccio 1 (Tab. 6.2.1 del DM 14.01.08) (A2+M2+R2) (v.6.4.2.1)

**Grafici sintetici dei risultati di calcolo**

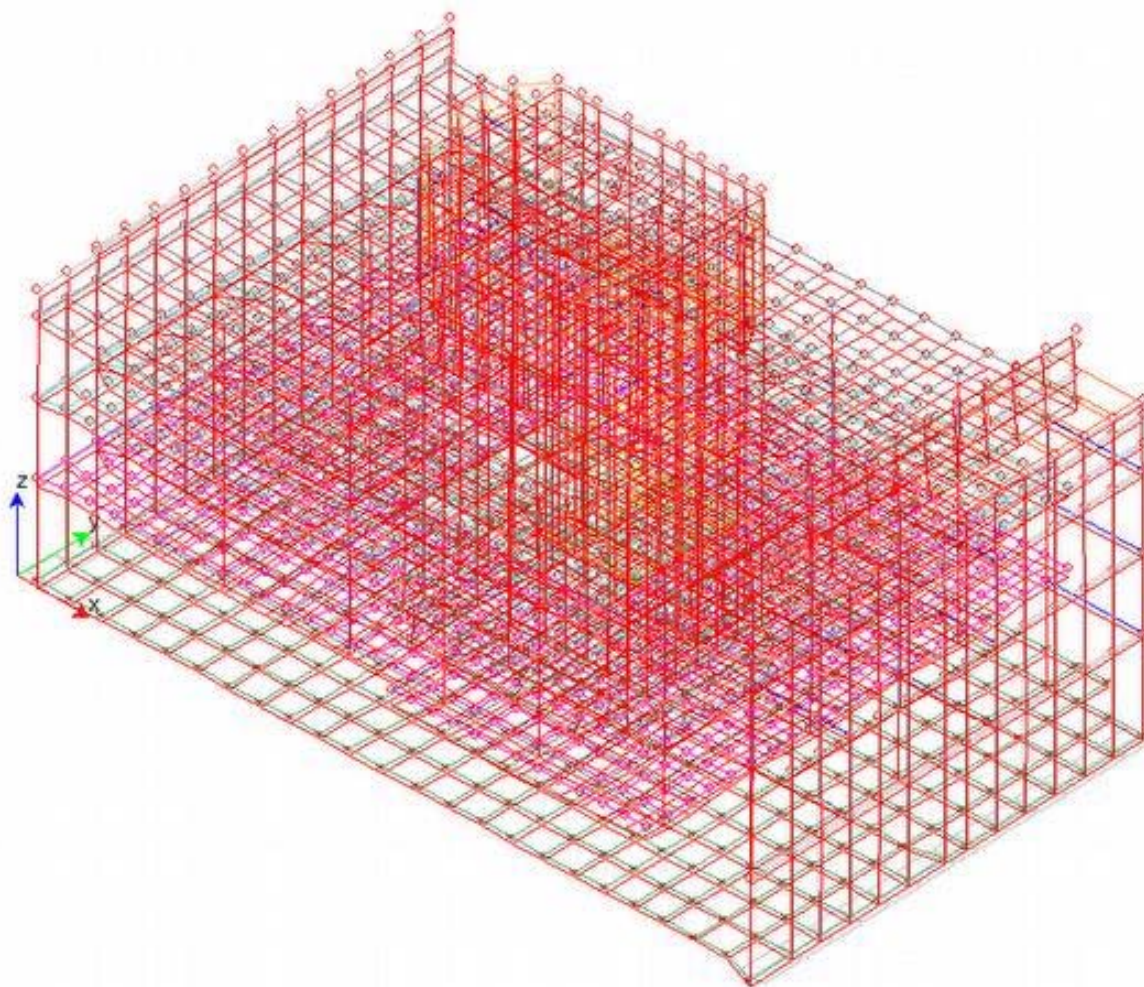


**Stralcio 1 – Deformata per Sisma X+**

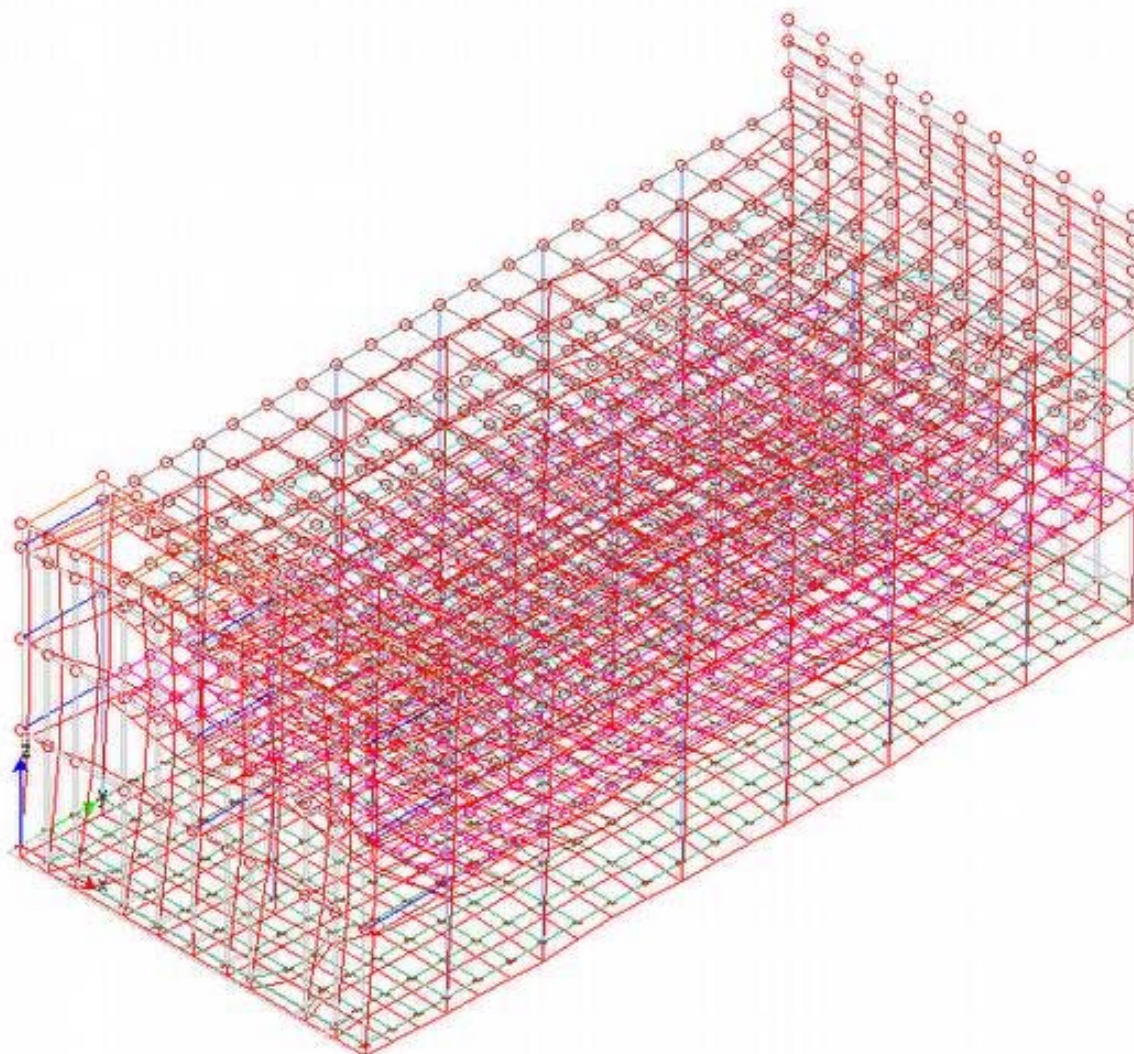


Stralcio 2 – Deformata per Sisma X+



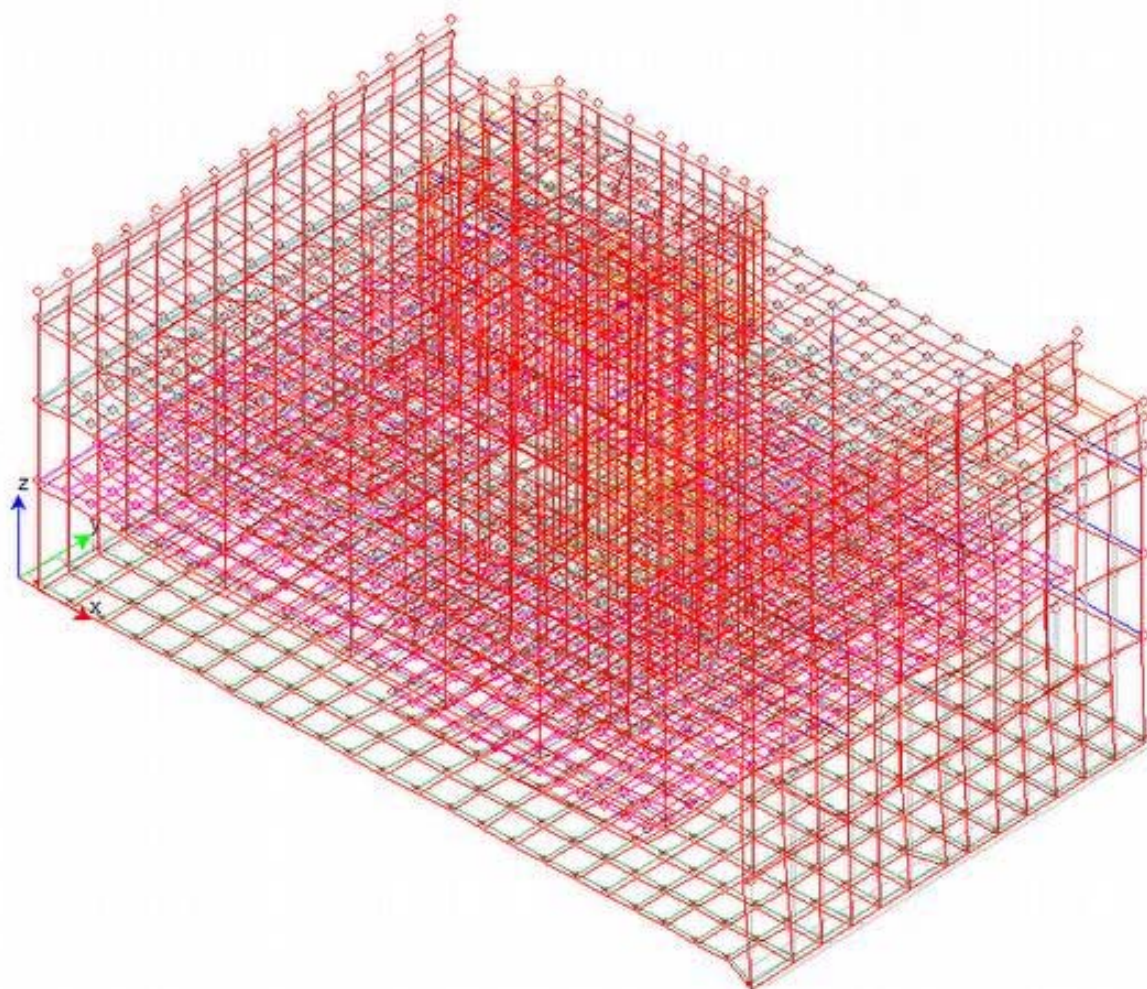


Stralcio 1 – Deformata per Sisma Y+

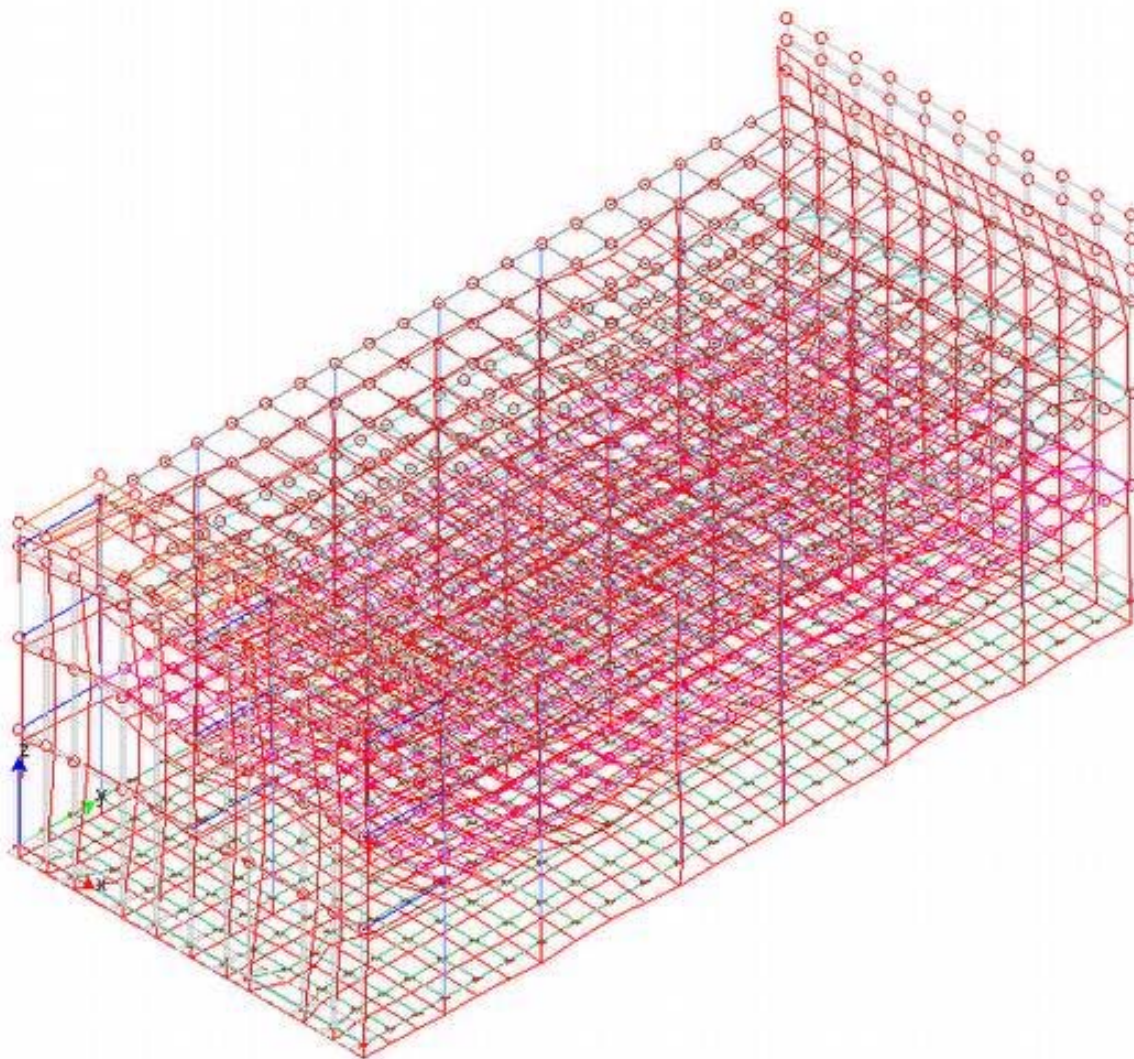


Stralcio 2 – Deformata per Sisma Y+



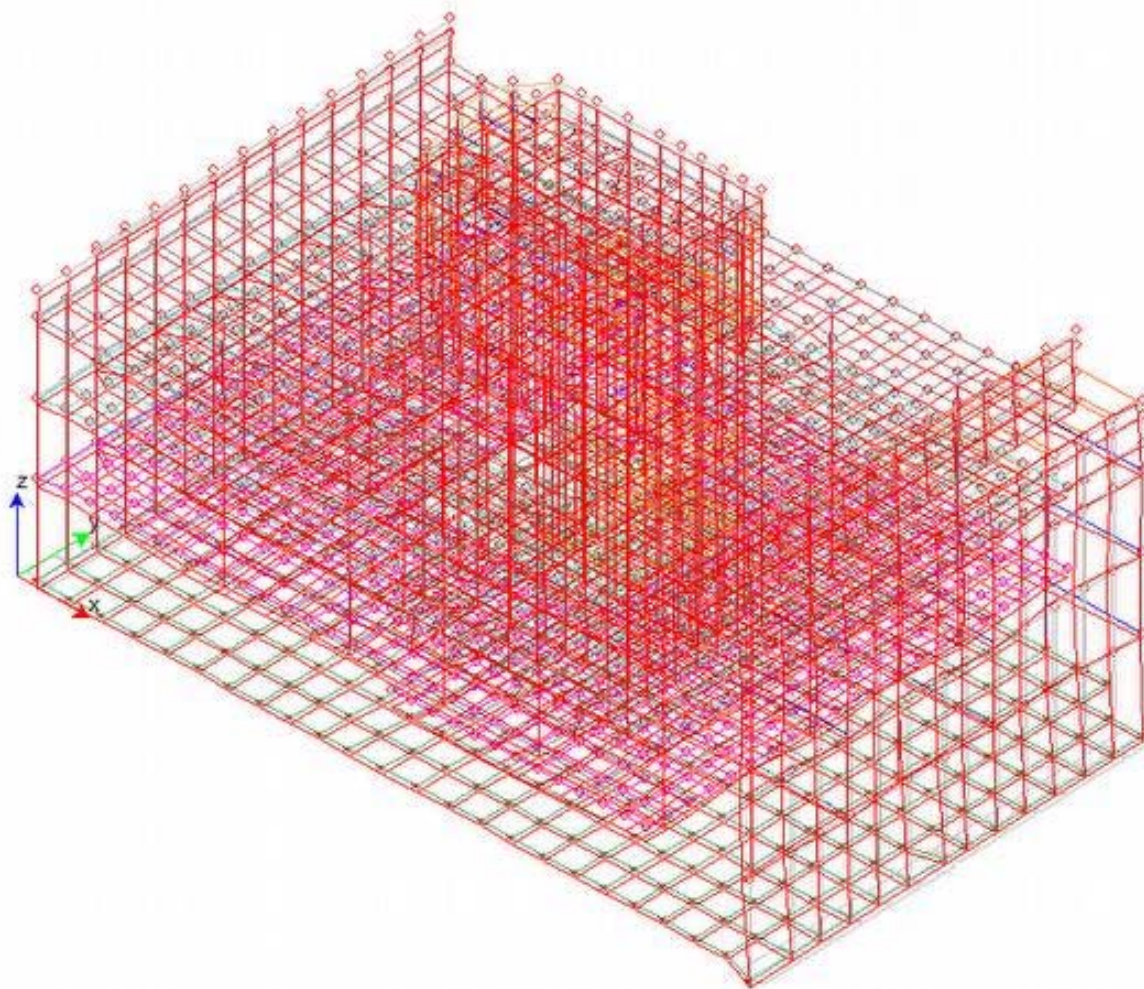


Stralcio 1 – Deformata per Combinazione Rara 1

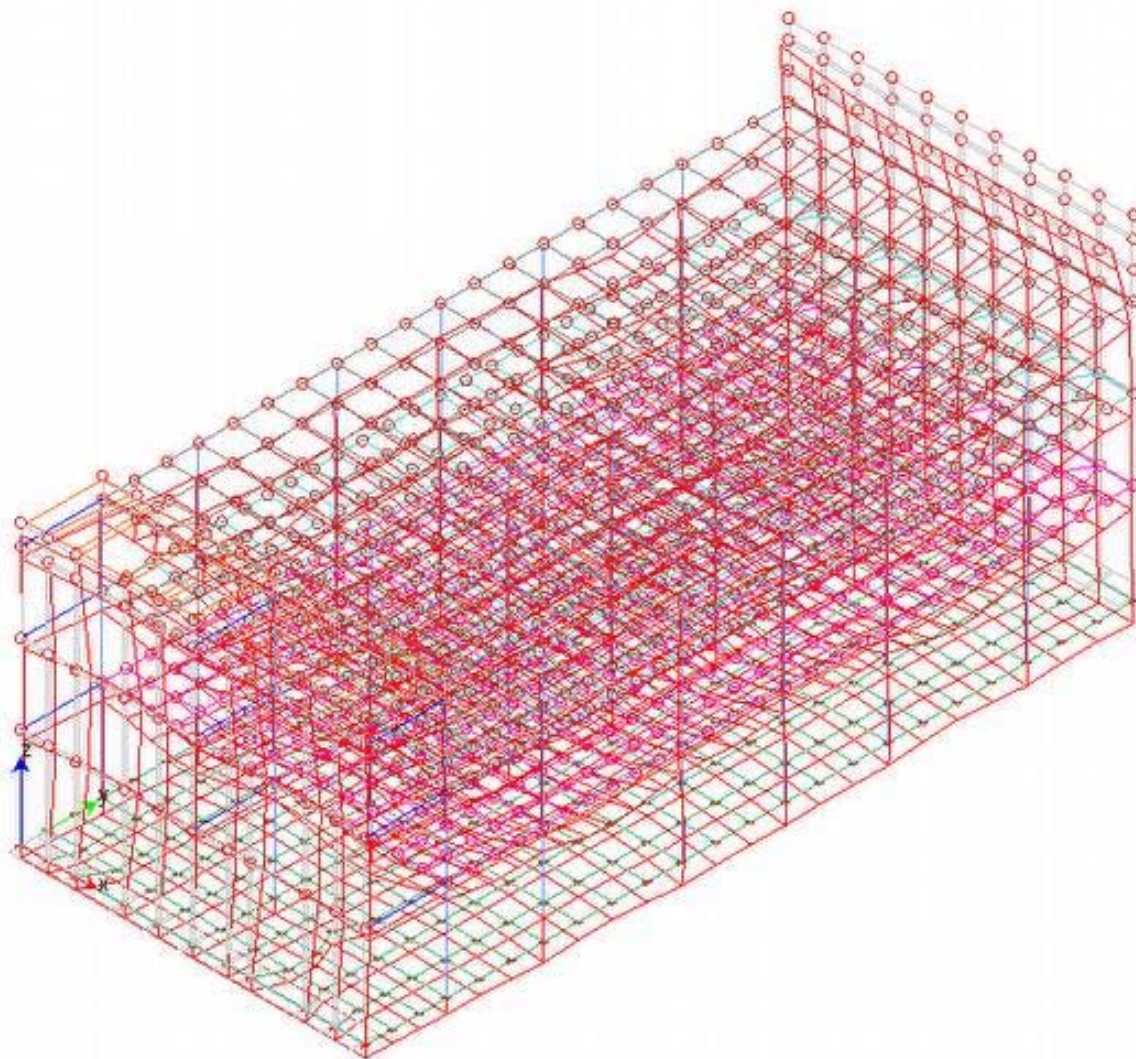


Stralcio 2 – Deformata per Combinazione Rara 1



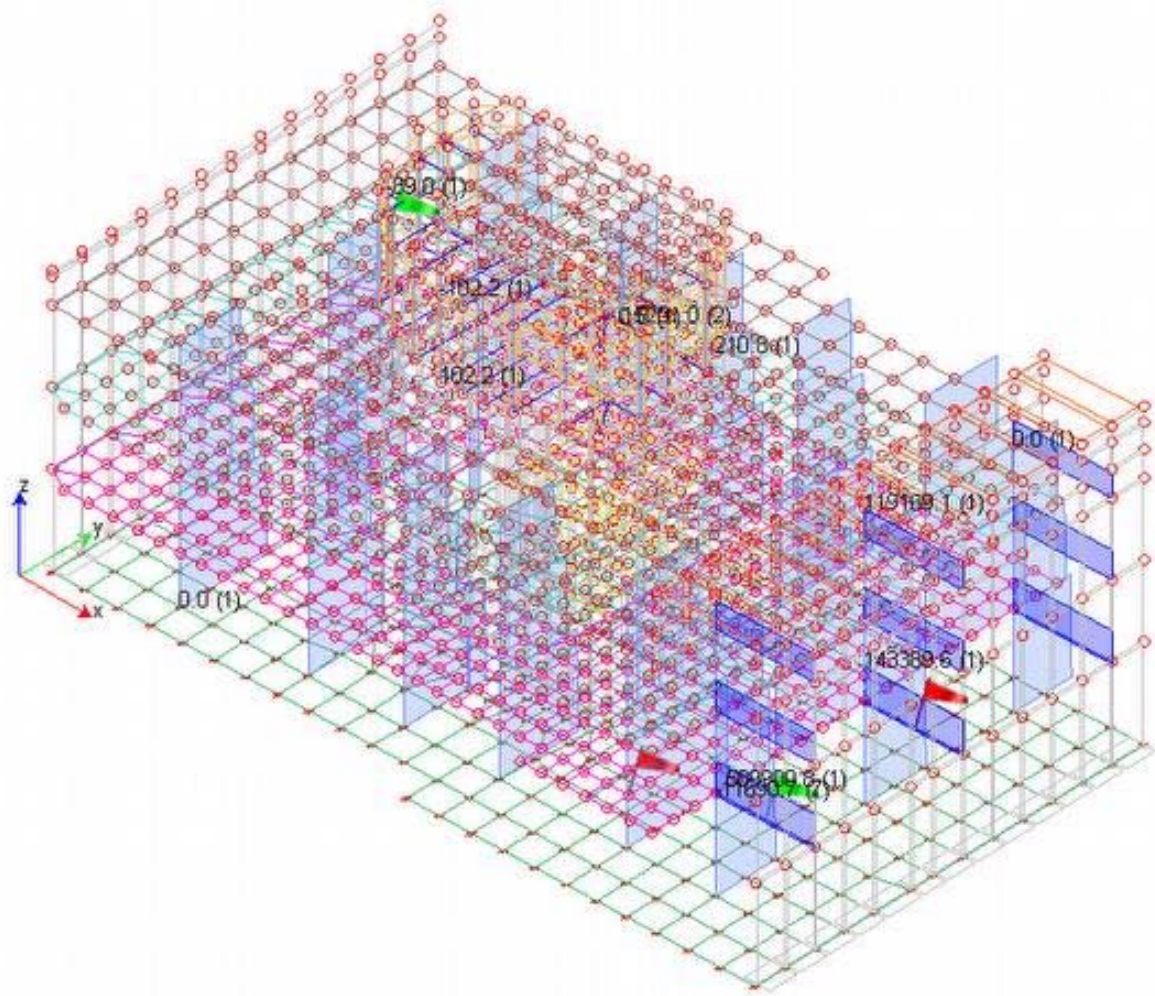


Stralcio 1 – Deformata per Combinazione Rara 2

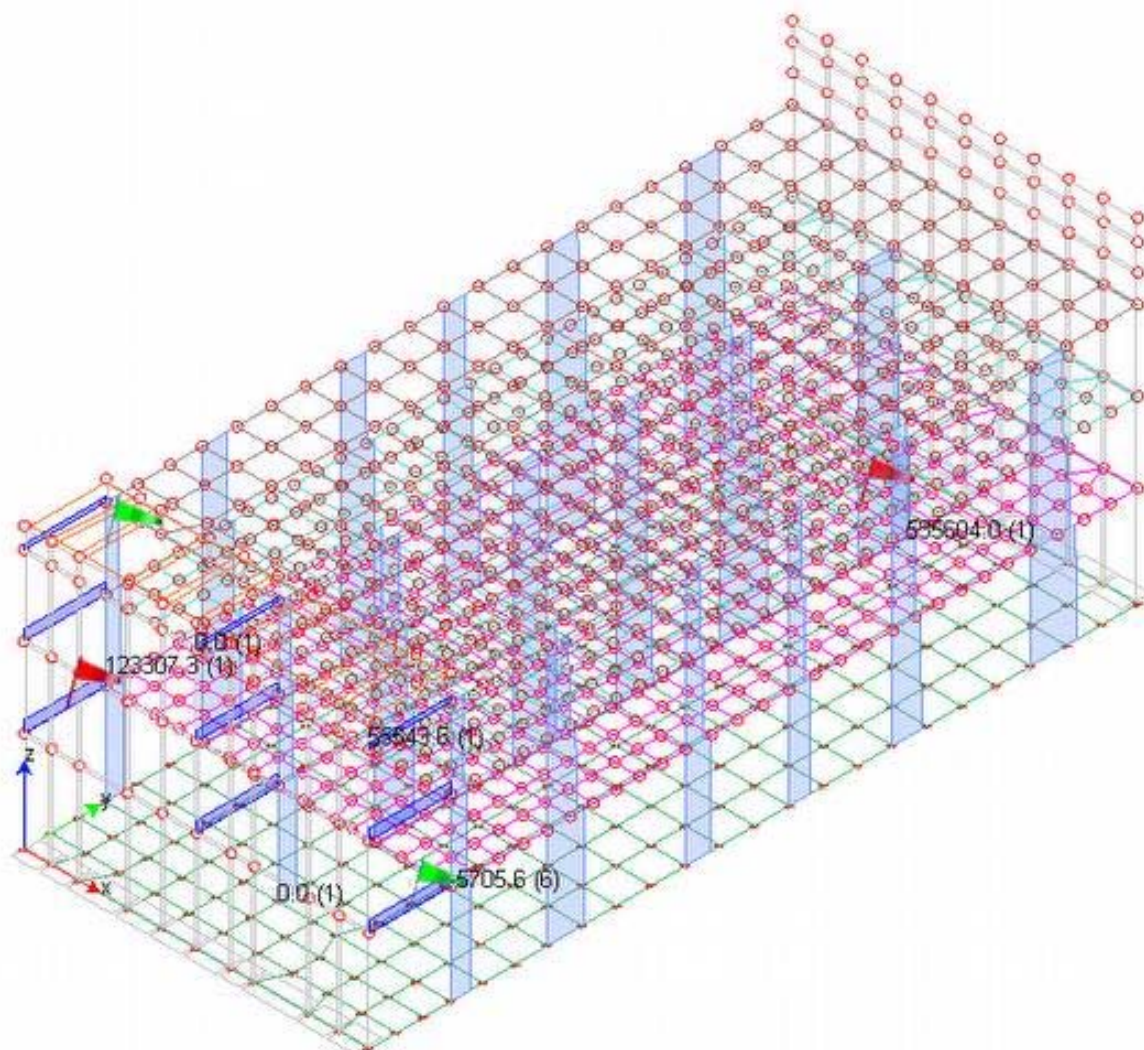


Stralcio 2 – Deformata per Combinazione Rara 2



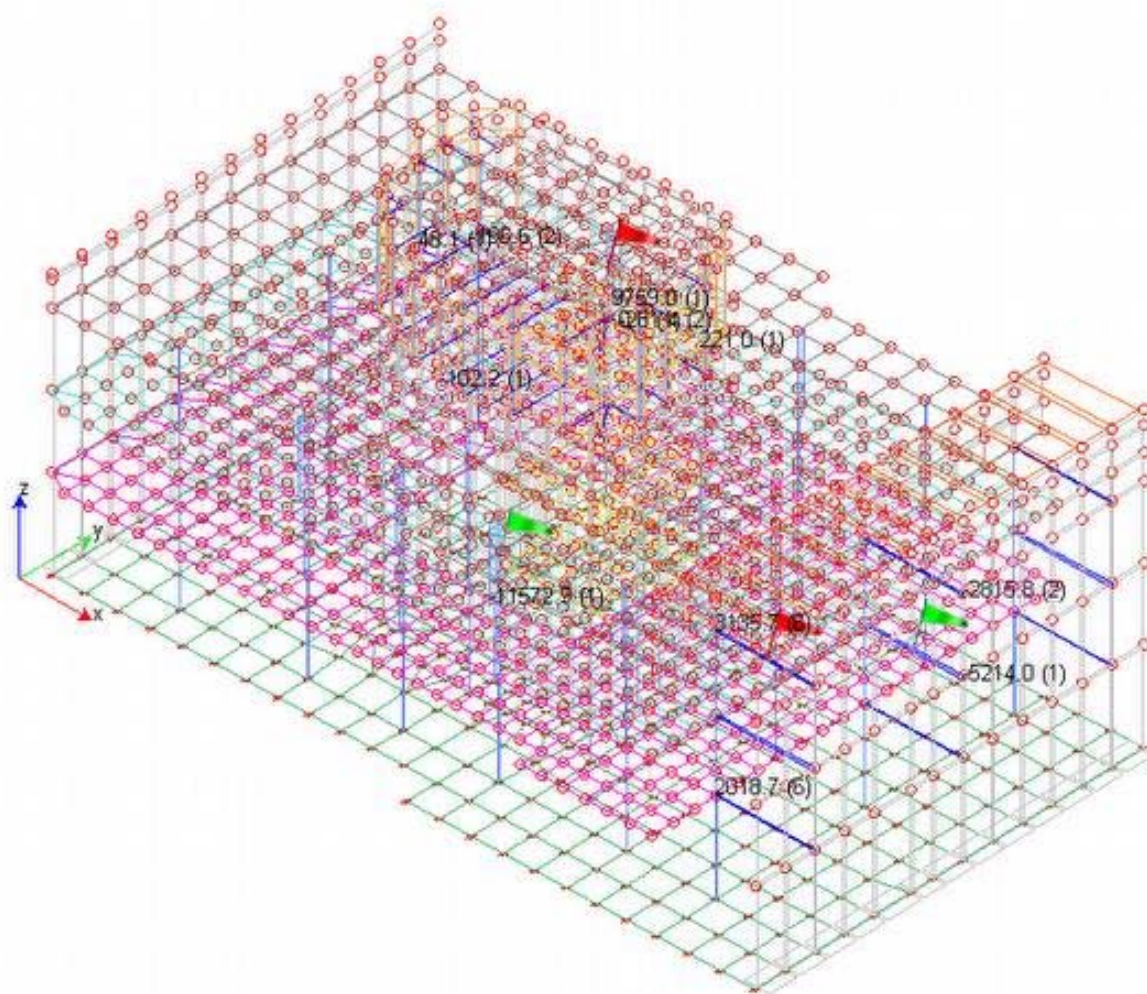


Stralcio 1 - Inviluppo dello Sforzo Normale N

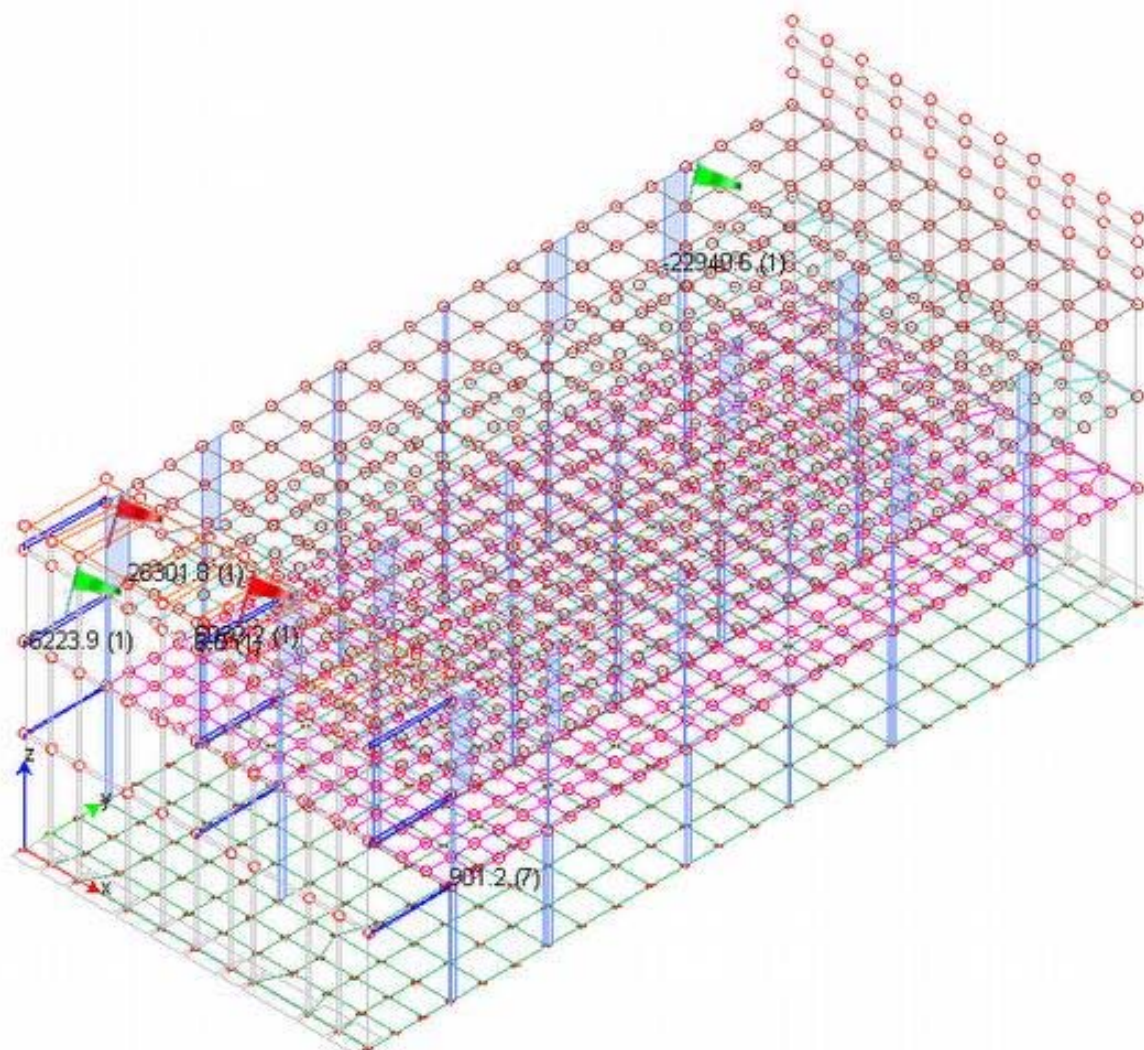


Stralcio 2 - Involuppo dello Sforzo Normale N



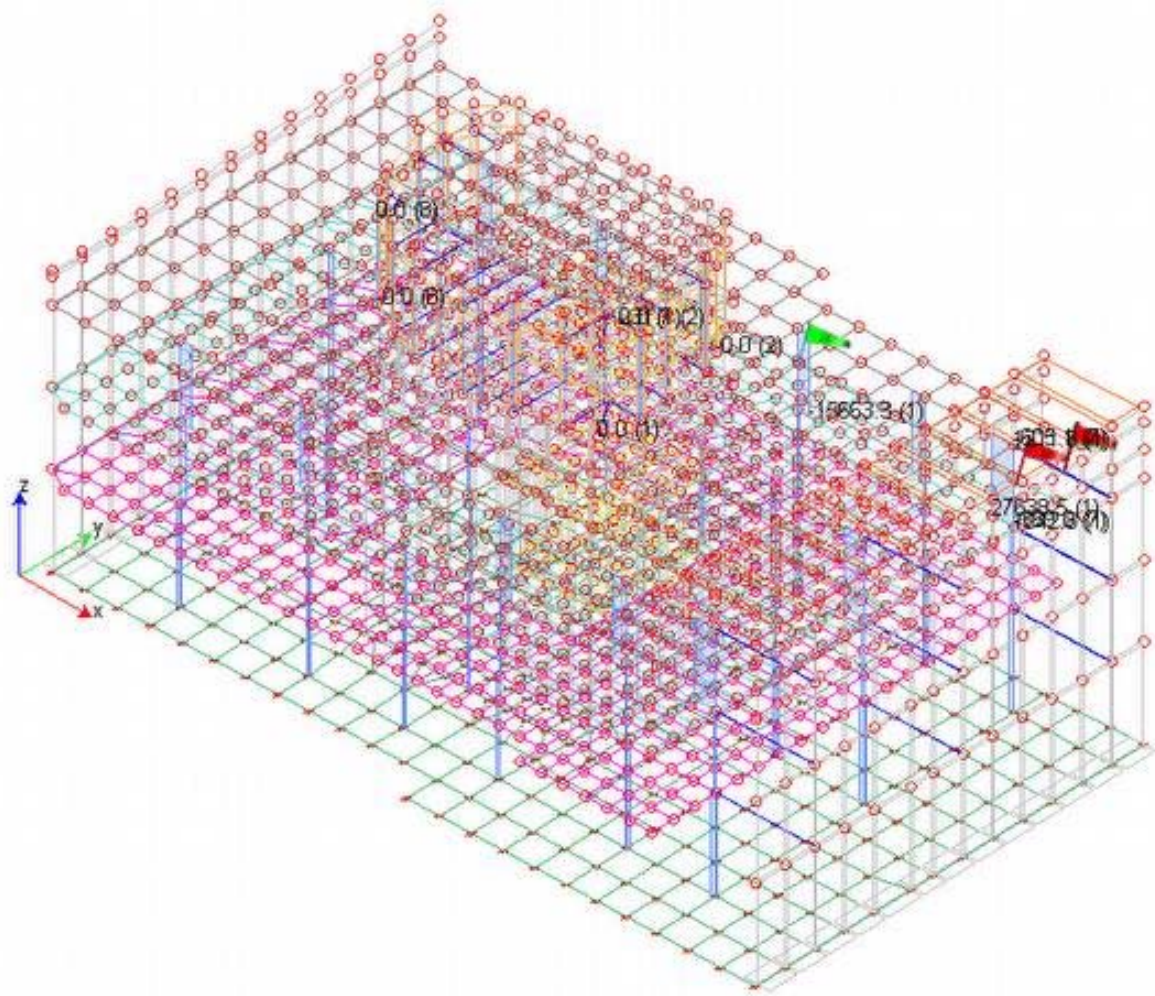


Stralcio 1 - Involuppo del Taglio T<sub>12</sub>

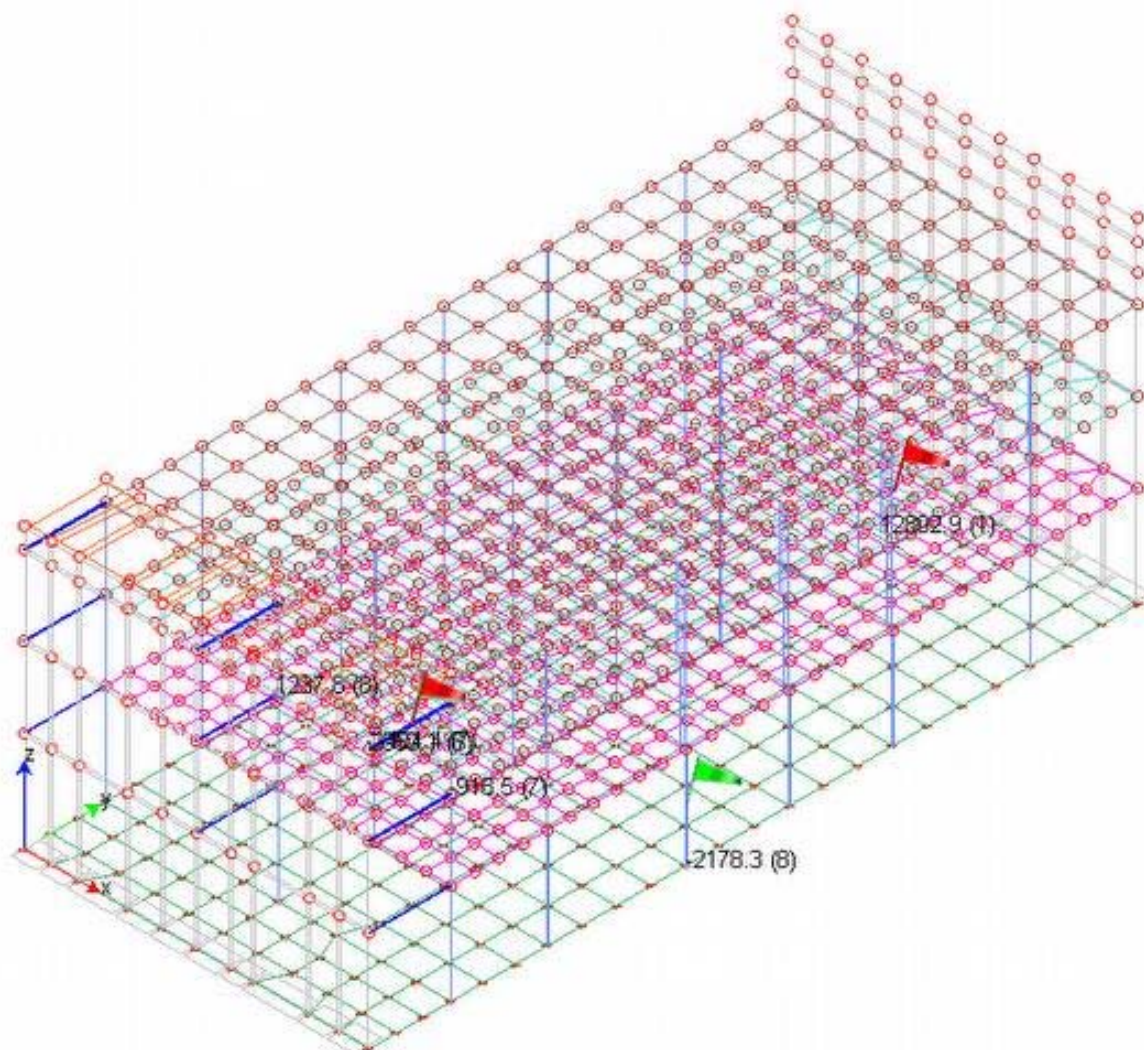


Stralcio 2 - Involuppo del Taglio T<sub>12</sub>



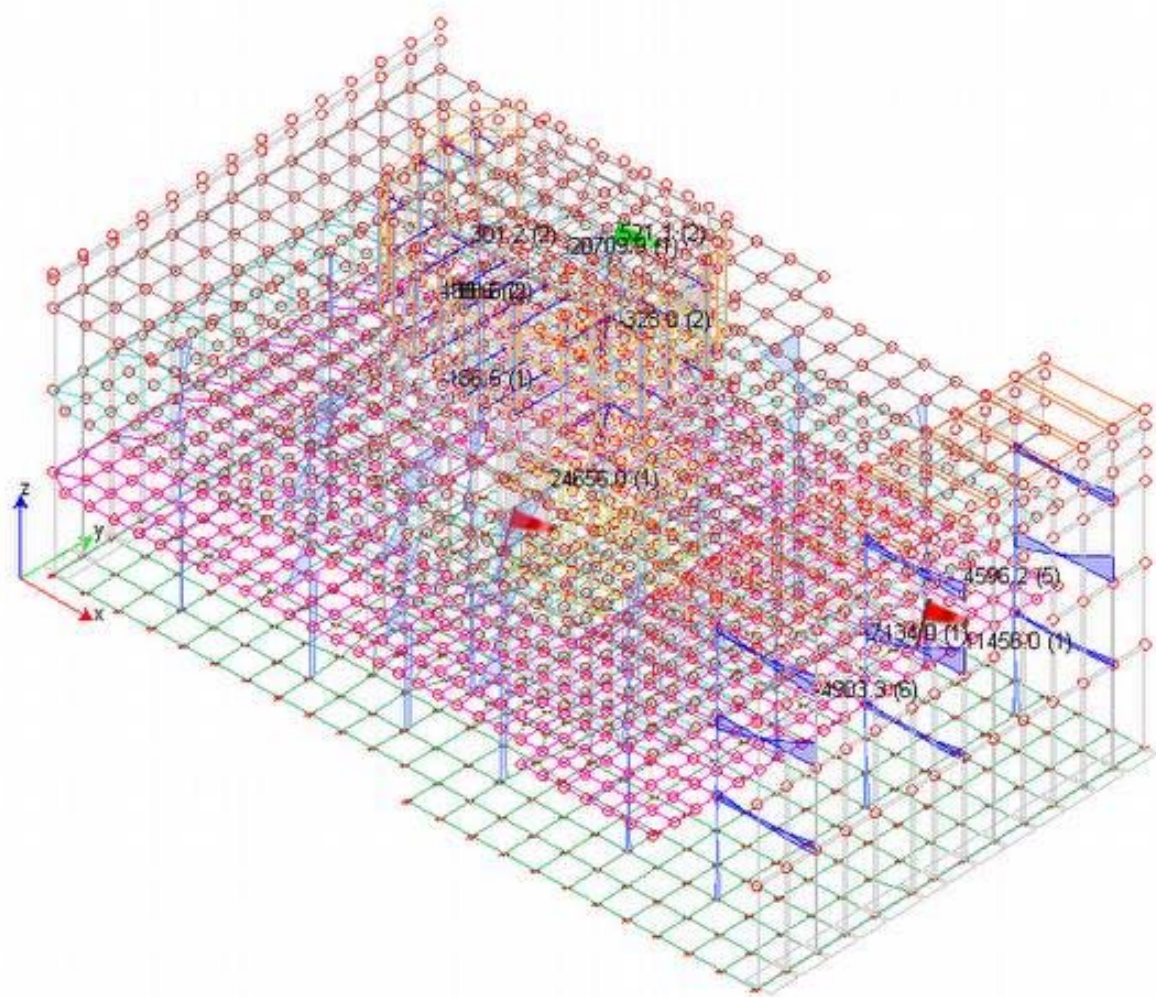


Stralcio 1 - Involuppo del Taglio  $T_{13}$

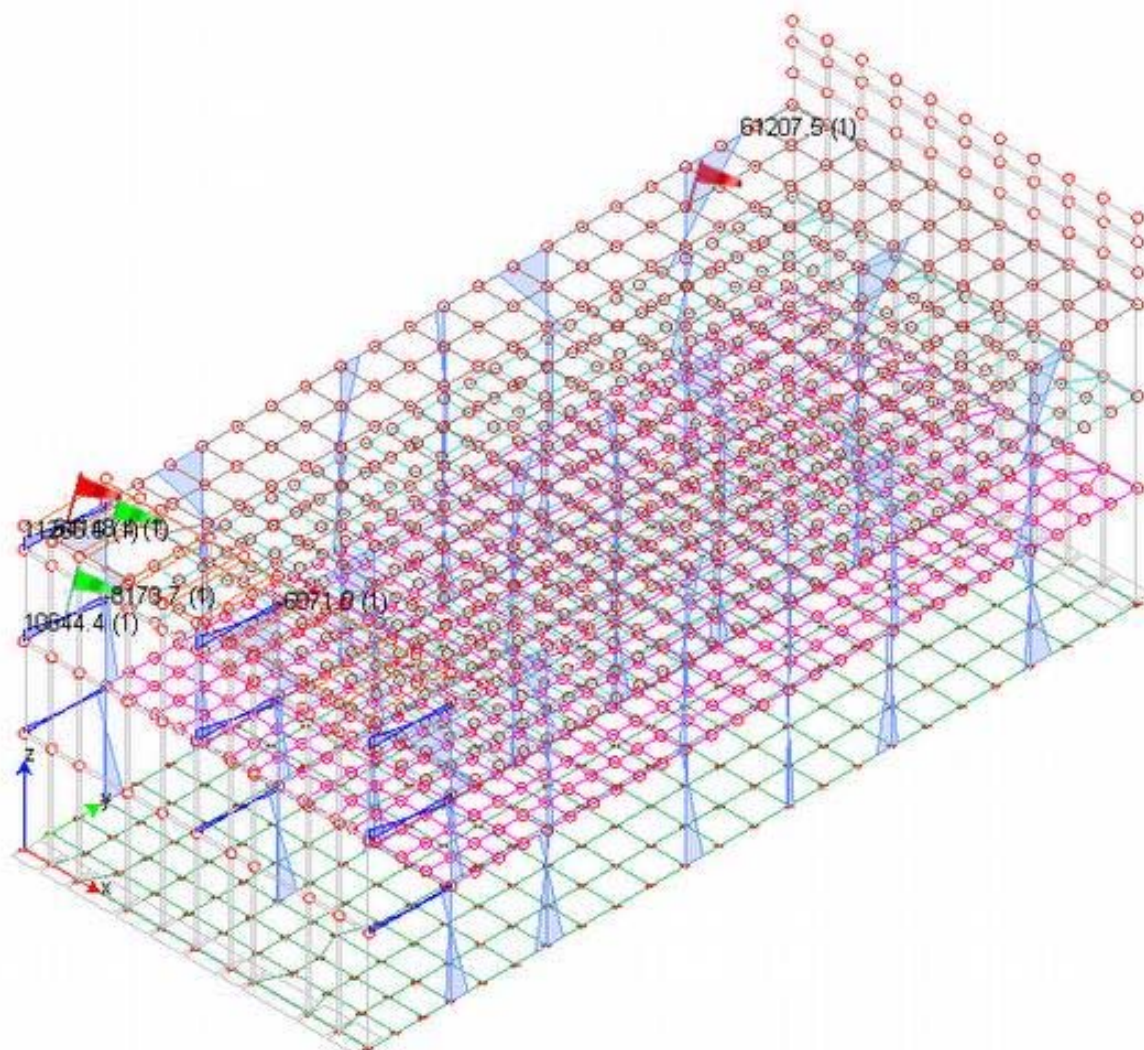


Stralcio 2 - Involuppo del Taglio T<sub>13</sub>



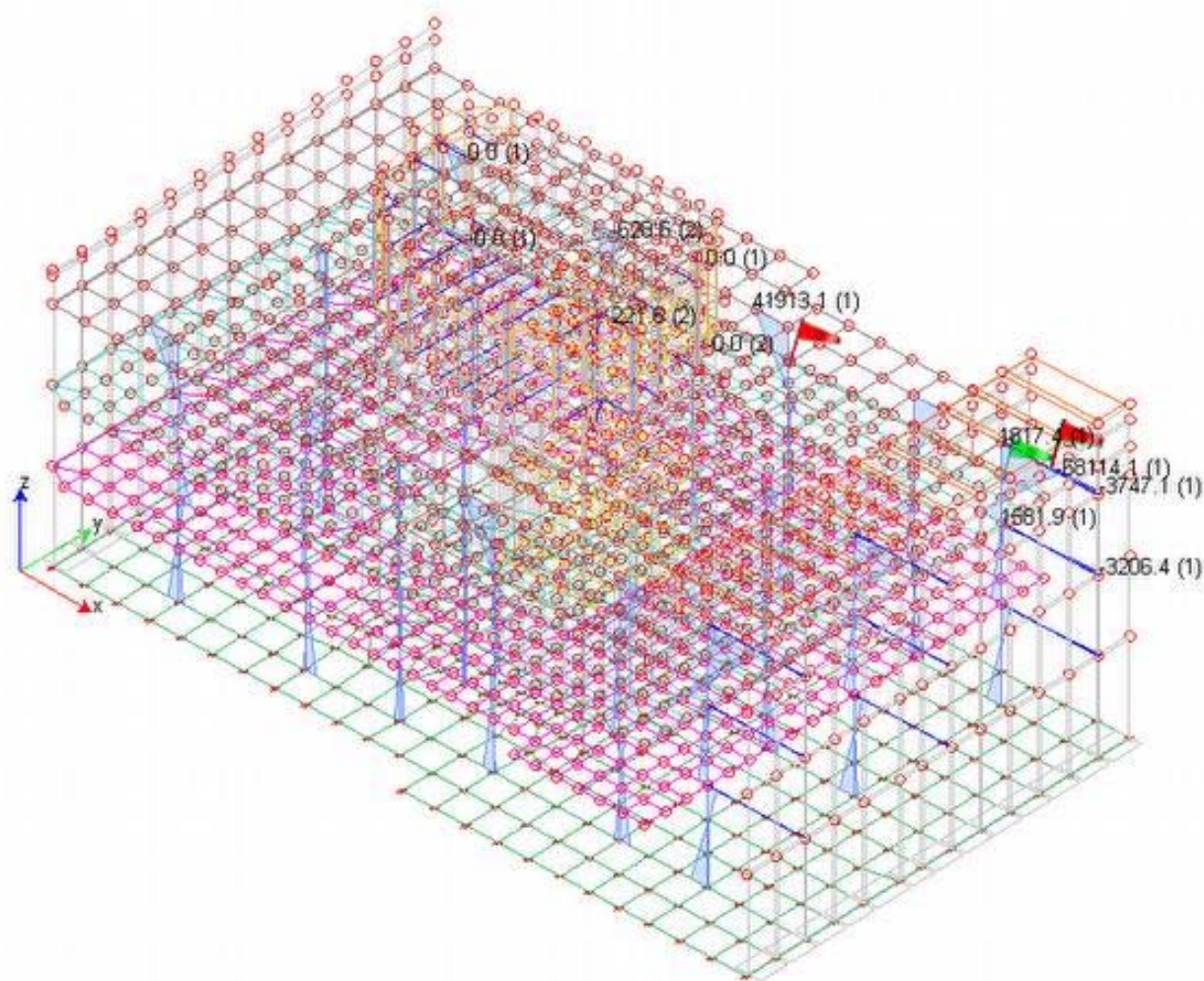


Stralcio 1 - Involuppo del Momento  $M_{12}$

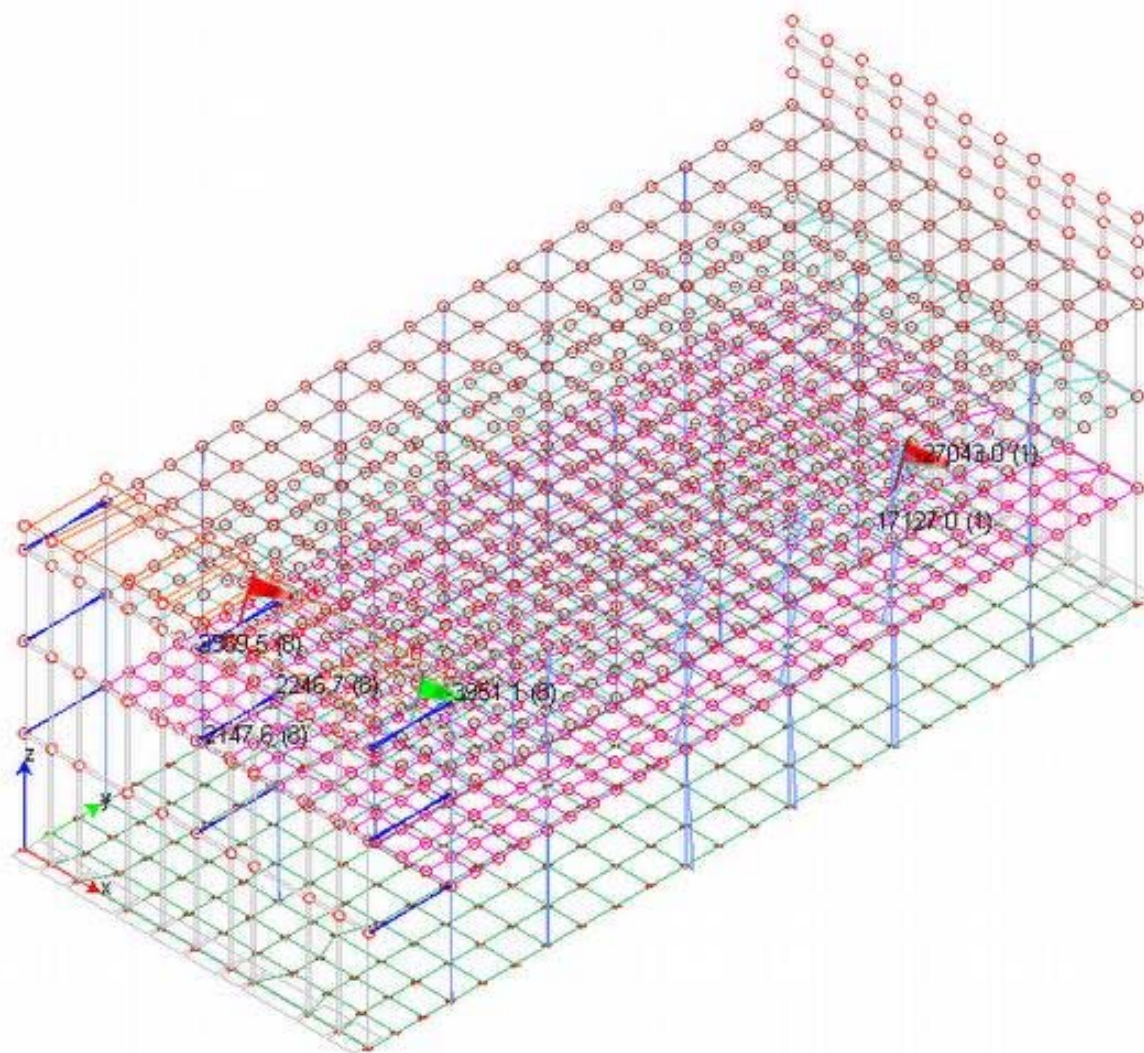


Stralcio 2 - Involuppo del Momento  $M_{12}$



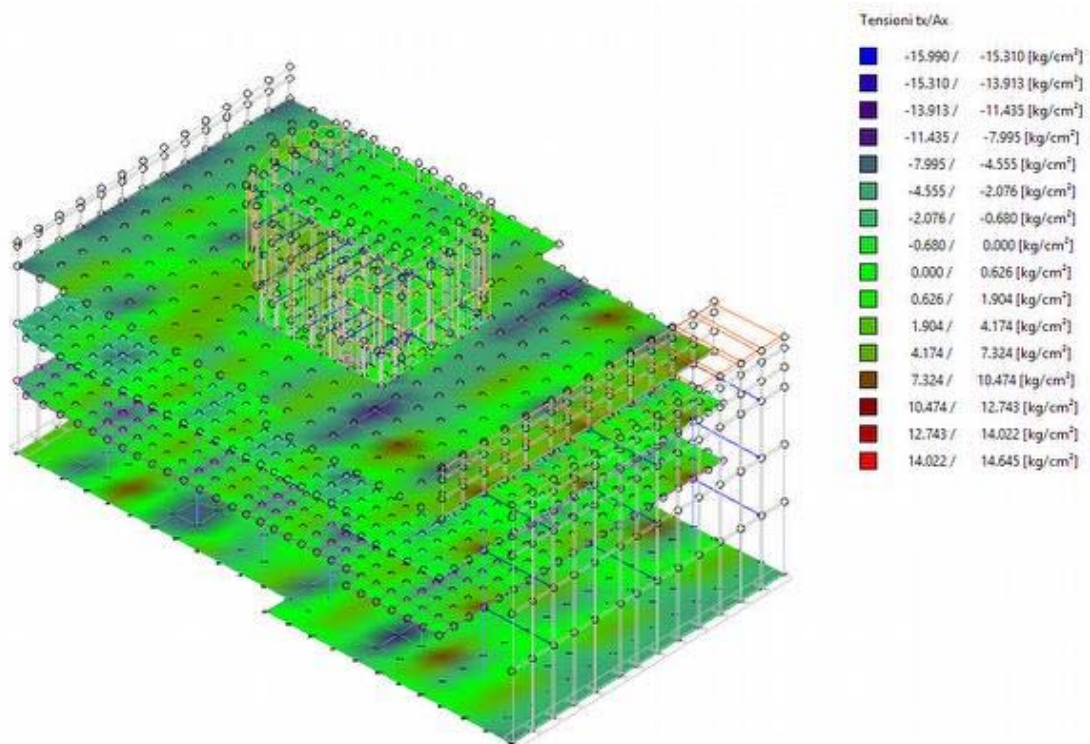


Stralcio 1 - Involuppo del Momento  $M_{13}$

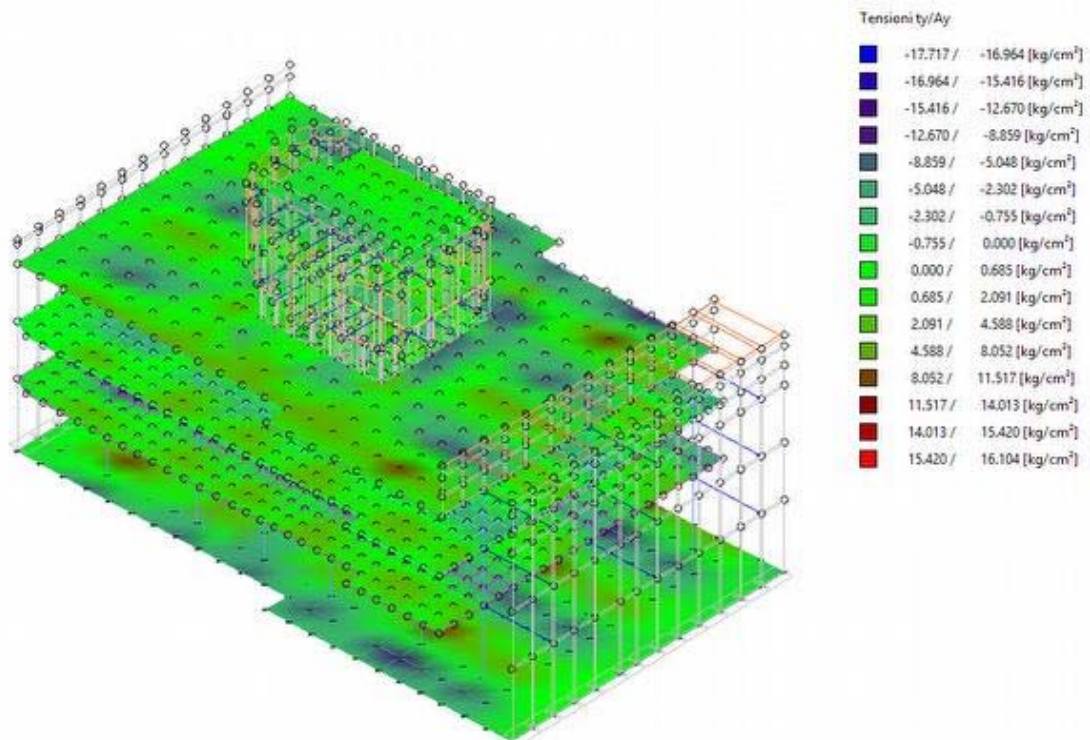


Stralcio 2 - Involuppo del Momento  $M_{13}$

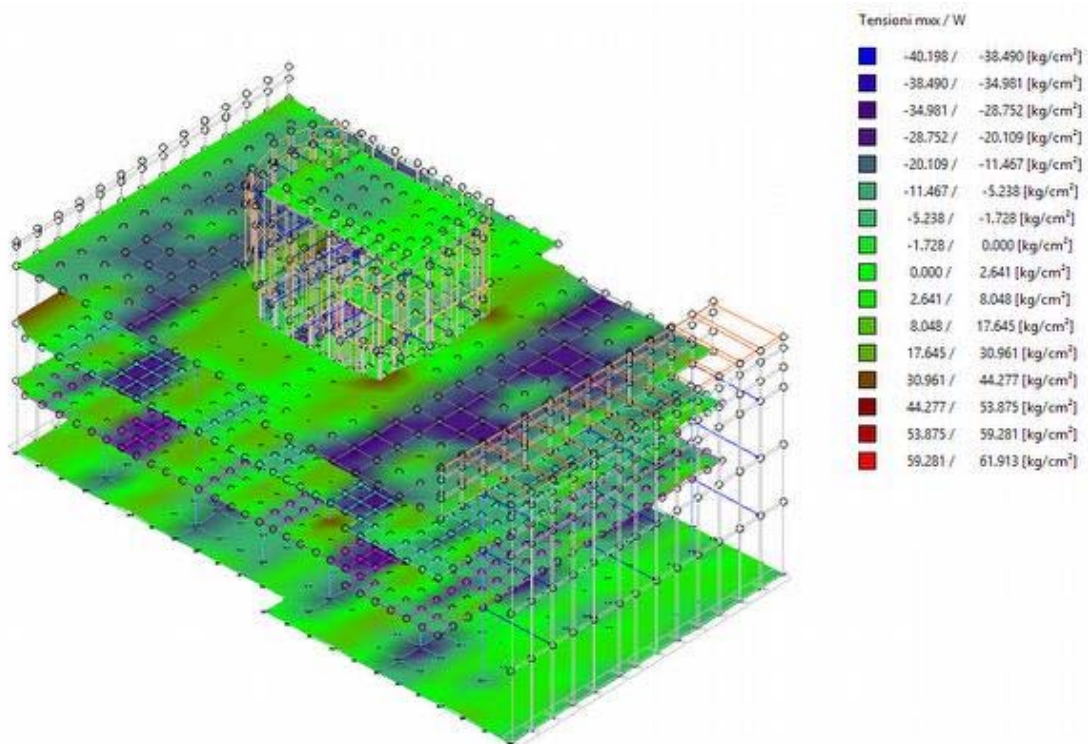




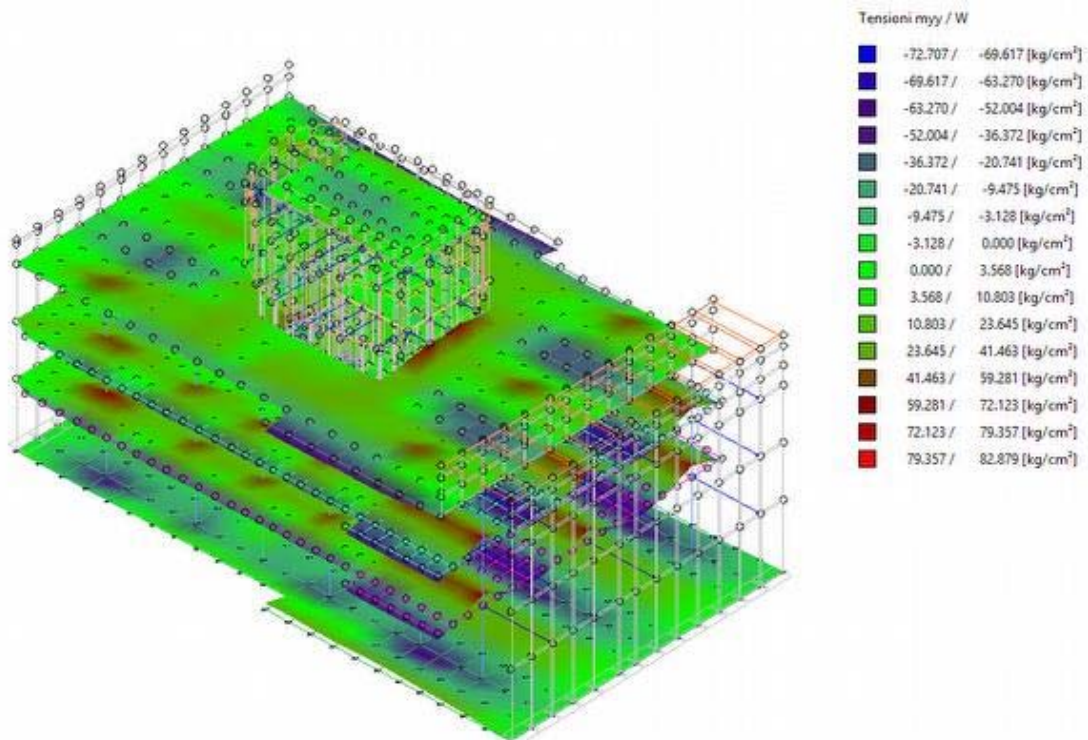
Stralcio 1 - Involuppo delle tensioni sulle piastre in c.a. dovute al Taglio Tx



Stralcio 1 - Involuppo delle tensioni sulle piastre in c.a. dovute al Taglio Ty

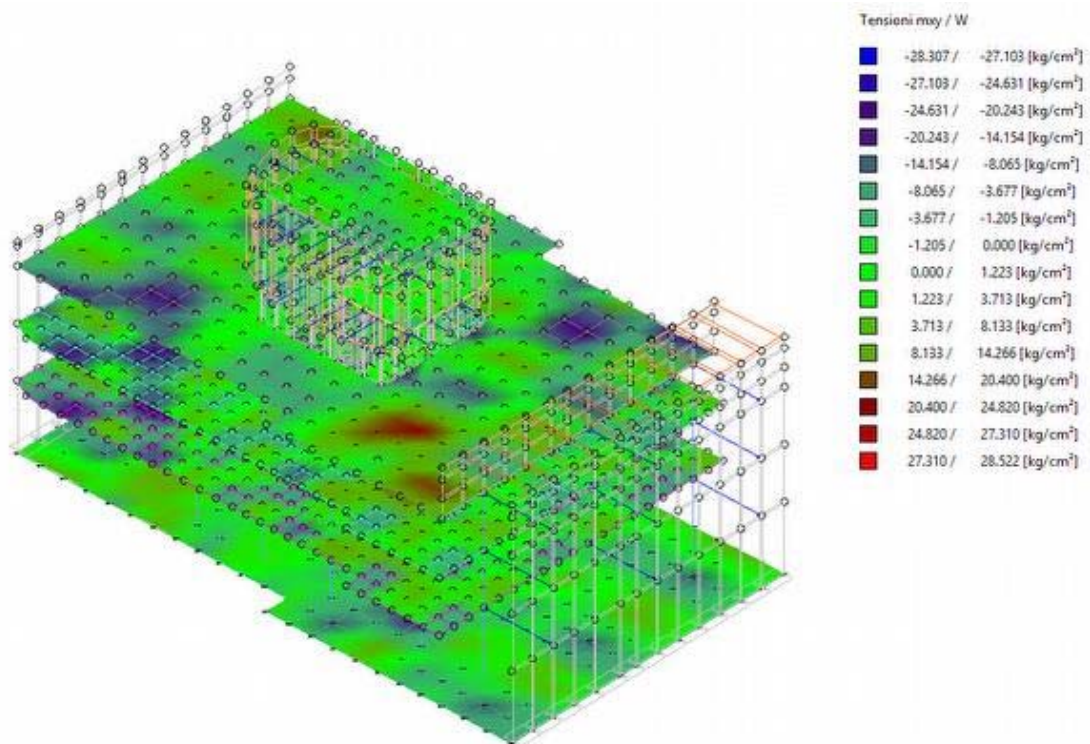


Stralcio 1 - Involuppo delle tensioni sulle piastre in c.a. dovute ai Momenti Mxx

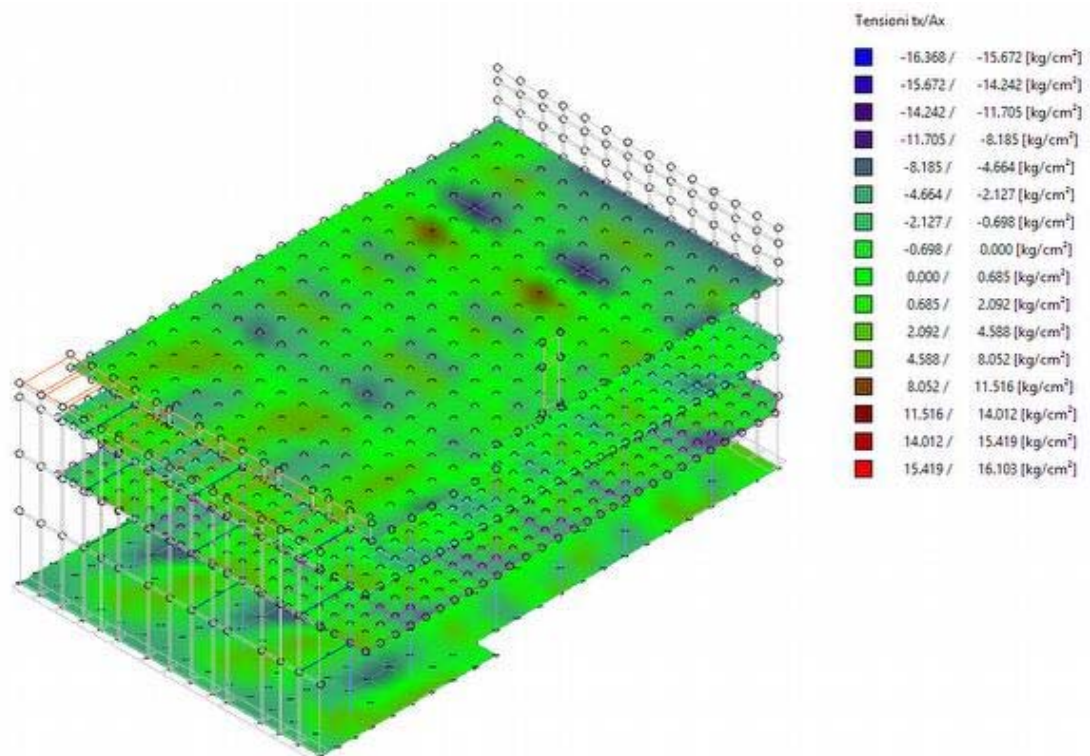


Stralcio 1 - Involuppo delle tensioni sulle piastre in c.a. dovute ai Momenti Myy

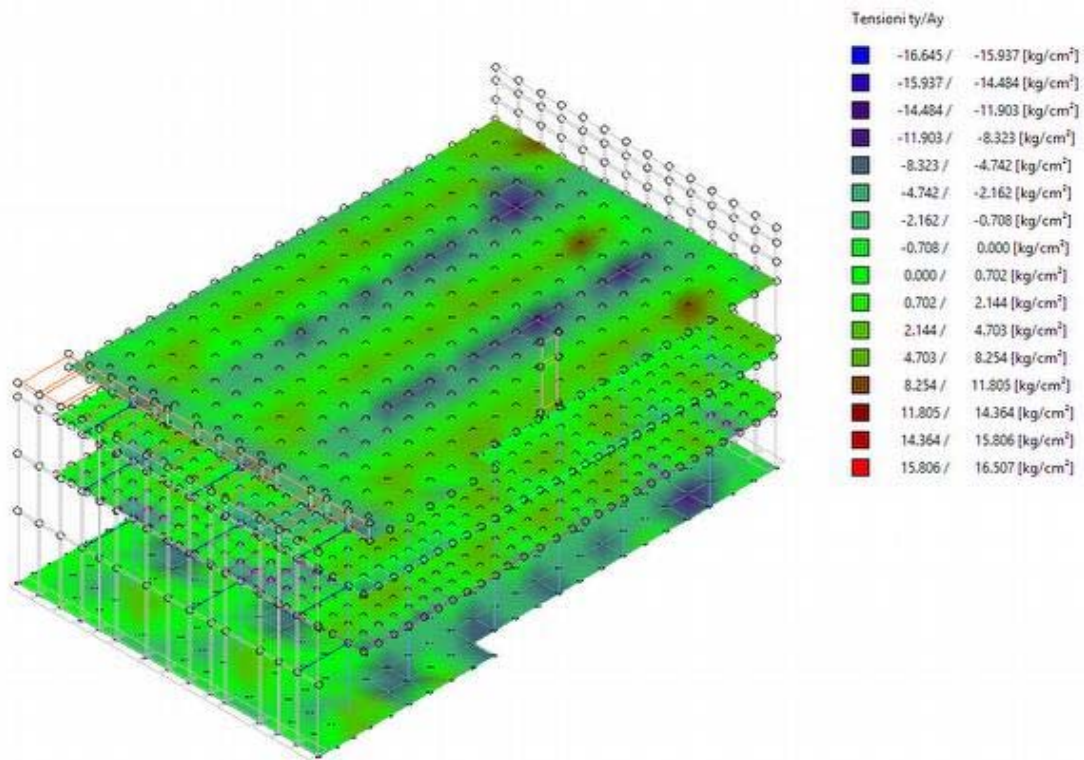




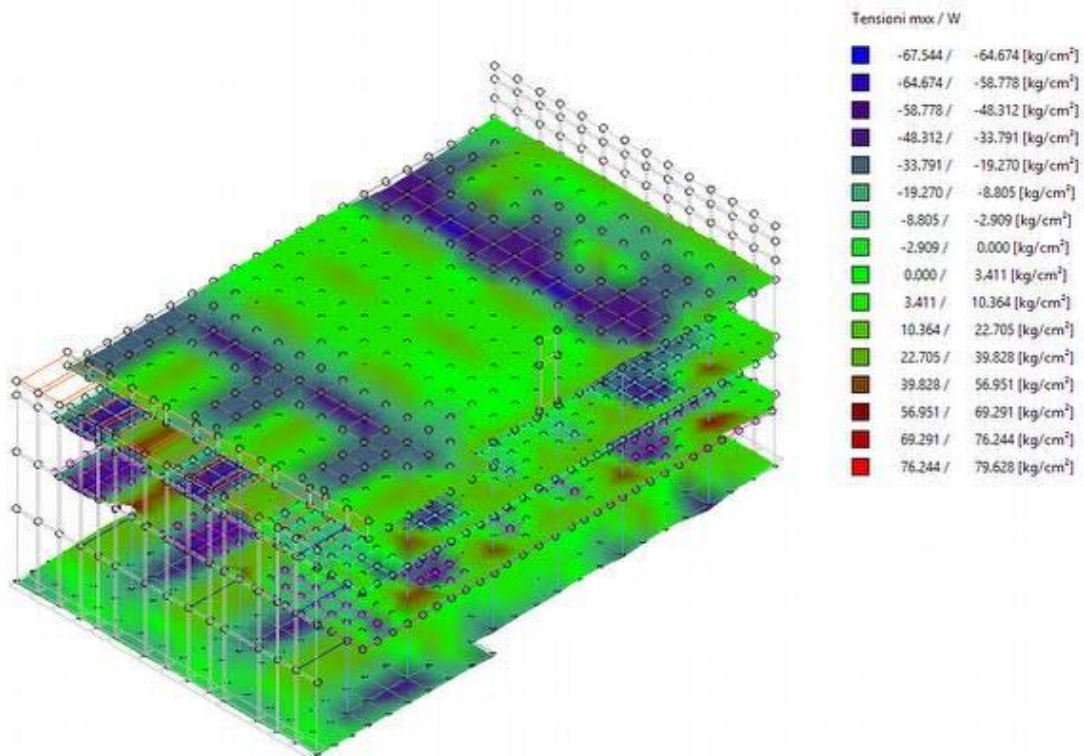
Stralcio 1 - Involuppo delle tensioni sulle piastre in c.a. dovute ai Momenti Mxy



Stralcio 2 - Involuppo delle tensioni sulle piastre in c.a. dovute al Taglio Tx

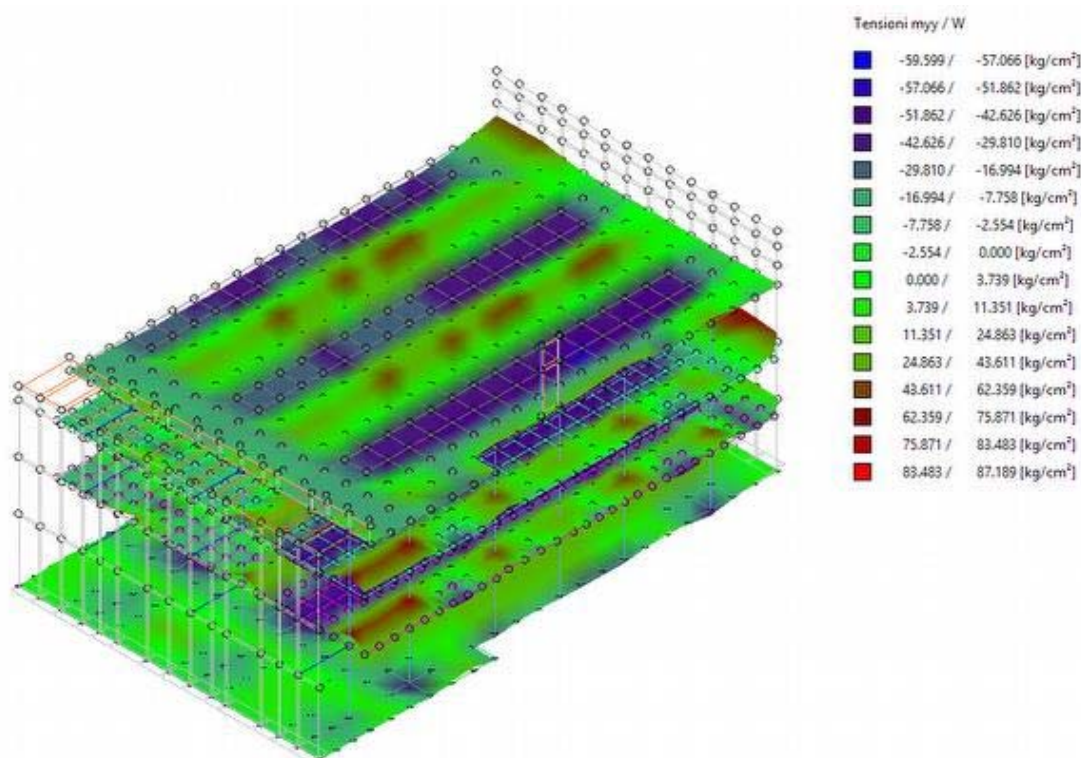


Stralcio 2 - Involuppo delle tensioni sulle piastre in c.a. dovute al Taglio Ty

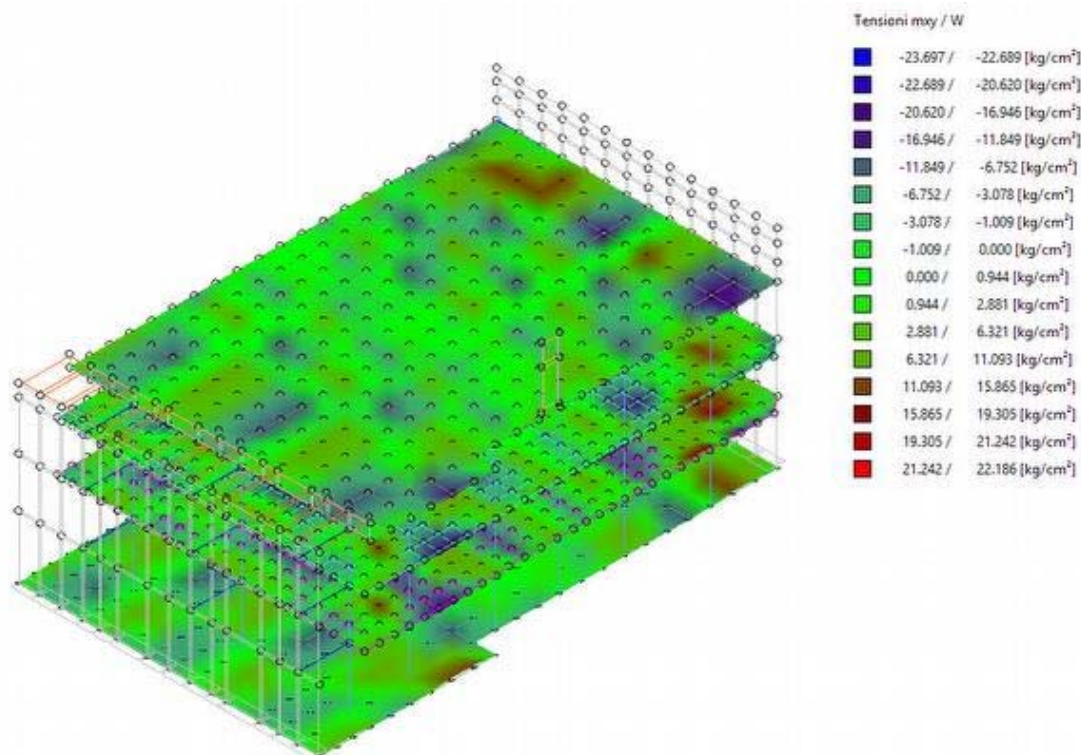


Stralcio 2 - Involuppo delle tensioni sulle piastre in c.a. dovute ai Momenti Mxx





Stralcio 2 - Involuppo delle tensioni sulle piastre in c.a. dovute ai Momenti Myy



Stralcio 2 - Involuppo delle tensioni sulle piastre in c.a. dovute ai Momenti Mxy

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

**Verifiche travi**

Modalità di verifica

Le travi vengono progettate-verificate a flessione retta e taglio nel piano longitudinale della trave sulla base dell'involuppo delle sollecitazioni.

Viene comunque sempre predisposta l'armatura minima mentre gli sforzi di taglio vengono integralmente assorbiti dalle staffe.

Le operazioni di progetto-verifica vengono condotte, per ogni asta, in tre diverse sezioni e precisamente in corrispondenza dei fili esterni dei pilastri e della sezione in campata nella quale viene riscontrato il massimo momento positivo (negativo).

I momenti si intendono positivi se tendono le fibre di intradosso (inferiori).

Per quanto concerne il progetto e la verifica delle travi a taglio esse vengono condotte nel modo seguente:

Si controlla se la trave necessita o meno di armatura aggiuntiva a taglio:

Se non occorre armatura aggiuntiva a taglio si procede a disporre la staffatura minima di regolamento e la progettazione ha termine.

Se occorre armatura aggiuntiva a taglio la staffatura viene progettata andando a suddividere la trave, a seconda del caso, in uno, tre o cinque conci:

due tronchi in prossimità degli appoggi di lunghezza pari all'altezza della sezione;

due altri (eventuali) tronchi dall'ascissa precedente a quella in cui il taglio può essere assorbito con la sola staffatura minima da regolamento

un restante (eventuale) concio di chiusura centrale.

In ogni caso l'armatura a taglio si intende simmetrica rispetto alla mezzera della trave e viene progettata considerando, rispetto alla mezzera, la zona della trave più sollecitata.

Per quanto concerne le verifiche a taglio esse vengono condotte suddividendo la trave in cinque conci:

due tronchi in prossimità degli appoggi di lunghezza pari all'altezza della sezione; due altri (eventuali) tronchi dall'ascissa precedente a quella in cui il taglio può essere assorbito con la sola staffatura minima da regolamento; il restante (eventuale) concio di chiusura centrale.

L'armatura a taglio si intende simmetrica rispetto alla mezzera della trave e viene progettata considerando, rispetto alla mezzera, la zona della trave più sollecitata.

Simbologia utilizzata:

**Af Es.** Area di ferro all'estradosso

**Af In.** Area di ferro all'intradosso

**Sigb.Es.** Tensione del calcestruzzo estradosso

**Sigb. In.** Tensione del calcestruzzo intradosso

**Sigf. Es.** Tensione dell'acciaio estradosso

**Sigf. In.** Tensione dell'acciaio intradosso

Sezioni Impiegate: Trave

Sezioni Nuove

Sez. Num.	Inf o	Dimensio ni	Criteri o	Calcestruzz o	$\gamma_M$	F.C.	$f_{ck}$ [kg/cm <sup>2</sup> ]	$f_{cd}$ [kg/cm <sup>2</sup> ]	$\sigma_{RARE}$ [kg/cm <sup>2</sup> ]	$\sigma_{FREQ}$ [kg/cm <sup>2</sup> ]	$\sigma_{QP}$ [kg/cm <sup>2</sup> ]	Acciai o	$\gamma_M$	F.C.	$f_{yk}$ [kg/cm <sup>2</sup> ]	$f_{yd}$ [kg/cm <sup>2</sup> ]	$\sigma_{YRARE}$ [kg/cm <sup>2</sup> ]	$\sigma_{YFREQ}$ [kg/cm <sup>2</sup> ]	$\sigma_{YQP}$ [kg/cm <sup>2</sup> ]	Cop . Es [cm]	Cop . In [cm]	cot g $\theta_1$	cot g $\theta$
1	Rett .	B 40 [cm] H 40 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	4.00	4.00	2.50	2.50
2	Rett .	B 40 [cm] H 40 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	5.50	5.50	2.50	2.50
3	Rett .	B 30 [cm] H 60 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	4.00	4.00	2.50	2.50
4	Rett .	B 40 [cm] H 60 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	4.00	4.00	2.50	2.50
5	Rett .	B 40 [cm] H 50 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	4.00	4.00	2.50	2.50
6	Rett .	B 30 [cm] H 40 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	5.50	5.50	2.50	2.50
7	Rett .	B 30 [cm] H 80 [cm]	Vertrav	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	3.50	3.50	1.00	2.50

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

**Verifica a fessurazione diretta (calcolo ampiezza delle fessure)**

Elemento	Comb. Rare mm	Comb. Frequenti mm	Comb. Quasi Permanenti mm
Trave	No	0.400	0.300
Trave di Fondazione	No	0.400	0.300

**Fattore di sovrarresistenza Travi  $\gamma_{R,d}$  (Nuovo) = 1.00**

**Fattore di sovrarresistenza delle azioni sulle Fondazioni  $\gamma_{R,d}$  (Nuovo) = 1.10**

Verifiche Travate :

Travata: Travata 0 Nodi 378 10463

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
378	0.13	8.04	8.04			528.24	13228.33	0.13	-1034.40	-13228.33	0.13					
					SLE Rare	0.00			-488.54			3.95	0.00	31.45	152.87	
					SLE Freq.	0.00			-429.49			3.47	0.00	27.65	134.39	0.0141
					SLE Q.P.	0.00			-409.74			3.32	0.00	26.38	128.21	0.0134
Camp.	2.33	8.04	8.04	650.00	881.59	174.21	13228.33	0.13	-881.59	-13228.33	0.13					
					SLE Rare	0.00			-678.14			5.49	0.00	43.66	212.20	
					SLE Freq.	0.00			-678.14			5.49	0.00	43.66	212.20	0.0222
					SLE Q.P.	0.00			-678.14			5.49	0.00	43.66	212.20	0.0222
10463	4.53	8.04	8.04			2036.62	13228.33	0.13	-65.37	-13228.33	0.13					
					SLE Rare	1359.89			0.00			0.00	11.00	425.52	87.55	
					SLE Freq.	1293.88			0.00			0.00	10.47	404.87	83.30	0.0087
					SLE Q.P.	1271.83			0.00			0.00	10.29	397.97	81.88	0.0086

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 378 10463 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	1031.88	8701.28	50188.84	61680.39	1321.87	6941.10	4173.10	ø 10 2br. 10.0'
0.63	4.03	3.41	1699.14	8701.28	50188.84	41120.26	1321.87	6941.10	4173.10	ø 10 2br. 15.0'
4.03	4.53	0.50	2024.14	8701.28	50188.84	61680.39	1321.87	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 116 Nodi 11540 11547 11549 11555 11557 11559 11565 11567 11569

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11540	0.13	12.57	12.57			12138.57	14241.09	0.24	-23.95	-14241.09	0.24					
					SLE Rare	8187.57			-16.22			0.19	93.87	2355.73	539.43	
					SLE Freq.	7725.56			-15.33			0.18	88.57	2222.80	508.99	0.0517
					SLE Q.P.	7610.40			-15.11			0.17	87.25	2189.67	501.40	0.0509
Camp.	0.43	12.57	12.57	4997.74	167.99	12138.57	14241.09	0.24	-157.92	-14241.09	0.24					
					SLE Rare	4914.59			-106.97			1.23	56.34	1414.03	323.79	
					SLE Freq.	4637.65			-101.12			1.16	53.17	1334.35	305.55	0.0310
					SLE Q.P.	4568.74			-99.65			1.14	52.38	1314.52	301.01	0.0306
11547	0.73	12.57	12.57			8579.70	14241.09	0.24	0.00	-14241.09	0.24					
					SLE Rare	1954.76			0.00			0.00	22.41	562.42	128.79	
					SLE Freq.	1845.76			0.00			0.00	21.16	531.06	121.61	0.0123
					SLE Q.P.	1818.82			0.00			0.00	20.85	523.31	119.83	0.0122
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11547	0.00	12.57	12.57			2306.60	14241.09	0.24	-2092.91	-14241.09	0.24					
					SLE Rare	1556.81			0.00			0.00	17.85	447.92	102.57	
					SLE Freq.	1470.37			0.00			0.00	16.86	423.05	96.87	0.0098
					SLE Q.P.	1449.06			0.00			0.00	16.61	416.92	95.47	0.0097
Camp.	0.37	12.57	12.57	4996.07	172.52	2306.60	14241.09	0.24	-5460.83	-14241.09	0.24					
					SLE Rare	0.00			-1296.35			14.86	0.00	85.41	372.99	
					SLE Freq.	0.00			-1221.81			14.01	0.00	80.50	351.54	0.0357
					SLE Q.P.	0.00			-1203.55			13.80	0.00	79.29	346.29	0.0352

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

11549	0.74	12.57	12.57			0.00	14241.09	0.24	-5460.83	-14241.09	0.24								
				SLE Rare		0.00			-3682.09			42.21	0.00	242.59	1059.41				
				SLE Freq.		0.00			-3472.13			39.81	0.00	228.76	999.00	0.1015			
				SLE Q.P.		0.00			-3419.89			39.21	0.00	225.32	983.97	0.0999			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11549	0.00	12.57	12.57			0.00	14241.09	0.24	-8388.16	-14241.09	0.24								
				SLE Rare		0.00			-4012.49			46.00	0.00	264.36	1154.48				
				SLE Freq.		0.00			-3783.86			43.38	0.00	249.30	1088.69	0.1106			
				SLE Q.P.		0.00			-3726.97			42.73	0.00	245.55	1072.33	0.1089			
Camp.	0.36	12.57	12.57	4996.58	164.01	0.00	14241.09	0.24	-9893.42	-14241.09	0.24								
				SLE Rare		0.00			-5564.29			63.79	0.00	366.60	1600.96				
				SLE Freq.		0.00			-5248.34			60.17	0.00	345.78	1510.05	0.1805			
				SLE Q.P.		0.00			-5169.51			59.27	0.00	340.59	1487.37	0.1767			
11555	0.72	12.57	12.57			0.00	14241.09	0.24	-9893.42	-14241.09	0.24								
				SLE Rare		0.00			-6671.71			76.49	0.00	439.56	1919.59				
				SLE Freq.		0.00			-6292.75			72.14	0.00	414.59	1810.55	0.2314			
				SLE Q.P.		0.00			-6198.05			71.06	0.00	408.35	1783.30	0.2268			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11555	0.00	12.57	12.57			0.00	14241.09	0.24	-10599.28	-14241.09	0.24								
				SLE Rare		0.00			-6815.15			78.13	0.00	449.01	1960.86				
				SLE Freq.		0.00			-6428.15			73.69	0.00	423.51	1849.51	0.2380			
				SLE Q.P.		0.00			-6331.46			72.59	0.00	417.14	1821.69	0.2333			
Camp.	0.37	12.57	12.57	4996.72	170.45	0.00	14241.09	0.24	-10608.80	-14241.09	0.24								
				SLE Rare		0.00			-7144.98			81.91	0.00	470.74	2055.76				
				SLE Freq.		0.00			-6739.95			77.27	0.00	444.05	1939.22	0.2532			
				SLE Q.P.		0.00			-6638.63			76.11	0.00	437.38	1910.07	0.2482			
11557	0.74	12.57	12.57			0.00	14241.09	0.24	-10608.80	-14241.09	0.24								
				SLE Rare		0.00			-7012.99			80.40	0.00	462.04	2017.78				
				SLE Freq.		0.00			-6615.19			75.84	0.00	435.83	1903.33	0.2471			
				SLE Q.P.		0.00			-6515.63			74.70	0.00	429.28	1874.68	0.2422			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11557	0.00	12.57	12.57			0.00	14241.09	0.24	-10216.82	-14241.09	0.24								
				SLE Rare		0.00			-6890.18			78.99	0.00	453.95	1982.44				
				SLE Freq.		0.00			-6499.44			74.51	0.00	428.21	1870.02	0.2414			
				SLE Q.P.		0.00			-6401.68			73.39	0.00	421.77	1841.89	0.2367			
Camp.	0.37	12.57	12.57	4999.67	170.55	0.00	14241.09	0.24	-10216.82	-14241.09	0.24								
				SLE Rare		0.00			-5964.16			68.38	0.00	392.94	1716.01				
				SLE Freq.		0.00			-5626.51			64.50	0.00	370.70	1618.86	0.1989			
				SLE Q.P.		0.00			-5542.04			63.54	0.00	365.13	1594.56	0.1948			
11559	0.74	12.57	12.57			0.00	14241.09	0.24	-8927.73	-14241.09	0.24								
				SLE Rare		0.00			-4576.06			52.46	0.00	301.49	1316.63				
				SLE Freq.		0.00			-4316.76			49.49	0.00	284.41	1242.02	0.1351			
				SLE Q.P.		0.00			-4251.90			48.75	0.00	280.13	1223.36	0.1320			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11559	0.00	12.57	12.57			0.00	14241.09	0.24	-6261.24	-14241.09	0.24								
				SLE Rare		0.00			-4222.53			48.41	0.00	278.20	1214.91				
				SLE Freq.		0.00			-3983.38			45.67	0.00	262.44	1146.10	0.1189			
				SLE Q.P.		0.00			-3923.60			44.98	0.00	258.50	1128.90	0.1160			
Camp.	0.36	13.03	12.57	4994.48	163.94	730.44	14699.60	0.24	-6261.24	-14240.66	0.24								
				SLE Rare		0.00			-2086.87			23.82	0.00	136.20	600.69				
				SLE Freq.		0.00			-1969.29			22.48	0.00	128.53	566.84	0.0576			
				SLE Q.P.		0.00			-1939.93			22.14	0.00	126.61	558.39	0.0567			
11565	0.72	15.86	12.57			730.44	17497.15	0.26	-3339.80	-14238.39	0.24								
				SLE Rare		492.98			0.00			0.00	5.20	113.59	33.81				
				SLE Freq.		464.69			0.00			0.00	4.90	107.07	31.87	0.0027			

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

			SLE Q.P.		458.24			0.00			0.00	4.84	105.59	31.43	0.0027
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11565	0.00	16.77	12.57			6688.88	18388.04	0.27	0.00	-14237.77	0.24				
			SLE Rare		894.27			0.00				0.00	9.26	195.42	61.76
			SLE Freq.		843.14			0.00				0.00	8.73	184.25	58.23
			SLE Q.P.		830.92			0.00				0.00	8.60	181.58	57.38
Camp.	0.37	19.69	12.57	4999.35	172.63	12255.46	21233.54	0.30	-172.63	-14236.05	0.24				
			SLE Rare		4346.14			-116.93				1.26	42.72	815.23	304.76
			SLE Freq.		4098.82			-110.54				1.19	40.29	768.84	287.41
			SLE Q.P.		4037.67			-108.94				1.17	39.69	757.37	283.13
11567	0.74	22.60	12.57			12255.46	24040.54	0.32	0.00	-14234.67	0.24				
			SLE Rare		8265.74			0.00				0.00	77.85	1359.50	584.59
			SLE Freq.		7796.64			0.00				0.00	73.44	1282.35	551.42
			SLE Q.P.		7680.18			0.00				0.00	72.34	1263.19	543.18
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11567	0.00	23.51	12.57			19947.44	24903.62	0.33	0.00	-14234.29	0.24				
			SLE Rare		8512.89			0.00				0.00	79.25	1348.77	603.15
			SLE Freq.		8029.70			0.00				0.00	74.75	1272.22	568.92
			SLE Q.P.		7909.62			0.00				0.00	73.63	1253.19	560.41
Camp.	0.30	25.13	12.57	4996.28	167.94	24438.07	26433.75	0.35	-157.88	-14233.66	0.24				
			SLE Rare		12340.72			-106.94				1.11	112.67	1835.21	876.51
			SLE Freq.		11640.14			-101.09				1.05	106.27	1731.02	826.75
			SLE Q.P.		11465.81			-99.63				1.03	104.68	1705.10	814.37
11569	0.61	25.13	12.57			24438.07	26433.75	0.35	-23.94	-14233.66	0.24				
			SLE Rare		16481.61			-16.21				0.17	150.47	2451.01	1170.62
			SLE Freq.		15546.50			-15.33				0.16	141.94	2311.95	1104.21
			SLE Q.P.		15313.65			-15.11				0.16	139.81	2277.32	1087.67

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 11540 11547 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	16711.12	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11547 11549 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12306.51	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11549 11555 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7251.09	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11555 11557 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	2242.24	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11557 11559 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	6491.14	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11559 11565 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	11457.45	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11565 11567 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	16562.29	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11567 11569 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	20941.92	8810.34	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 117 Nodi 11526 11528 11529 11532 11533 11534

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11526	0.12	12.57	12.57			12102.91	14241.09	0.24	-23.94	-14241.09	0.24					
			SLE Rare			8161.85			-16.21			0.19	93.57	2348.33	537.74	
			SLE Freq.			7699.55			-15.33			0.18	88.27	2215.31	507.28	0.0515
			SLE Q.P.			7585.84			-15.11			0.17	86.97	2182.60	499.78	0.0508
Camp.	0.43	12.57	12.57	4996.28	167.94	12102.91	14241.09	0.24	-157.88	-14241.09	0.24					
			SLE Rare			4894.57			-106.94			1.23	56.11	1408.27	322.47	



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	4617.27			-101.09			1.16	52.93	1328.48	304.20	0.0309
				SLE Q.P.	4549.58			-99.63			1.14	52.16	1309.00	299.74	0.0304
11528	0.73	12.57	12.57		8549.92	14241.09	0.24	0.00	-14241.09	0.24					
				SLE Rare	1940.33			0.00			0.00	22.24	558.27	127.84	
				SLE Freq.	1830.92			0.00			0.00	20.99	526.79	120.63	0.0123
				SLE Q.P.	1804.96			0.00			0.00	20.69	519.32	118.92	0.0121
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11528	0.00	12.57	12.57		2280.01	14241.09	0.24	-2118.55	-14241.09	0.24					
				SLE Rare	1537.53			0.00			0.00	17.63	442.38	101.30	
				SLE Freq.	1450.76			0.00			0.00	16.63	417.41	95.58	0.0097
				SLE Q.P.	1430.58			0.00			0.00	16.40	411.61	94.25	0.0096
Camp.	0.37	12.57	12.57	4999.34	172.63	2280.01	14241.09	0.24	-5485.18	-14241.09	0.24				
				SLE Rare	0.00			-1314.68			15.07	0.00	86.62	378.26	
				SLE Freq.	0.00			-1240.16			14.22	0.00	81.71	356.82	0.0362
				SLE Q.P.	0.00			-1221.18			14.00	0.00	80.46	351.36	0.0357
11529	0.74	12.57	12.57		0.00	14241.09	0.24	-5485.18	-14241.09	0.24					
				SLE Rare	0.00			-3699.16			42.41	0.00	243.72	1064.33	
				SLE Freq.	0.00			-3488.94			40.00	0.00	229.87	1003.84	0.1019
				SLE Q.P.	0.00			-3436.07			39.39	0.00	226.38	988.63	0.1004
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11529	0.00	12.57	12.57		0.00	14241.09	0.24	-8398.26	-14241.09	0.24					
				SLE Rare	0.00			-4033.35			46.24	0.00	265.73	1160.48	
				SLE Freq.	0.00			-3804.38			43.61	0.00	250.65	1094.60	0.1112
				SLE Q.P.	0.00			-3746.85			42.96	0.00	246.86	1078.05	0.1095
Camp.	0.36	12.57	12.57	4994.49	163.94	0.00	14241.09	0.24	-9886.67	-14241.09	0.24				
				SLE Rare	0.00			-5572.51			63.89	0.00	367.14	1603.33	
				SLE Freq.	0.00			-5256.66			60.26	0.00	346.33	1512.45	0.1809
				SLE Q.P.	0.00			-5177.44			59.36	0.00	341.11	1489.66	0.1771
11532	0.72	12.57	12.57		0.00	14241.09	0.24	-9886.67	-14241.09	0.24					
				SLE Rare	0.00			-6667.49			76.44	0.00	439.28	1918.37	
				SLE Freq.	0.00			-6289.04			72.10	0.00	414.35	1809.48	0.2312
				SLE Q.P.	0.00			-6194.20			71.01	0.00	408.10	1782.20	0.2266
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11532	0.00	12.57	12.57		0.00	14241.09	0.24	-10594.36	-14241.09	0.24					
				SLE Rare	0.00			-6814.67			78.13	0.00	448.98	1960.72	
				SLE Freq.	0.00			-6428.09			73.69	0.00	423.51	1849.49	0.2380
				SLE Q.P.	0.00			-6331.27			72.58	0.00	417.13	1821.64	0.2332
Camp.	0.37	12.57	12.57	4999.67	170.55	0.00	14241.09	0.24	-10603.40	-14241.09	0.24				
				SLE Rare	0.00			-7141.87			81.88	0.00	470.53	2054.86	
				SLE Freq.	0.00			-6737.06			77.24	0.00	443.86	1938.39	0.2530
				SLE Q.P.	0.00			-6635.72			76.07	0.00	437.19	1909.23	0.2481
11533	0.74	12.57	12.57		0.00	14241.09	0.24	-10603.40	-14241.09	0.24					
				SLE Rare	0.00			-7006.99			80.33	0.00	461.65	2016.05	
				SLE Freq.	0.00			-6609.23			75.77	0.00	435.44	1901.61	0.2468
				SLE Q.P.	0.00			-6509.93			74.63	0.00	428.90	1873.04	0.2419
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11533	0.00	12.57	12.57		0.00	14241.09	0.24	-10213.63	-14241.09	0.24					
				SLE Rare	0.00			-6887.86			78.96	0.00	453.80	1981.78	
				SLE Freq.	0.00			-6497.08			74.48	0.00	428.05	1869.34	0.2413
				SLE Q.P.	0.00			-6399.50			73.37	0.00	421.62	1841.27	0.2366
Camp.	0.34	12.57	12.57	4996.72	170.45	0.00	14241.09	0.24	-10213.63	-14241.09	0.24				
				SLE Rare	0.00			-6036.02			69.20	0.00	397.68	1736.69	
				SLE Freq.	0.00			-5693.78			65.28	0.00	375.13	1638.22	0.2022
				SLE Q.P.	0.00			-5608.61			64.30	0.00	369.52	1613.71	0.1981
11534	0.69	12.57	12.57		0.00	14241.09	0.24	-9142.00	-14241.09	0.24					



**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

	SLE Rare	0.00			-4783.00		54.83	0.00	315.12	1376.17	
	SLE Freq.	0.00			-4511.25		51.72	0.00	297.22	1297.98	0.1446
	SLE Q.P.	0.00			-4443.97		50.95	0.00	292.79	1278.62	0.1413

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 11526 11528 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	16684.32	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11528 11529 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12304.70	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11529 11532 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7199.86	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11532 11533 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	2233.55	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11533 11534 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.69	0.69	6250.06	8810.34	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 120 Nodi 11534 11537 11538 11541 11548 11550 11556 11558 11560 11566 11568 11569

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11534	0.05	12.57	12.57			0.00	14241.09	0.24	-5855.40	-14241.09	0.24					
				SLE Rare		0.00			-3948.30			45.26	0.00	260.13	1136.01	
				SLE Freq.		0.00			-3724.06			42.69	0.00	245.36	1071.49	0.1088
				SLE Q.P.		0.00			-3668.69			42.06	0.00	241.71	1055.56	0.1072
Camp.	0.39	12.57	12.57	4996.58	164.01	771.54	14241.09	0.24	-5855.40	-14241.09	0.24					
				SLE Rare		0.00			-1905.71			21.85	0.00	125.56	548.31	
				SLE Freq.		0.00			-1797.38			20.61	0.00	118.42	517.14	0.0525
				SLE Q.P.		0.00			-1771.25			20.31	0.00	116.70	509.63	0.0518
11537	0.72	14.80	12.57			771.54	16453.38	0.26	-3318.42	-14239.17	0.24					
				SLE Rare		521.84			0.00			0.00	5.64	128.43	35.44	
				SLE Freq.		493.21			0.00			0.00	5.33	121.39	33.49	0.0030
				SLE Q.P.		485.95			0.00			0.00	5.25	119.60	33.00	0.0030
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11537	0.00	15.71	12.57			6725.07	17347.14	0.26	0.00	-14238.50	0.24					
				SLE Rare		918.75			0.00			0.00	9.73	213.66	62.93	
				SLE Freq.		867.36			0.00			0.00	9.18	201.71	59.41	0.0051
				SLE Q.P.		854.35			0.00			0.00	9.05	198.68	58.52	0.0050
Camp.	0.37	18.63	12.57	4996.08	172.52	12292.52	20204.08	0.29	-172.52	-14236.63	0.24					
				SLE Rare		4371.88			-116.86			1.27	43.74	864.40	305.17	
				SLE Freq.		4124.58			-110.47			1.20	41.26	815.50	287.91	0.0220
				SLE Q.P.		4062.57			-108.87			1.18	40.64	803.24	283.58	0.0216
11538	0.74	21.54	12.57			12292.52	23026.31	0.31	0.00	-14235.14	0.24					
				SLE Rare		8292.44			0.00			0.00	79.25	1427.58	584.99	
				SLE Freq.		7823.67			0.00			0.00	74.77	1346.88	551.92	0.0383
				SLE Q.P.		7706.26			0.00			0.00	73.65	1326.67	543.63	0.0377
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11538	0.00	22.45	12.57			19986.35	23894.98	0.32	0.00	-14234.73	0.24					
				SLE Rare		8533.80			0.00			0.00	80.54	1412.65	603.35	
				SLE Freq.		8051.01			0.00			0.00	75.99	1332.73	569.22	0.0384
				SLE Q.P.		7930.05			0.00			0.00	74.85	1312.71	560.66	0.0378
Camp.	0.30	24.76	12.57	4997.74	167.99	24482.83	26080.65	0.35	-157.92	-14233.80	0.24					
				SLE Rare		12367.22			-106.97			1.11	113.40	1865.66	877.96	
				SLE Freq.		11666.98			-101.12			1.05	106.98	1760.03	828.25	0.0532
				SLE Q.P.		11491.64			-99.65			1.03	105.37	1733.57	815.80	0.0518
11541	0.61	25.13	12.57			24482.83	26433.75	0.35	-23.95	-14233.66	0.24					
				SLE Rare		16513.78			-16.22			0.17	150.77	2455.79	1172.91	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

	SLE Freq.	15578.97			-15.33			0.16	142.23	2316.77	1106.51	0.0820
	SLE Q.P.	15344.95			-15.11			0.16	140.10	2281.97	1089.89	0.0803
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>												
11541	0.13	25.13	12.57			19949.43	26433.75	0.35	-23.94	-14233.66	0.24	
	SLE Rare	13455.79			-16.21			0.17	122.85	2001.03	955.71	
	SLE Freq.	12694.68			-15.33			0.16	115.90	1887.85	901.65	0.0605
	SLE Q.P.	12504.33			-15.11			0.16	114.16	1859.54	888.13	0.0591
Camp.	0.43	24.34	12.57	4996.28	167.94	19949.43	25684.37	0.34	-157.88	-14233.96	0.24	
	SLE Rare	9747.18			-106.94			1.11	89.82	1494.54	691.54	
	SLE Freq.	9195.82			-101.09			1.05	84.74	1410.00	652.43	0.0418
	SLE Q.P.	9057.92			-99.63			1.04	83.47	1388.86	642.64	0.0412
11548	0.73	22.03	12.57			15922.97	23492.64	0.32	0.00	-14234.92	0.24	
	SLE Rare	6351.61			0.00			0.00	60.29	1070.50	448.63	
	SLE Freq.	5992.89			0.00			0.00	56.89	1010.04	423.29	0.0289
	SLE Q.P.	5903.15			0.00			0.00	56.03	994.91	416.95	0.0285
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>												
11548	0.00	21.12	12.57			9181.15	22621.89	0.31	0.00	-14235.34	0.24	
	SLE Rare	6193.51			0.00			0.00	59.55	1086.43	436.40	
	SLE Freq.	5843.85			0.00			0.00	56.19	1025.09	411.77	0.0289
	SLE Q.P.	5756.38			0.00			0.00	55.35	1009.75	405.60	0.0285
Camp.	0.37	18.21	12.57	4999.35	172.63	9181.15	19794.02	0.28	-181.99	-14236.88	0.24	
	SLE Rare	2802.08			-116.93			1.27	28.24	566.20	195.18	
	SLE Freq.	2643.94			-110.54			1.20	26.65	534.25	184.17	0.0143
	SLE Q.P.	2604.36			-108.94			1.19	26.25	526.25	181.41	0.0141
11550	0.74	15.29	12.57			4363.22	16932.89	0.26	-181.99	-14238.80	0.24	
	SLE Rare	0.00			-121.62			1.36	0.00	7.59	35.08	
	SLE Freq.	0.00			-113.82			1.27	0.00	7.10	32.83	0.0033
	SLE Q.P.	0.00			-112.96			1.26	0.00	7.05	32.58	0.0033
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>												
11550	0.00	15.42	12.57			0.00	17065.64	0.26	-3822.53	-14238.70	0.24	
	SLE Rare	0.00			-383.52			4.28	0.00	23.87	110.62	
	SLE Freq.	0.00			-360.82			4.03	0.00	22.45	104.08	0.0106
	SLE Q.P.	0.00			-356.26			3.98	0.00	22.17	102.76	0.0105
Camp.	0.36	12.57	12.57	4994.48	163.94	0.00	14241.09	0.24	-6034.54	-14241.09	0.24	
	SLE Rare	0.00			-2448.42			28.07	0.00	161.31	704.46	
	SLE Freq.	0.00			-2309.36			26.48	0.00	152.15	664.45	0.0675
	SLE Q.P.	0.00			-2275.45			26.09	0.00	149.92	654.69	0.0665
11556	0.72	12.57	12.57			0.00	14241.09	0.24	-6034.54	-14241.09	0.24	
	SLE Rare	0.00			-4069.13			46.65	0.00	268.09	1170.77	
	SLE Freq.	0.00			-3838.00			44.00	0.00	252.86	1104.27	0.1121
	SLE Q.P.	0.00			-3780.81			43.34	0.00	249.09	1087.82	0.1105
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>												
11556	0.00	12.57	12.57			0.00	14241.09	0.24	-7641.76	-14241.09	0.24	
	SLE Rare	0.00			-4260.08			48.84	0.00	280.67	1225.71	
	SLE Freq.	0.00			-4018.10			46.06	0.00	264.73	1156.09	0.1206
	SLE Q.P.	0.00			-3958.20			45.38	0.00	260.78	1138.85	0.1177
Camp.	0.37	12.57	12.57	4999.67	170.55	0.00	14241.09	0.24	-8191.74	-14241.09	0.24	
	SLE Rare	0.00			-5123.23			58.73	0.00	337.54	1474.06	
	SLE Freq.	0.00			-4832.97			55.41	0.00	318.41	1390.54	0.1603
	SLE Q.P.	0.00			-4760.73			54.58	0.00	313.66	1369.76	0.1568
11558	0.74	12.57	12.57			0.00	14241.09	0.24	-8191.74	-14241.09	0.24	
	SLE Rare	0.00			-5524.29			63.33	0.00	363.96	1589.45	
	SLE Freq.	0.00			-5211.03			59.74	0.00	343.32	1499.32	0.1787
	SLE Q.P.	0.00			-5132.77			58.84	0.00	338.17	1476.80	0.1749
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>												

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

11558	0.00	12.57	12.57			0.00	14241.09	0.24	-8190.09	-14241.09	0.24								
				SLE Rare		0.00			-5523.20			63.32	0.00	363.89	1589.14				
				SLE Freq.		0.00			-5209.98			59.73	0.00	343.25	1499.02	0.1786			
				SLE Q.P.		0.00			-5131.72			58.83	0.00	338.10	1476.50	0.1748			
Camp.	0.37	12.57	12.57	4996.72	170.45	0.00	14241.09	0.24	-8190.09	-14241.09	0.24								
				SLE Rare		0.00			-5130.23			58.81	0.00	338.00	1476.07				
				SLE Freq.		0.00			-4839.86			55.49	0.00	318.87	1392.53	0.1606			
				SLE Q.P.		0.00			-4767.24			54.65	0.00	314.08	1371.63	0.1571			
11560	0.74	12.57	12.57			0.00	14241.09	0.24	-7651.23	-14241.09	0.24								
				SLE Rare		0.00			-4275.45			49.02	0.00	281.68	1230.13				
				SLE Freq.		0.00			-4033.18			46.24	0.00	265.72	1160.43	0.1213			
				SLE Q.P.		0.00			-3972.59			45.54	0.00	261.73	1142.99	0.1184			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11560	0.00	12.57	12.57			0.00	14241.09	0.24	-6052.86	-14241.09	0.24								
				SLE Rare		0.00			-4081.92			46.80	0.00	268.93	1174.45				
				SLE Freq.		0.00			-3850.60			44.14	0.00	253.69	1107.90	0.1125			
				SLE Q.P.		0.00			-3792.74			43.48	0.00	249.88	1091.25	0.1108			
Camp.	0.36	12.57	12.57	4996.58	164.01	0.00	14241.09	0.24	-6052.86	-14241.09	0.24								
				SLE Rare		0.00			-2459.54			28.20	0.00	162.04	707.66				
				SLE Freq.		0.00			-2320.74			26.61	0.00	152.90	667.72	0.0678			
				SLE Q.P.		0.00			-2286.00			26.21	0.00	150.61	657.73	0.0668			
11566	0.72	14.45	12.57			0.00	16101.47	0.25	-3838.17	-14239.45	0.24								
				SLE Rare		0.00			-392.80			4.42	0.00	24.92	113.20				
				SLE Freq.		0.00			-370.81			4.18	0.00	23.52	106.87	0.0109			
				SLE Q.P.		0.00			-365.26			4.11	0.00	23.17	105.27	0.0107			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11566	0.00	14.21	12.57			4340.23	15872.47	0.25	-190.05	-14239.64	0.24								
				SLE Rare		0.00			-128.08			1.45	0.00	8.16	36.91				
				SLE Freq.		0.00			-121.08			1.37	0.00	7.72	34.89	0.0035			
				SLE Q.P.		0.00			-119.27			1.35	0.00	7.60	34.37	0.0035			
Camp.	0.37	15.67	12.57	4996.07	172.52	9144.10	17311.09	0.26	-190.05	-14238.52	0.24								
				SLE Rare		2785.82			-116.86			1.30	29.52	649.29	190.76				
				SLE Freq.		2627.15			-110.47			1.23	27.84	612.31	179.89	0.0155			
				SLE Q.P.		2588.74			-108.87			1.21	27.43	603.36	177.26	0.0152			
11568	0.74	17.13	12.57			9144.10	18743.45	0.27	0.00	-14237.54	0.24								
				SLE Rare		6167.15			0.00			0.00	63.41	1320.51	426.93				
				SLE Freq.		5817.24			0.00			0.00	59.81	1245.59	402.70	0.0325			
				SLE Q.P.		5731.29			0.00			0.00	58.93	1227.19	396.75	0.0320			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
11568	0.00	17.59	12.57			15885.26	19187.31	0.28	0.00	-14237.25	0.24								
				SLE Rare		6329.00			0.00			0.00	64.51	1321.86	439.35				
				SLE Freq.		5969.95			0.00			0.00	60.85	1246.87	414.43	0.0329			
				SLE Q.P.		5881.64			0.00			0.00	59.95	1228.42	408.30	0.0324			
Camp.	0.30	18.74	12.57	4997.75	167.99	19908.30	20312.02	0.29	-157.92	-14236.57	0.24								
				SLE Rare		9721.10			-106.97			1.16	97.06	1911.21	678.91				
				SLE Freq.		9169.35			-101.12			1.10	91.55	1802.73	640.38	0.0487			
				SLE Q.P.		9033.08			-99.65			1.08	90.19	1775.94	630.86	0.0479			
11569	0.61	18.85	12.57			19908.30	20420.77	0.29	-23.95	-14236.51	0.24								
				SLE Rare		13426.34			-16.22			0.18	133.80	2624.77	938.17				
				SLE Freq.		12664.76			-15.33			0.17	126.21	2475.89	884.95	0.0670			
				SLE Q.P.		12476.25			-15.11			0.16	124.33	2439.04	871.78	0.0660			

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

*Parcheggio interrato - Tabulato di calcolo*

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe									
Trave 11534 11537 Sez. 2 Rett. 40x40 [cm]																
0.05	0.72	0.67	11508.68	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11537 11538 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	16564.11	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11538 11541 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	20968.72	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11541 11548 Sez. 2 Rett. 40x40 [cm]																
0.13	0.73	0.61	18834.16	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11548 11550 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	14454.53	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11550 11556 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	9349.69	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11556 11558 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	4383.38	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11558 11560 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	4350.01	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11560 11566 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	9358.85	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11566 11568 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	14414.28	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 11568 11569 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	18818.89	8810.34	37247.76	36621.00	ø 10 2br. 12.5'									
Travata: Travata 121 Nodi 11527 11593 11594 11595 11596 11597 11598 11599 11544																
Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
11527	0.12	12.57	12.57			12027.71	14241.09	0.24	-23.95	-14241.09	0.24					
					SLE Rare	8110.74			-16.22			0.19	92.98	2333.62	534.37	
					SLE Freq.	7651.12			-15.33			0.18	87.72	2201.38	504.09	0.0512
					SLE Q.P.	7538.13			-15.11			0.17	86.42	2168.87	496.64	0.0504
Camp.	0.43	12.57	12.57	4997.75	167.99	12027.71	14241.09	0.24	-157.92	-14241.09	0.24					
					SLE Rare	4854.60			-106.97			1.23	55.65	1396.77	319.84	
					SLE Freq.	4579.38			-101.12			1.16	52.50	1317.58	301.71	0.0306
					SLE Q.P.	4512.24			-99.66			1.14	51.73	1298.26	297.28	0.0302
11593	0.73	12.57	12.57			8486.60	14241.09	0.24	0.00	-14241.09	0.24					
					SLE Rare	1911.60			0.00			0.00	21.92	550.01	125.94	
					SLE Freq.	1803.66			0.00			0.00	20.68	518.95	118.83	0.0121
					SLE Q.P.	1778.08			0.00			0.00	20.38	511.59	117.15	0.0119
Trave Sez. 2 Rett. 40x40 [cm]																
11593	0.00	12.57	12.57			2240.67	14241.09	0.24	-2127.43	-14241.09	0.24					
					SLE Rare	1510.52			0.00			0.00	17.32	434.61	99.52	
					SLE Freq.	1425.05			0.00			0.00	16.34	410.02	93.89	0.0095
					SLE Q.P.	1405.22			0.00			0.00	16.11	404.31	92.58	0.0094
Camp.	0.37	12.57	12.57	4996.11	172.52	2240.67	14241.09	0.24	-5466.61	-14241.09	0.24					
					SLE Rare	0.00			-1322.04			15.16	0.00	87.10	380.38	
					SLE Freq.	0.00			-1247.35			14.30	0.00	82.18	358.89	0.0364
					SLE Q.P.	0.00			-1228.33			14.08	0.00	80.93	353.42	0.0359
11594	0.74	12.57	12.57			0.00	14241.09	0.24	-5466.61	-14241.09	0.24					
					SLE Rare	0.00			-3687.18			42.27	0.00	242.93	1060.88	
					SLE Freq.	0.00			-3477.89			39.87	0.00	229.14	1000.66	0.1016
					SLE Q.P.	0.00			-3425.25			39.27	0.00	225.67	985.51	0.1001
Trave Sez. 2 Rett. 40x40 [cm]																
11594	0.00	12.57	12.57			0.00	14241.09	0.24	-8365.64	-14241.09	0.24					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	0.00			-4019.48			46.08	0.00	264.82	1156.49	
				SLE Freq.	0.00			-3791.60			43.47	0.00	249.81	1090.92	0.1108
				SLE Q.P.	0.00			-3734.35			42.81	0.00	246.03	1074.45	0.1091
Camp.	0.36	12.57	12.57	4974.77	163.30	0.00	14241.09	0.24	-9846.88	-14241.09	0.24				
				SLE Rare	0.00			-5551.51			63.64	0.00	365.76	1597.28	
				SLE Freq.	0.00			-5237.09			60.04	0.00	345.04	1506.82	0.1800
				SLE Q.P.	0.00			-5158.23			59.14	0.00	339.84	1484.13	0.1761
11595	0.72	12.57	12.57			0.00	14241.09	0.24	-9846.88	-14241.09	0.24				
				SLE Rare	0.00			-6641.07			76.14	0.00	437.54	1910.77	
				SLE Freq.	0.00			-6264.30			71.82	0.00	412.72	1802.37	0.2300
				SLE Q.P.	0.00			-6169.89			70.73	0.00	406.50	1775.20	0.2254
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11595	0.00	12.57	12.57			0.00	14241.09	0.24	-10516.08	-14241.09	0.24				
				SLE Rare	0.00			-6787.02			77.81	0.00	447.16	1952.76	
				SLE Freq.	0.00			-6402.26			73.40	0.00	421.81	1842.06	0.2367
				SLE Q.P.	0.00			-6305.89			72.29	0.00	415.46	1814.33	0.2320
Camp.	0.37	12.57	12.57	4928.18	168.11	0.00	14241.09	0.24	-10521.35	-14241.09	0.24				
				SLE Rare	0.00			-7090.66			81.29	0.00	467.16	2040.13	
				SLE Freq.	0.00			-6689.02			76.69	0.00	440.70	1924.57	0.2507
				SLE Q.P.	0.00			-6588.49			75.53	0.00	434.08	1895.64	0.2458
11596	0.74	12.57	12.57			0.00	14241.09	0.24	-10521.35	-14241.09	0.24				
				SLE Rare	0.00			-6938.72			79.55	0.00	457.15	1996.41	
				SLE Freq.	0.00			-6545.08			75.04	0.00	431.22	1883.15	0.2437
				SLE Q.P.	0.00			-6446.86			73.91	0.00	424.74	1854.89	0.2389
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11596	0.00	12.57	12.57			0.00	14241.09	0.24	-10112.33	-14241.09	0.24				
				SLE Rare	0.00			-6820.20			78.19	0.00	449.34	1962.31	
				SLE Freq.	0.00			-6433.55			73.76	0.00	423.87	1851.07	0.2382
				SLE Q.P.	0.00			-6337.03			72.65	0.00	417.51	1823.29	0.2335
Camp.	0.37	12.57	12.57	4999.81	170.56	0.00	14241.09	0.24	-10112.33	-14241.09	0.24				
				SLE Rare	0.00			-5905.17			67.70	0.00	389.06	1699.04	
				SLE Freq.	0.00			-5570.47			63.86	0.00	367.00	1602.74	0.1962
				SLE Q.P.	0.00			-5487.24			62.91	0.00	361.52	1578.79	0.1921
11597	0.74	12.57	12.57			0.00	14241.09	0.24	-8839.67	-14241.09	0.24				
				SLE Rare	0.00			-4528.06			51.91	0.00	298.33	1302.81	
				SLE Freq.	0.00			-4270.56			48.96	0.00	281.36	1228.73	0.1329
				SLE Q.P.	0.00			-4206.94			48.23	0.00	277.17	1210.42	0.1298
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11597	0.00	12.57	12.57			0.00	14241.09	0.24	-6201.21	-14241.09	0.24				
				SLE Rare	0.00			-4181.33			47.94	0.00	275.48	1203.06	
				SLE Freq.	0.00			-3943.80			45.21	0.00	259.83	1134.71	0.1170
				SLE Q.P.	0.00			-3885.10			44.54	0.00	255.97	1117.82	0.1141
Camp.	0.36	12.58	12.57	4994.58	163.95	756.59	14250.04	0.24	-6201.21	-14241.08	0.24				
				SLE Rare	0.00			-2056.43			23.57	0.00	135.46	591.68	
				SLE Freq.	0.00			-1939.35			22.23	0.00	127.75	557.99	0.0567
				SLE Q.P.	0.00			-1911.07			21.91	0.00	125.89	549.86	0.0558
11598	0.72	15.41	12.57			756.59	17050.75	0.26	-3295.52	-14238.71	0.24				
				SLE Rare	512.66			0.00			0.00	5.46	121.44	35.02	
				SLE Freq.	485.00			0.00			0.00	5.17	114.89	33.13	0.0029
				SLE Q.P.	477.97			0.00			0.00	5.09	113.22	32.65	0.0028
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11598	0.00	16.32	12.57			6686.08	17942.91	0.27	0.00	-14238.07	0.24				
				SLE Rare	906.45			0.00			0.00	9.47	203.33	62.39	
				SLE Freq.	856.15			0.00			0.00	8.95	192.05	58.93	0.0049
				SLE Q.P.	843.41			0.00			0.00	8.82	189.19	58.05	0.0048

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Camp.	0.37	19.23	12.57	4999.39	172.64	12236.11	20793.47	0.29	-172.64	-14236.30	0.24						
				SLE Rare		4347.31			-116.93			1.26	43.05	833.74	304.28		
				SLE Freq.		4101.97			-110.54			1.19	40.62	786.69	287.11	0.0214	
				SLE Q.P.		4040.43			-108.94			1.18	40.01	774.89	282.80	0.0211	
11599	0.74	22.15	12.57			12236.11	23607.17	0.32	0.00	-14234.86	0.24						
				SLE Rare		8255.90			0.00			0.00	78.24	1384.30	583.30		
				SLE Freq.		7789.93			0.00			0.00	73.82	1306.17	550.38	0.0375	
				SLE Q.P.		7673.20			0.00			0.00	72.72	1286.60	542.13	0.0369	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
11599	0.00	23.06	12.57			19898.29	24472.71	0.33	0.00	-14234.47	0.24						
				SLE Rare		8494.87			0.00			0.00	79.54	1371.06	601.36		
				SLE Freq.		8014.94			0.00			0.00	75.05	1293.60	567.39	0.0377	
				SLE Q.P.		7894.69			0.00			0.00	73.92	1274.19	558.88	0.0371	
Camp.	0.30	25.13	12.57	4996.29	167.94	24378.63	26433.75	0.35	-157.88	-14233.66	0.24						
				SLE Rare		12313.68			-106.94			1.11	112.42	1831.19	874.59		
				SLE Freq.		11617.30			-101.09			1.05	106.06	1727.63	825.13	0.0525	
				SLE Q.P.		11442.90			-99.63			1.03	104.47	1701.69	812.74	0.0512	
11544	0.61	25.13	12.57			24378.63	26433.75	0.35	-23.94	-14233.66	0.24						
				SLE Rare		16445.54			-16.21			0.17	150.14	2445.64	1168.06		
				SLE Freq.		15515.58			-15.33			0.16	141.65	2307.35	1102.01	0.0815	
				SLE Q.P.		15282.76			-15.11			0.16	139.53	2272.72	1085.47	0.0798	

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 11527 11593 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	16630.24	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11593 11594 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12225.61	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11594 11595 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7170.15	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11595 11596 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	2122.82	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11596 11597 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	6444.38	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11597 11598 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	11410.78	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11598 11599 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	16515.67	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11599 11544 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	20895.24	8810.34	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 126 Nodi 11544 11600 11602 11604 11606 11608 11610 11612 11570 11613 11611 11609

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11544	0.12	21.99	12.57			19913.26	23454.77	0.32	-23.95	-14234.94	0.24					
				SLE Rare		13433.36			-16.22			0.17	127.58	2267.92	948.73	
				SLE Freq.		12674.39			-15.33			0.16	120.37	2139.79	895.13	0.0632
				SLE Q.P.		12484.54			-15.11			0.16	118.57	2107.74	881.72	0.0616
Camp.	0.43	21.99	12.57	4997.69	167.98	19913.26	23454.77	0.32	-157.92	-14234.94	0.24					
				SLE Rare		9725.84			-106.97			1.13	92.37	1641.99	686.89	
				SLE Freq.		9176.47			-101.12			1.07	87.15	1549.24	648.09	0.0443
				SLE Q.P.		9039.03			-99.65			1.05	85.85	1526.04	638.38	0.0437
11600	0.73	20.43	12.57			15888.21	21957.51	0.30	0.00	-14235.67	0.24					
				SLE Rare		6331.46			0.00			0.00	61.51	1146.22	445.17	
				SLE Freq.		5974.56			0.00			0.00	58.04	1081.61	420.07	0.0301
				SLE Q.P.		5885.24			0.00			0.00	57.17	1065.44	413.79	0.0297



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Trave Sez. 2 Rett. 40x40 [cm]																
11600	0.00	19.75	12.57			9147.49	21299.37	0.30	0.00	-14236.02	0.24					
				SLE Rare		6172.44			0.00			0.00	60.60	1154.02	432.93	
				SLE Freq.		5824.71			0.00			0.00	57.19	1089.00	408.54	0.0300
				SLE Q.P.		5737.70			0.00			0.00	56.33	1072.73	402.44	0.0295
Camp.	0.37	17.57	12.57	4996.16	172.52	9147.49	19168.89	0.28	-193.35	-14237.26	0.24					
				SLE Rare		2788.34			-116.86			1.28	28.43	582.96	193.54	
				SLE Freq.		2631.56			-110.47			1.21	26.83	550.18	182.66	0.0145
				SLE Q.P.		2592.30			-108.87			1.19	26.43	541.97	179.93	0.0143
11602	0.74	15.38	12.57			4340.43	17020.95	0.26	-193.35	-14238.74	0.24					
				SLE Rare		0.00			-128.32			1.43	0.00	7.99	37.01	
				SLE Freq.		0.00			-119.72			1.34	0.00	7.46	34.53	0.0035
				SLE Q.P.		0.00			-118.75			1.33	0.00	7.40	34.25	0.0035
Trave Sez. 2 Rett. 40x40 [cm]																
11602	0.00	15.92	12.57			0.00	17555.31	0.26	-3841.32	-14238.35	0.24					
				SLE Rare		0.00			-390.52			4.34	0.00	24.07	112.69	
				SLE Freq.		0.00			-366.97			4.08	0.00	22.62	105.89	0.0108
				SLE Q.P.		0.00			-362.30			4.03	0.00	22.33	104.55	0.0106
Camp.	0.36	12.58	12.57	4996.69	164.02	0.00	14251.66	0.24	-6059.02	-14241.08	0.24					
				SLE Rare		0.00			-2459.96			28.20	0.00	162.04	707.79	
				SLE Freq.		0.00			-2319.88			26.59	0.00	152.81	667.48	0.0678
				SLE Q.P.		0.00			-2285.79			26.20	0.00	150.56	657.67	0.0668
11604	0.72	12.57	12.57			0.00	14241.09	0.24	-6059.02	-14241.09	0.24					
				SLE Rare		0.00			-4085.02			46.83	0.00	269.14	1175.34	
				SLE Freq.		0.00			-3852.71			44.17	0.00	253.83	1108.50	0.1126
				SLE Q.P.		0.00			-3795.27			43.51	0.00	250.05	1091.98	0.1109
Trave Sez. 2 Rett. 40x40 [cm]																
11604	0.00	12.57	12.57			0.00	14241.09	0.24	-7656.91	-14241.09	0.24					
				SLE Rare		0.00			-4275.85			49.02	0.00	281.71	1230.25	
				SLE Freq.		0.00			-4032.68			46.23	0.00	265.69	1160.28	0.1213
				SLE Q.P.		0.00			-3972.52			45.54	0.00	261.73	1142.98	0.1184
Camp.	0.37	12.57	12.57	4996.58	170.45	0.00	14241.09	0.24	-8198.96	-14241.09	0.24					
				SLE Rare		0.00			-5133.40			58.85	0.00	338.21	1476.98	
				SLE Freq.		0.00			-4842.40			55.51	0.00	319.04	1393.26	0.1607
				SLE Q.P.		0.00			-4770.00			54.68	0.00	314.27	1372.43	0.1572
11606	0.74	12.57	12.57			0.00	14241.09	0.24	-8198.96	-14241.09	0.24					
				SLE Rare		0.00			-5529.14			63.39	0.00	364.28	1590.85	
				SLE Freq.		0.00			-5215.58			59.79	0.00	343.62	1500.63	0.1789
				SLE Q.P.		0.00			-5137.24			58.90	0.00	338.46	1478.09	0.1751
Trave Sez. 2 Rett. 40x40 [cm]																
11606	0.00	12.57	12.57			0.00	14241.09	0.24	-8196.59	-14241.09	0.24					
				SLE Rare		0.00			-5527.54			63.37	0.00	364.18	1590.39	
				SLE Freq.		0.00			-5214.04			59.78	0.00	343.52	1500.19	0.1788
				SLE Q.P.		0.00			-5135.71			58.88	0.00	338.36	1477.65	0.1750
Camp.	0.37	12.57	12.57	4999.63	170.55	0.00	14241.09	0.24	-8196.59	-14241.09	0.24					
				SLE Rare		0.00			-5129.26			58.80	0.00	337.94	1475.79	
				SLE Freq.		0.00			-4839.06			55.48	0.00	318.82	1392.30	0.1606
				SLE Q.P.		0.00			-4766.48			54.64	0.00	314.03	1371.41	0.1570
11608	0.74	12.57	12.57			0.00	14241.09	0.24	-7649.83	-14241.09	0.24					
				SLE Rare		0.00			-4268.91			48.94	0.00	281.25	1228.25	
				SLE Freq.		0.00			-4027.27			46.17	0.00	265.33	1158.73	0.1210
				SLE Q.P.		0.00			-3966.82			45.48	0.00	261.35	1141.34	0.1181
Trave Sez. 2 Rett. 40x40 [cm]																
11608	0.00	12.57	12.57			0.00	14241.09	0.24	-6041.63	-14241.09	0.24					
				SLE Rare		0.00			-4074.90			46.72	0.00	268.47	1172.43	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-3844.22			44.07	0.00	253.27	1106.06	0.1123
				SLE Q.P.	0.00			-3786.50			43.41	0.00	249.47	1089.45	0.1106
Camp.	0.36	12.57	12.57	4994.53	163.95	0.00	14241.09	0.24	-6041.63	-14241.09	0.24				
				SLE Rare	0.00			-2456.93			28.17	0.00	161.87	706.91	
				SLE Freq.	0.00			-2318.60			26.58	0.00	152.76	667.11	0.0677
				SLE Q.P.	0.00			-2283.96			26.18	0.00	150.48	657.14	0.0667
11610	0.72	13.75	12.57			0.00	15411.93	0.25	-3832.73	-14240.03	0.24				
				SLE Rare	0.00			-394.77			4.47	0.00	25.39	113.70	
				SLE Freq.	0.00			-373.08			4.23	0.00	24.00	107.46	0.0109
				SLE Q.P.	0.00			-367.59			4.17	0.00	23.65	105.88	0.0108
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11610	0.00	14.22	12.57			4350.51	15882.59	0.25	-191.13	-14239.63	0.24				
				SLE Rare	0.00			-129.71			1.46	0.00	8.26	37.37	
				SLE Freq.	0.00			-122.99			1.39	0.00	7.84	35.44	0.0036
				SLE Q.P.	0.00			-121.24			1.37	0.00	7.73	34.94	0.0036
Camp.	0.37	17.14	12.57	4999.44	172.64	9165.19	18753.47	0.27	-191.13	-14237.53	0.24				
				SLE Rare	2791.19			-116.93			1.29	28.69	597.31	193.23	
				SLE Freq.	2631.67			-110.54			1.22	27.05	563.17	182.19	0.0147
				SLE Q.P.	2593.19			-108.94			1.20	26.66	554.94	179.53	0.0145
11612	0.74	20.06	12.57			9165.19	21594.64	0.30	0.00	-14235.86	0.24				
				SLE Rare	6179.81			0.00			0.00	60.38	1138.67	433.94	
				SLE Freq.	5828.49			0.00			0.00	56.95	1073.94	409.27	0.0297
				SLE Q.P.	5742.36			0.00			0.00	56.11	1058.07	403.22	0.0293
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11612	0.00	20.97	12.57			15909.01	22470.33	0.31	0.00	-14235.41	0.24				
				SLE Rare	6341.81			0.00			0.00	61.12	1120.38	446.65	
				SLE Freq.	5981.40			0.00			0.00	57.64	1056.71	421.26	0.0297
				SLE Q.P.	5892.90			0.00			0.00	56.79	1041.08	415.03	0.0293
Camp.	0.30	23.27	12.57	4996.27	167.94	19933.50	24676.51	0.33	-157.88	-14234.38	0.24				
				SLE Rare	9735.10			-106.94			1.12	90.90	1557.48	689.45	
				SLE Freq.	9181.82			-101.09			1.06	85.74	1468.96	650.26	0.0429
				SLE Q.P.	9045.34			-99.63			1.04	84.46	1447.13	640.60	0.0423
11570	0.61	25.13	12.57			19933.50	26433.75	0.35	-23.94	-14233.66	0.24				
				SLE Rare	13441.44			-16.21			0.17	122.72	1998.90	954.69	
				SLE Freq.	12678.17			-15.33			0.16	115.75	1885.39	900.48	0.0604
				SLE Q.P.	12489.44			-15.11			0.16	114.03	1857.32	887.07	0.0590
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11570	0.12	25.13	12.57			24444.76	26433.75	0.35	-23.95	-14233.66	0.24				
				SLE Rare	16484.40			-16.22			0.17	150.50	2451.42	1170.82	
				SLE Freq.	15548.33			-15.33			0.16	141.95	2312.22	1104.34	0.0818
				SLE Q.P.	15315.65			-15.11			0.16	139.83	2277.62	1087.81	0.0800
Camp.	0.43	25.13	12.57	4997.71	167.99	24444.76	26433.75	0.35	-157.92	-14233.66	0.24				
				SLE Rare	12342.43			-106.97			1.11	112.68	1835.46	876.63	
				SLE Freq.	11641.05			-101.12			1.05	106.28	1731.16	826.82	0.0527
				SLE Q.P.	11466.89			-99.65			1.03	104.69	1705.26	814.45	0.0514
11613	0.73	23.52	12.57			19952.66	24908.26	0.33	0.00	-14234.29	0.24				
				SLE Rare	8513.59			0.00			0.00	79.25	1348.62	603.21	
				SLE Freq.	8029.79			0.00			0.00	74.75	1271.98	568.93	0.0373
				SLE Q.P.	7909.85			0.00			0.00	73.63	1252.98	560.43	0.0367
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11613	0.00	22.61	12.57			12258.63	24045.20	0.32	0.00	-14234.66	0.24				
				SLE Rare	8266.42			0.00			0.00	77.86	1359.34	584.65	
				SLE Freq.	7796.61			0.00			0.00	73.43	1282.08	551.42	0.0371
				SLE Q.P.	7680.32			0.00			0.00	72.34	1262.96	543.20	0.0365
Camp.	0.37	19.69	12.57	4996.27	172.53	12258.63	21238.29	0.30	-172.53	-14236.05	0.24				

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	4351.52				-116.86			1.26	42.77	816.05	305.14	
				SLE Freq.	4103.32				-110.47			1.19	40.33	769.50	287.74	0.0212
				SLE Q.P.	4042.23				-108.87			1.17	39.73	758.05	283.45	0.0208
11611	0.74	16.77	12.57			6698.42	18392.84	0.27	0.00	-14237.77	0.24					
				SLE Rare	904.05				0.00			0.00	9.36	197.51	62.43	
				SLE Freq.	851.90				0.00			0.00	8.82	186.11	58.83	0.0048
				SLE Q.P.	839.64				0.00			0.00	8.69	183.43	57.99	0.0048
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11611	0.00	15.87	12.57			746.36	17501.97	0.26	-3335.69	-14238.38	0.24					
				SLE Rare	502.56				0.00			0.00	5.30	115.77	34.47	
				SLE Freq.	473.20				0.00			0.00	4.99	109.00	32.46	0.0028
				SLE Q.P.	466.72				0.00			0.00	4.92	107.51	32.01	0.0027
Camp.	0.34	13.26	12.57	4996.53	164.01	746.36	14929.08	0.24	-5866.84	-14240.45	0.24					
				SLE Rare	0.00				-1919.85			21.86	0.00	124.72	552.72	
				SLE Freq.	0.00				-1812.12			20.64	0.00	117.72	521.71	0.0530
				SLE Q.P.	0.00				-1785.20			20.33	0.00	115.97	513.96	0.0522
11609	0.67	12.57	12.57			0.00	14241.09	0.24	-5866.84	-14241.09	0.24					
				SLE Rare	0.00				-3957.30			45.37	0.00	260.72	1138.60	
				SLE Freq.	0.00				-3733.55			42.80	0.00	245.98	1074.22	0.1091
				SLE Q.P.	0.00				-3677.60			42.16	0.00	242.29	1058.12	0.1075

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 11544 11600 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	18827.92	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11600 11602 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	14423.34	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11602 11604 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	9367.87	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11604 11606 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4359.03	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11606 11608 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4374.18	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11608 11610 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	9340.52	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11610 11612 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	14445.39	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11612 11570 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	18824.99	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11570 11613 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	20948.44	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11613 11611 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	16543.85	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11611 11609 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.67	0.67	11488.30	8810.34	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 14 Nodi 104 2793

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
104	0.13	4.54	5.68			0.00	6105.08	0.14	-3145.03	-7386.30	0.14					
				SLE Rare		0.00			-1502.92			22.41	0.00	99.89	812.02	
				SLE Freq.		0.00			-1404.26			20.93	0.00	93.33	758.72	0.0849
				SLE Q.P.		0.00			-1370.45			20.43	0.00	91.09	740.45	0.0828
Camp.	1.77	6.03	6.03	520.00	409.58	812.55	7803.06	0.15	-1292.37	-7803.06	0.15					
				SLE Rare		0.00			-556.12			7.92	0.00	47.56	301.59	
				SLE Freq.		0.00			-541.65			7.72	0.00	46.32	293.74	0.0319

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-536.91			7.65	0.00	45.91	291.17	0.0316
2793	3.42	6.03	6.03			4031.28	7803.06	0.15	-436.60	-7803.06	0.15				
				SLE Rare	1497.94			0.00			0.00	21.34	812.34	128.10	
				SLE Freq.	1431.43			0.00			0.00	20.40	776.27	122.41	0.0133
				SLE Q.P.	1408.18			0.00			0.00	20.06	763.66	120.42	0.0131

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 104 2793 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1674.64	6895.68	38935.73	63800.94	151.92	5004.46	2398.29	ø 10 2br. 7.5'
0.52	3.03	2.50	2674.64	7037.02	38935.73	38280.56	151.92	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	2834.64	7037.02	38935.73	63800.94	151.92	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 15 Nodi 105 2798

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
105	0.13	4.54	5.68			0.00	6105.08	0.14	-3457.18	-7386.30	0.14					
				SLE Rare		0.00			-1671.32			24.92	0.00	111.08	903.01	
				SLE Freq.		0.00			-1570.77			23.42	0.00	104.40	848.68	0.0949
				SLE Q.P.		0.00			-1536.36			22.90	0.00	102.11	830.09	0.0929
Camp.	1.77	6.03	6.03	520.00	409.58	921.43	7803.06	0.15	-1320.08	-7803.06	0.15					
				SLE Rare		0.00			-530.50			7.56	0.00	45.37	287.69	
				SLE Freq.		0.00			-515.69			7.35	0.00	44.10	279.66	0.0303
				SLE Q.P.		0.00			-510.76			7.28	0.00	43.68	276.99	0.0300
2798	3.42	6.03	6.03			4395.23	7803.06	0.15	-402.38	-7803.06	0.15					
				SLE Rare		1725.10			0.00			0.00	24.58	935.52	147.52	
				SLE Freq.		1657.18			0.00			0.00	23.61	898.70	141.72	0.0154
				SLE Q.P.		1633.50			0.00			0.00	23.28	885.85	139.69	0.0151

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 105 2798 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1879.52	6895.68	38935.73	63800.94	170.18	5004.46	2398.29	ø 10 2br. 7.5'
0.52	3.03	2.50	2879.52	7037.02	38935.73	38280.56	170.18	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	3039.52	7037.02	38935.73	63800.94	170.18	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 155 Nodi 3921 3984 4057

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 7 Rett. 30x80 [cm]</b>																
3921	0.13	8.04	8.04			10483.69	22578.91	0.08	-1.79	-22578.91	0.08					
				SLE Rare		7498.37			-1.38			0.01	29.92	1356.71	320.67	
				SLE Freq.		7229.84			-1.38			0.01	28.85	1308.13	309.18	0.0278
				SLE Q.P.		7149.67			-1.38			0.01	28.53	1293.62	305.75	0.0275
Camp.	0.48	8.04	8.04	780.00	34.41	10483.69	22578.91	0.08	-32.86	-22578.91	0.08					
				SLE Rare		5668.50			-25.27			0.10	22.62	1025.62	242.41	
				SLE Freq.		5466.57			-25.27			0.10	21.81	989.09	233.78	0.0210
				SLE Q.P.		5405.89			-25.27			0.10	21.57	978.11	231.18	0.0208
3984	0.84	8.04	8.04			10483.69	22578.91	0.08	0.00	-22578.91	0.08					
				SLE Rare		3915.38			0.00			0.00	15.62	708.43	167.44	
				SLE Freq.		3780.04			0.00			0.00	15.08	683.94	161.65	0.0145
				SLE Q.P.		3738.87			0.00			0.00	14.92	676.49	159.89	0.0144
<b>Trave Sez. 7 Rett. 30x80 [cm]</b>																
3984	0.00	8.04	8.04			963.33	22578.91	0.08	-5880.26	-22578.91	0.08					
				SLE Rare		0.00			-402.89			1.61	0.00	17.23	72.90	
				SLE Freq.		0.00			-380.05			1.52	0.00	16.25	68.76	0.0062

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-375.73			1.50	0.00	16.07	67.98	0.0061
Camp.	0.49	8.04	8.04	780.00	59.03	963.33	22578.91	0.08	-6434.19	-22578.91	0.08				
				SLE Rare	0.00			-2108.87			8.41	0.00	90.19	381.57	
				SLE Freq.	0.00			-2031.18			8.10	0.00	86.86	367.51	0.0330
				SLE Q.P.	0.00			-2012.57			8.03	0.00	86.07	364.14	0.0327
4057	0.98	8.04	8.04			811.49	22578.91	0.08	-6434.19	-22578.91	0.08				
				SLE Rare	0.00			-3672.23			14.65	0.00	157.04	664.43	
				SLE Freq.	0.00			-3539.69			14.12	0.00	151.37	640.45	0.0576
				SLE Q.P.	0.00			-3506.79			13.99	0.00	149.97	634.50	0.0570

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 3921 3984 Sez. 7 Rett. 30x80 [cm]</b>										
0.13	0.84	0.72	7192.30	9231.02	91905.48	33235.49	1687.50	11601.62	6485.85	ø 10 2br. 12.5'
<b>Trave 3984 4057 Sez. 7 Rett. 30x80 [cm]</b>										
0.00	0.98	0.98	5377.27	9231.02	91905.48	33235.49	1355.65	11601.62	6485.85	ø 10 2br. 12.5'

Travata: Travata 17 Nodi 107 2803

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
107	0.13	4.12	5.68			343.49	5628.58	0.13	-3082.86	-7381.72	0.14					
				SLE Rare		0.00			-1253.50			18.80	0.00	76.63	676.99	
				SLE Freq.		0.00			-1167.61			17.51	0.00	71.38	630.61	0.0705
				SLE Q.P.		0.00			-1137.82			17.07	0.00	69.55	614.51	0.0687
Camp.	1.77	6.03	6.03	520.00	409.58	765.88	7803.06	0.15	-1234.80	-7803.06	0.15					
				SLE Rare		0.00			-582.71			8.30	0.00	49.83	316.01	
				SLE Freq.		0.00			-565.58			8.06	0.00	48.37	306.72	0.0333
				SLE Q.P.		0.00			-559.87			7.98	0.00	47.88	303.62	0.0329
2803	3.42	6.03	6.03			3918.67	7803.06	0.15	-773.25	-7803.06	0.15					
				SLE Rare		1192.17			0.00			0.00	16.99	646.52	101.95	
				SLE Freq.		1143.87			0.00			0.00	16.30	620.33	97.82	0.0106
				SLE Q.P.		1126.40			0.00			0.00	16.05	610.85	96.33	0.0104

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 107 2803 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1621.68	6895.68	38935.73	63800.94	165.83	5004.46	2299.93	ø 10 2br. 7.5'
0.52	3.03	2.50	2621.68	7037.02	38935.73	38280.56	165.83	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	2781.68	7037.02	38935.73	63800.94	165.83	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 2 Nodi 141 3962

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
141	0.13	6.03	6.03			4489.49	7803.06	0.15	0.00	-7803.06	0.15					
				SLE Rare		3259.08			0.00			0.00	46.44	1767.41	278.70	
				SLE Freq.		3148.58			0.00			0.00	44.86	1707.48	269.25	0.0292
				SLE Q.P.		3112.30			0.00			0.00	44.35	1687.81	266.15	0.0289
Camp.	2.13	6.03	6.03	520.00	587.03	454.71	7803.06	0.15	-1210.48	-7803.06	0.15					
				SLE Rare		0.00			-451.56			6.43	0.00	38.62	244.88	
				SLE Freq.		0.00			-451.56			6.43	0.00	38.62	244.88	0.0266
				SLE Q.P.		0.00			-451.56			6.43	0.00	38.62	244.88	0.0266
3962	4.13	6.03	6.03			0.00	7803.06	0.15	-3329.63	-7803.06	0.15					
				SLE Rare		0.00			-2337.62			33.31	0.00	199.90	1267.70	
				SLE Freq.		0.00			-2226.78			31.73	0.00	190.43	1207.59	0.1310
				SLE Q.P.		0.00			-2190.54			31.21	0.00	187.33	1187.94	0.1288



**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 141 3962 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	2994.78	7037.02	38935.73	63800.94	215.33	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.72	3.20	2786.78	7037.02	38935.73	38280.56	215.33	5004.46	2832.32	ø 10 2br. 12.5'
3.72	4.13	0.40	1122.78	7037.02	38935.73	63800.94	215.33	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 20 Nodi 203 5846

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
203	0.13	6.03	8.04			0.00	7812.95	0.15	-6930.18	-10079.37	0.16					
				SLE Rare		0.00			-4605.19			58.75	0.00	410.56	1894.42	
				SLE Freq.		0.00			-4360.13			55.63	0.00	388.71	1793.61	0.1748
				SLE Q.P.		0.00			-4277.44			54.57	0.00	381.34	1759.60	0.1695
Camp.	1.77	6.03	6.03	520.00	409.58	2419.32	7803.06	0.15	-1527.88	-7803.06	0.15					
				SLE Rare		252.64			-315.06			4.49	3.60	137.01	170.86	
				SLE Freq.		233.13			-315.06			4.49	3.32	126.43	170.86	0.0185
				SLE Q.P.		226.66			-315.06			4.49	3.23	122.92	170.86	0.0185
5846	3.42	8.04	6.03			9151.01	10079.37	0.16	0.00	-7812.94	0.15					
				SLE Rare		6201.28			0.00			0.00	79.12	2551.00	552.85	
				SLE Freq.		5917.21			0.00			0.00	75.49	2434.14	527.53	0.0448
				SLE Q.P.		5821.59			0.00			0.00	74.27	2394.81	519.00	0.0441

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 203 5846 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	4223.09	7745.24	38935.73	63800.94	101.69	5004.46	3304.37	ø 10 2br. 7.5'
0.52	3.03	2.50	5523.09	7037.02	38935.73	38280.56	101.69	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	5731.09	7037.02	38935.73	63800.94	101.69	5004.46	3304.37	ø 10 2br. 7.5'

Travata: Travata 21 Nodi 204 5851

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
204	0.13	6.03	8.04			0.00	7812.95	0.15	-7621.21	-10079.37	0.16					
				SLE Rare		0.00			-5072.16			64.71	0.00	452.19	2086.52	
				SLE Freq.		0.00			-4808.50			61.35	0.00	428.68	1978.06	0.2037
				SLE Q.P.		0.00			-4719.87			60.22	0.00	420.78	1941.59	0.1980
Camp.	1.77	6.03	6.03	520.00	409.58	2607.38	7803.06	0.15	-1686.32	-7803.06	0.15					
				SLE Rare		262.20			-315.06			4.49	3.74	142.19	170.86	
				SLE Freq.		242.20			-315.06			4.49	3.45	131.34	170.86	0.0185
				SLE Q.P.		235.55			-315.06			4.49	3.36	127.74	170.86	0.0185
5851	3.42	8.04	6.03			9871.66	10079.37	0.16	0.00	-7812.94	0.15					
				SLE Rare		6687.38			0.00			0.00	85.32	2750.96	596.19	
				SLE Freq.		6383.72			0.00			0.00	81.44	2626.04	569.11	0.0483
				SLE Q.P.		6281.79			0.00			0.00	80.14	2584.12	560.03	0.0476

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 204 5851 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	4650.87	7745.24	38935.73	63800.94	107.66	5004.46	3304.37	ø 10 2br. 7.5'
0.52	3.03	2.50	5950.87	7037.02	38935.73	38280.56	107.66	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	6158.87	7037.02	38935.73	63800.94	107.66	5004.46	3304.37	ø 10 2br. 7.5'

Travata: Travata 214 Nodi 363 10154

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
363	0.13	8.04	8.04			3991.77	13228.33	0.13	-502.55	-13228.33	0.13					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	866.20			0.00			0.00	7.01	271.05	55.76	
				SLE Freq.	642.93			0.00			0.00	5.20	201.18	41.39	0.0043
				SLE Q.P.	568.50			0.00			0.00	4.60	177.89	36.60	0.0038
Camp.	2.33	8.04	8.04	650.00	883.62	1033.36	13228.33	0.13	-2644.24	-13228.33	0.13				
				SLE Rare	0.00				-708.11			5.73	0.00	45.59	221.58
				SLE Freq.	0.00				-679.70			5.50	0.00	43.76	212.69
				SLE Q.P.	0.00				-679.70			5.50	0.00	43.76	212.69
10154	4.54	8.04	8.04			3839.05	13228.33	0.13	-4895.17	-13228.33	0.13				
				SLE Rare	1289.49			0.00			0.00	10.43	403.49	83.01	
				SLE Freq.	1481.79			0.00			0.00	11.99	463.67	95.39	0.0100
				SLE Q.P.	1482.15			0.00			0.00	11.99	463.78	95.42	0.0100

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 363 10154 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	3116.90	8701.28	50188.84	61680.39	134.60	6941.10	4173.10	Ø 10 2br. 10.0'
0.63	4.04	3.41	2866.90	8701.28	50188.84	41120.26	134.60	6941.10	4173.10	Ø 10 2br. 15.0'
4.04	4.54	0.50	2083.16	8701.28	50188.84	61680.39	134.60	6941.10	4173.10	Ø 10 2br. 10.0'

Travata: Travata 215 Nodi 372 10369

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
372	0.13	8.04	8.04			2069.35	13228.33	0.13	-1046.54	-13228.33	0.13					
				SLE Rare		14.98			-424.51			3.43	0.12	27.33	132.83	
				SLE Freq.		0.00			-439.70			3.56	0.00	28.31	137.59	0.0144
				SLE Q.P.		0.00			-440.00			3.56	0.00	28.33	137.68	0.0144
Camp.	2.30	8.04	8.04	650.00	856.55	1078.56	13228.33	0.13	-1507.81	-13228.33	0.13					
				SLE Rare		0.00			-658.89			5.33	0.00	42.42	206.17	
				SLE Freq.		0.00			-658.89			5.33	0.00	42.42	206.17	0.0216
				SLE Q.P.		0.00			-658.89			5.33	0.00	42.42	206.17	0.0216
10369	4.47	8.04	8.04			3638.44	13228.33	0.13	-1943.72	-13228.33	0.13					
				SLE Rare		2428.88			0.00			0.00	19.65	760.02	156.37	
				SLE Freq.		2553.74			0.00			0.00	20.66	799.09	164.40	0.0172
				SLE Q.P.		2554.03			0.00			0.00	20.66	799.19	164.42	0.0172

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 372 10369 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	2002.73	8701.28	50188.84	61680.39	149.28	6941.10	4173.10	Ø 10 2br. 10.0'
0.63	3.97	3.34	2140.18	8701.28	50188.84	41120.26	149.28	6941.10	4173.10	Ø 10 2br. 15.0'
3.97	4.47	0.50	2465.18	8701.28	50188.84	61680.39	149.28	6941.10	4173.10	Ø 10 2br. 10.0'

Travata: Travata 216 Nodi 366 10259

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
366	0.13	8.04	8.04			2322.69	13228.33	0.13	-1961.82	-13228.33	0.13					
				SLE Rare		0.00			-1084.51			8.77	0.00	69.82	339.36	
				SLE Freq.		0.00			-1111.07			8.99	0.00	71.53	347.67	0.0365
				SLE Q.P.		0.00			-1111.66			8.99	0.00	71.57	347.85	0.0365
Camp.	2.32	8.04	8.04	650.00	873.94	1122.33	13228.33	0.13	-2351.13	-13228.33	0.13					
				SLE Rare		0.00			-802.04			6.49	0.00	51.63	250.97	
				SLE Freq.		0.00			-672.26			5.44	0.00	43.28	210.36	0.0221
				SLE Q.P.		0.00			-672.26			5.44	0.00	43.28	210.36	0.0221
10259	4.51	8.04	8.04			4457.58	13228.33	0.13	-3401.83	-13228.33	0.13					
				SLE Rare		2522.10			0.00			0.00	20.41	789.19	162.37	
				SLE Freq.		2691.23			0.00			0.00	21.77	842.12	173.25	0.0182

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

	SLE Q.P.	2691.71		0.00		0.00	21.78	842.27	173.29	0.0182
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Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 366 10259 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	2401.58	8701.28	50188.84	61680.39	66.40	6941.10	4173.10	ø 10 2br. 10.0'
0.63	4.01	3.39	2409.59	8701.28	50188.84	41120.26	66.40	6941.10	4173.10	ø 10 2br. 15.0'
4.01	4.51	0.50	2734.59	8701.28	50188.84	61680.39	66.40	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 217 Nodi 357 10050

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
357	0.13	8.04	8.04			5496.06	13228.33	0.13	0.00	-13228.33	0.13					
				SLE Rare		2972.21			0.00			0.00	24.05	930.04	191.34	
				SLE Freq.		2766.00			0.00			0.00	22.38	865.51	178.07	0.0187
				SLE Q.P.		2697.26			0.00			0.00	21.82	844.00	173.64	0.0182
Camp.	2.35	8.04	8.04	650.00	896.52	853.20	13228.33	0.13	-2557.93	-13228.33	0.13					
				SLE Rare		0.00			-689.63			5.58	0.00	44.40	215.79	
				SLE Freq.		0.00			-689.63			5.58	0.00	44.40	215.79	0.0226
				SLE Q.P.		0.00			-689.63			5.58	0.00	44.40	215.79	0.0226
10050	4.57	8.04	8.04			1863.49	13228.33	0.13	-5673.82	-13228.33	0.13					
				SLE Rare		0.00			-1442.18			11.67	0.00	92.84	451.28	
				SLE Freq.		0.00			-879.60			7.12	0.00	56.63	275.24	0.0289
				SLE Q.P.		0.00			-692.07			5.60	0.00	44.55	216.56	0.0227

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 357 10050 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	3623.31	8701.28	50188.84	61680.39	296.75	6941.10	4173.10	ø 10 2br. 10.0'
0.63	4.07	3.45	3373.31	8701.28	50188.84	41120.26	296.75	6941.10	4173.10	ø 10 2br. 15.0'
4.07	4.57	0.50	1649.47	8701.28	50188.84	61680.39	296.75	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 218 Nodi 266 8267

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
266	0.13	4.54	7.57			0.00	6122.58	0.14	-6776.84	-9538.68	0.16					
				SLE Rare		0.00			-4444.89			59.37	0.00	309.33	1822.33	
				SLE Freq.		0.00			-4208.93			56.22	0.00	292.91	1725.59	0.1663
				SLE Q.P.		0.00			-4130.25			55.16	0.00	287.44	1693.33	0.1632
Camp.	2.32	6.03	6.03	520.00	699.15	2429.48	7803.06	0.15	-886.45	-7803.06	0.15					
				SLE Rare		475.96			-537.81			7.66	6.78	258.12	291.65	
				SLE Freq.		407.68			-537.81			7.66	5.81	221.09	291.65	0.0316
				SLE Q.P.		384.92			-537.81			7.66	5.48	208.75	291.65	0.0316
8267	4.51	10.05	6.03			10811.11	12344.55	0.18	0.00	-7819.74	0.15					
				SLE Rare		7326.67			0.00			0.00	86.26	2433.98	661.66	
				SLE Freq.		6954.15			0.00			0.00	81.87	2310.23	628.02	0.0453
				SLE Q.P.		6829.96			0.00			0.00	80.41	2268.97	616.80	0.0445

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 266 8267 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	3075.16	7589.68	38935.73	63800.94	66.70	5004.46	2842.47	ø 10 2br. 7.5'
0.52	4.11	3.59	4940.99	7037.02	38935.73	38280.56	66.70	5004.46	2832.32	ø 10 2br. 12.5'
4.11	4.51	0.40	5148.99	7037.02	38935.73	63800.94	66.70	5004.46	3776.43	ø 10 2br. 7.5'

Travata: Travata 219 Nodi 272 8474

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
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**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
272	0.13	4.54	7.57			0.00	6122.58	0.14	-6584.99	-9538.68	0.16					
				SLE Rare		0.00			-4323.21			57.74	0.00	300.87	1772.45	
				SLE Freq.		0.00			-4095.00			54.69	0.00	284.98	1678.88	0.1618
				SLE Q.P.		0.00			-4018.91			53.68	0.00	279.69	1647.69	0.1588
Camp.	2.30	6.03	6.03	520.00	685.24	2281.60	7803.06	0.15	-886.35	-7803.06	0.15					
				SLE Rare		407.46			-527.11			7.51	5.81	220.97	285.85	
				SLE Freq.		349.13			-527.11			7.51	4.97	189.33	285.85	0.0310
				SLE Q.P.		329.69			-527.11			7.51	4.70	178.79	285.85	0.0310
8474	4.47	10.05	6.03			10357.00	12344.55	0.18	0.00	-7819.74	0.15					
				SLE Rare		7027.41			0.00			0.00	82.73	2334.56	634.64	
				SLE Freq.		6682.54			0.00			0.00	78.67	2219.99	603.49	0.0435
				SLE Q.P.		6567.56			0.00			0.00	77.32	2181.80	593.11	0.0428

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
Trave 272 8474 Sez. 1 Rett. 40x40 [cm]										
0.13	0.52	0.40	2981.24	7589.68	38935.73	63800.94	73.15	5004.46	2842.47	ø 10 2br. 7.5'
0.52	4.07	3.54	4822.95	7037.02	38935.73	38280.56	73.15	5004.46	2832.32	ø 10 2br. 12.5'
4.07	4.47	0.40	5030.95	7037.02	38935.73	63800.94	73.15	5004.46	3776.43	ø 10 2br. 7.5'

Travata: Travata 22 Nodi 205 5856

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
205	0.13	6.03	8.04			0.00	7812.95	0.15	-7616.73	-10079.37	0.16					
				SLE Rare		0.00			-5073.16			64.72	0.00	452.28	2086.93	
				SLE Freq.		0.00			-4808.26			61.34	0.00	428.66	1977.96	0.2037
				SLE Q.P.		0.00			-4719.21			60.21	0.00	420.72	1941.32	0.1980
Camp.	1.77	6.03	6.03	520.00	409.58	2569.04	7803.06	0.15	-1707.78	-7803.06	0.15					
				SLE Rare		242.35			-315.06			4.49	3.45	131.42	170.86	
				SLE Freq.		220.99			-315.06			4.49	3.15	119.84	170.86	0.0185
				SLE Q.P.		213.89			-315.06			4.49	3.05	116.00	170.86	0.0185
5856	3.42	8.04	6.03			9807.38	10079.37	0.16	0.00	-7812.94	0.15					
				SLE Rare		6648.66			0.00			0.00	84.82	2735.03	592.74	
				SLE Freq.		6341.05			0.00			0.00	80.90	2608.49	565.31	0.0480
				SLE Q.P.		6237.82			0.00			0.00	79.58	2566.03	556.11	0.0472

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
Trave 205 5856 Sez. 1 Rett. 40x40 [cm]										
0.13	0.52	0.40	4630.03	7745.24	38935.73	63800.94	149.37	5004.46	3304.37	ø 10 2br. 7.5'
0.52	3.03	2.50	5930.03	7037.02	38935.73	38280.56	149.37	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	6138.03	7037.02	38935.73	63800.94	149.37	5004.46	3304.37	ø 10 2br. 7.5'

Travata: Travata 220 Nodi 278 8651

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
278	0.13	6.03	6.03			0.00	7803.06	0.15	-2815.88	-7803.06	0.15					
				SLE Rare		0.00			-1818.67			25.91	0.00	155.53	986.27	
				SLE Freq.		0.00			-1731.24			24.67	0.00	148.05	938.86	0.1018
				SLE Q.P.		0.00			-1702.05			24.25	0.00	145.55	923.03	0.1001
Camp.	2.33	6.03	6.03	520.00	705.27	967.57	7803.06	0.15	-705.27	-7803.06	0.15					
				SLE Rare		58.85			-542.51			7.73	0.84	46.39	294.21	
				SLE Freq.		41.90			-542.51			7.73	0.60	46.39	294.21	0.0319
				SLE Q.P.		36.25			-542.51			7.73	0.52	46.39	294.21	0.0319
8651	4.53	6.03	6.03			5641.88	7803.06	0.15	0.00	-7803.06	0.15					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

	SLE Rare	3884.09		0.00		0.00	55.34	2106.35	332.15	
	SLE Freq.	3762.78		0.00		0.00	53.62	2040.57	321.78	0.0349
	SLE Q.P.	3722.27		0.00		0.00	53.04	2018.60	318.31	0.0345

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 278 8651 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	980.38	7037.02	38935.73	63800.94	194.54	5004.46	2832.32	ø 10 2br. 7.5'
0.52	4.13	3.61	2856.74	7037.02	38935.73	38280.56	194.54	5004.46	2832.32	ø 10 2br. 12.5'
4.13	4.53	0.40	3064.74	7037.02	38935.73	63800.94	194.54	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 221 Nodi 257 7877

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
257	0.12	4.54	5.68			0.00	6105.08	0.14	-4161.14	-7386.30	0.14					
				SLE Rare		0.00			-2696.02			40.19	0.00	179.19	1456.65	
				SLE Freq.		0.00			-2542.73			37.91	0.00	169.00	1373.83	0.1537
				SLE Q.P.		0.00			-2491.61			37.14	0.00	165.60	1346.21	0.1506
Camp.	2.35	6.03	6.03	520.00	717.84	1884.18	7803.06	0.15	-717.84	-7803.06	0.15					
				SLE Rare		443.24			-552.19			7.87	6.32	240.37	299.45	
				SLE Freq.		384.27			-552.19			7.87	5.48	208.39	299.45	0.0325
				SLE Q.P.		364.62			-552.19			7.87	5.20	197.73	299.45	0.0325
7877	4.57	8.04	6.03			8175.99	10079.37	0.16	0.00	-7812.94	0.15					
				SLE Rare		5566.95			0.00			0.00	71.02	2290.06	496.30	
				SLE Freq.		5295.72			0.00			0.00	67.56	2178.48	472.12	0.0401
				SLE Q.P.		5205.28			0.00			0.00	66.41	2141.28	464.06	0.0394

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 257 7877 Sez. 1 Rett. 40x40 [cm]</b>										
0.12	0.52	0.40	1823.62	6895.68	38935.73	63800.94	124.55	5004.46	2398.29	ø 10 2br. 7.5'
0.52	4.17	3.65	3721.49	7037.02	38935.73	38280.56	124.55	5004.46	2832.32	ø 10 2br. 12.5'
4.17	4.57	0.40	3929.49	7037.02	38935.73	63800.94	124.55	5004.46	3304.37	ø 10 2br. 7.5'

Travata: Travata 222 Nodi 263 8079

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
263	0.13	4.54	5.68			0.00	6105.08	0.14	-5992.34	-7386.30	0.14					
				SLE Rare		0.00			-3919.27			58.43	0.00	260.49	2117.57	
				SLE Freq.		0.00			-3703.62			55.21	0.00	246.16	2001.06	0.2239
				SLE Q.P.		0.00			-3631.67			54.14	0.00	241.38	1962.18	0.2195
Camp.	2.33	6.03	6.03	520.00	706.89	2266.86	7803.06	0.15	-851.22	-7803.06	0.15					
				SLE Rare		468.67			-543.76			7.75	6.68	254.16	294.89	
				SLE Freq.		398.48			-543.76			7.75	5.68	216.09	294.89	0.0320
				SLE Q.P.		375.08			-543.76			7.75	5.34	203.41	294.89	0.0320
8079	4.54	10.05	6.03			10035.66	12344.55	0.18	0.00	-7819.74	0.15					
				SLE Rare		6809.08			0.00			0.00	80.16	2262.03	614.92	
				SLE Freq.		6453.04			0.00			0.00	75.97	2143.75	582.76	0.0420
				SLE Q.P.		6334.30			0.00			0.00	74.57	2104.30	572.04	0.0412

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 263 8079 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.53	0.40	2691.81	6895.68	38935.73	63800.94	77.51	5004.46	2398.29	ø 10 2br. 7.5'
0.53	4.14	3.61	4570.96	7037.02	38935.73	38280.56	77.51	5004.46	2832.32	ø 10 2br. 12.5'
4.14	4.54	0.40	4778.96	7037.02	38935.73	63800.94	77.51	5004.46	3776.43	ø 10 2br. 7.5'



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Travata: Travata 24 Nodi 207 5861

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
207	0.13	6.03	8.04			0.00	7812.95	0.15	-7188.46	-10079.37	0.16					
				SLE Rare		0.00			-4781.72			61.01	0.00	426.30	1967.04	
				SLE Freq.		0.00			-4529.50			57.79	0.00	403.81	1863.29	0.1857
				SLE Q.P.		0.00			-4444.45			56.70	0.00	396.23	1828.30	0.1803
Camp.	1.77	6.03	6.03	520.00	409.58	2532.96	7803.06	0.15	-1560.83	-7803.06	0.15					
				SLE Rare		280.17			-315.06			4.49	3.99	151.94	170.86	
				SLE Freq.		256.29			-315.06			4.49	3.65	138.99	170.86	0.0185
				SLE Q.P.		248.37			-315.06			4.49	3.54	134.69	170.86	0.0185
5861	3.42	8.04	6.03			9489.97	10079.37	0.16	0.00	-7812.94	0.15					
				SLE Rare		6432.89			0.00			0.00	82.07	2646.27	573.50	
				SLE Freq.		6132.91			0.00			0.00	78.24	2522.87	546.76	0.0464
				SLE Q.P.		6032.00			0.00			0.00	76.96	2481.36	537.76	0.0457

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 207 5861 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	4404.07	7745.24	38935.73	63800.94	158.96	5004.46	3304.37	ø 10 2br. 7.5'
0.52	3.03	2.50	5704.07	7037.02	38935.73	38280.56	158.96	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	5912.07	7037.02	38935.73	63800.94	158.96	5004.46	3304.37	ø 10 2br. 7.5'

Travata: Travata 27 Nodi 8904 303

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
8904	0.13	8.04	8.04			9663.47	13228.33	0.13	0.00	-13228.33	0.13					
				SLE Rare		6423.71			0.00			0.00	51.97	2010.05	413.54	
				SLE Freq.		6051.95			0.00			0.00	48.97	1893.72	389.61	0.0408
				SLE Q.P.		5926.31			0.00			0.00	47.95	1854.41	381.52	0.0400
Camp.	1.77	8.04	8.04	650.00	511.98	3936.97	13228.33	0.13	-567.34	-13228.33	0.13					
				SLE Rare		1052.27			-393.83			3.19	8.51	329.27	123.23	
				SLE Freq.		1015.64			-393.83			3.19	8.22	317.81	123.23	0.0129
				SLE Q.P.		1003.36			-393.83			3.19	8.12	313.96	123.23	0.0129
303	3.42	8.04	8.04			51.77	13228.33	0.13	-4698.10	-13228.33	0.13					
				SLE Rare		0.00			-2955.64			23.91	0.00	190.28	924.85	
				SLE Freq.		0.00			-2657.14			21.50	0.00	171.06	831.45	0.0872
				SLE Q.P.		0.00			-2556.08			20.68	0.00	164.55	799.83	0.0839

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 8904 303 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	5424.49	8701.28	50188.84	61680.39	81.26	6941.10	4173.10	ø 10 2br. 10.0'
0.63	2.92	2.30	5099.49	8701.28	50188.84	41120.26	81.26	6941.10	4173.10	ø 10 2br. 15.0'
2.92	3.42	0.50	3604.49	8701.28	50188.84	61680.39	81.26	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 277 Nodi 163 5021

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
163	0.13	6.03	6.03			2167.16	7803.06	0.15	-1392.08	-7803.06	0.15					
				SLE Rare		926.19			0.00			0.00	13.20	502.28	79.20	
				SLE Freq.		867.18			0.00			0.00	12.36	470.27	74.16	0.0080
				SLE Q.P.		847.50			0.00			0.00	12.08	459.60	72.48	0.0079
Camp.	2.33	6.03	6.03	520.00	706.89	0.00	7803.06	0.15	-1758.59	-7803.06	0.15					
				SLE Rare		0.00			-1118.18			15.93	0.00	95.62	606.39	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-1078.22			15.36	0.00	92.21	584.73	0.0634
				SLE Q.P.	0.00			-1065.93			15.19	0.00	91.15	578.06	0.0627
5021	4.54	6.03	6.03			2339.90	7803.06	0.15	-2828.81	-7803.06	0.15				
				SLE Rare	0.00			-1186.93			16.91	0.00	101.50	643.67	
				SLE Freq.	0.00			-1054.34			15.02	0.00	90.16	571.77	0.0620
				SLE Q.P.	0.00			-1010.15			14.39	0.00	86.38	547.81	0.0594

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 163 5021 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.53	0.40	2014.66	7037.02	38935.73	63800.94	90.17	5004.46	2832.32	ø 10 2br. 7.5'
0.53	4.14	3.61	1854.66	7037.02	38935.73	38280.56	90.17	5004.46	2832.32	ø 10 2br. 12.5'
4.14	4.54	0.40	1727.38	7037.02	38935.73	63800.94	90.17	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 278 Nodi 166 5209

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
166	0.13	6.03	6.03			1376.69	7803.06	0.15	-1521.95	-7803.06	0.15					
				SLE Rare		433.06			0.00			0.00	6.17	234.85	37.03	
				SLE Freq.		397.42			0.00			0.00	5.66	215.52	33.99	0.0037
				SLE Q.P.		385.54			0.00			0.00	5.49	209.08	32.97	0.0036
Camp.	2.32	6.03	6.03	520.00	699.15	0.00	7803.06	0.15	-1534.34	-7803.06	0.15					
				SLE Rare		0.00			-1063.63			15.16	0.00	90.96	576.81	
				SLE Freq.		0.00			-1030.47			14.68	0.00	88.12	558.83	0.0606
				SLE Q.P.		0.00			-1019.43			14.53	0.00	87.18	552.84	0.0600
5209	4.51	6.03	6.03			2484.59	7803.06	0.15	-1906.13	-7803.06	0.15					
				SLE Rare		0.00			-609.34			8.68	0.00	52.11	330.45	
				SLE Freq.		0.00			-507.07			7.23	0.00	43.36	274.99	0.0298
				SLE Q.P.		0.00			-472.98			6.74	0.00	40.45	256.50	0.0278

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 166 5209 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1620.22	7037.02	38935.73	63800.94	84.33	5004.46	2832.32	ø 10 2br. 7.5'
0.52	4.11	3.59	1630.67	7037.02	38935.73	38280.56	84.33	5004.46	2832.32	ø 10 2br. 12.5'
4.11	4.51	0.40	1790.67	7037.02	38935.73	63800.94	84.33	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 279 Nodi 172 5416

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
172	0.13	6.03	6.03			750.65	7803.06	0.15	-1091.80	-7803.06	0.15					
				SLE Rare		254.07			0.00			0.00	3.62	137.78	21.73	
				SLE Freq.		238.53			0.00			0.00	3.40	129.36	20.40	0.0022
				SLE Q.P.		233.35			0.00			0.00	3.32	126.55	19.96	0.0022
Camp.	2.30	6.03	6.03	520.00	685.24	0.00	7803.06	0.15	-1397.72	-7803.06	0.15					
				SLE Rare		0.00			-1009.96			14.39	0.00	86.37	547.71	
				SLE Freq.		0.00			-981.39			13.98	0.00	83.92	532.21	0.0577
				SLE Q.P.		0.00			-971.86			13.85	0.00	83.11	527.05	0.0572
5416	4.47	6.03	6.03			1952.56	7803.06	0.15	-1184.52	-7803.06	0.15					
				SLE Rare		0.00			-352.10			5.02	0.00	30.11	190.94	
				SLE Freq.		0.00			-280.36			3.99	0.00	23.98	152.04	0.0165
				SLE Q.P.		0.00			-256.45			3.65	0.00	21.93	139.07	0.0151

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

*Parcheggio interrato - Tabulato di calcolo*

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 172 5416 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1279.04	7037.02	38935.73	63800.94	91.17	5004.46	2832.32	ø 10 2br. 7.5'
0.52	4.07	3.54	1399.42	7037.02	38935.73	38280.56	91.17	5004.46	2832.32	ø 10 2br. 12.5'
4.07	4.47	0.40	1559.42	7037.02	38935.73	63800.94	91.17	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 28 Nodi 8909 304

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
8909	0.13	8.04	8.04			10519.07	13228.33	0.13	0.00	-13228.33	0.13					
					SLE Rare	6998.52			0.00			0.00	56.62	2189.92	450.55	
					SLE Freq.	6614.24			0.00			0.00	53.52	2069.67	425.81	0.0446
					SLE Q.P.	6484.93			0.00			0.00	52.47	2029.21	417.48	0.0438
Camp.	1.77	8.04	8.04	650.00	511.98	4204.78	13228.33	0.13	-836.72	-13228.33	0.13					
					SLE Rare	1052.59			-393.83			3.19	8.52	329.37	123.23	
					SLE Freq.	1018.88			-393.83			3.19	8.24	318.82	123.23	0.0129
					SLE Q.P.	1007.59			-393.83			3.19	8.15	315.29	123.23	0.0129
304	3.42	8.04	8.04			0.00	13228.33	0.13	-5555.28	-13228.33	0.13					
					SLE Rare	0.00			-3529.81			28.56	0.00	227.24	1104.52	
					SLE Freq.	0.00			-3212.95			26.00	0.00	206.84	1005.37	0.1054
					SLE Q.P.	0.00			-3106.23			25.13	0.00	199.97	971.97	0.1019

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 8909 304 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	5943.52	8701.28	50188.84	61680.39	43.96	6941.10	4173.10	ø 10 2br. 10.0'
0.63	2.92	2.30	5618.52	8701.28	50188.84	41120.26	43.96	6941.10	4173.10	ø 10 2br. 15.0'
2.92	3.42	0.50	4123.52	8701.28	50188.84	61680.39	43.96	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 280 Nodi 178 5593

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
178	0.13	6.03	6.03			1104.25	7803.06	0.15	-482.84	-7803.06	0.15					
					SLE Rare	651.13			0.00			0.00	9.28	353.11	55.68	
					SLE Freq.	643.79			0.00			0.00	9.17	349.13	55.05	0.0060
					SLE Q.P.	641.37			0.00			0.00	9.14	347.82	54.85	0.0059
Camp.	2.33	6.03	6.03	520.00	705.27	0.00	7803.06	0.15	-1172.81	-7803.06	0.15					
					SLE Rare	0.00			-828.16			11.80	0.00	70.82	449.12	
					SLE Freq.	0.00			-811.73			11.57	0.00	69.42	440.20	0.0477
					SLE Q.P.	0.00			-806.25			11.49	0.00	68.95	437.23	0.0474
5593	4.53	6.03	6.03			1321.14	7803.06	0.15	-1056.45	-7803.06	0.15					
					SLE Rare	0.00			-302.65			4.31	0.00	25.88	164.13	
					SLE Freq.	0.00			-258.80			3.69	0.00	22.13	140.35	0.0152
					SLE Q.P.	0.00			-244.20			3.48	0.00	20.88	132.43	0.0144

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 178 5593 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1429.98	7037.02	38935.73	63800.94	237.22	5004.46	2832.32	ø 10 2br. 7.5'
0.52	4.13	3.61	1221.98	7037.02	38935.73	38280.56	237.22	5004.46	2832.32	ø 10 2br. 12.5'
4.13	4.53	0.40	1251.47	7037.02	38935.73	63800.94	237.22	5004.46	2832.32	ø 10 2br. 7.5'

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Travata: Travata 281 Nodi 157 4819

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
157	0.12	6.03	6.03			3010.82	7803.06	0.15	-535.50	-7803.06	0.15					
				SLE Rare		1918.45			0.00			0.00	27.34	1040.38	164.06	
				SLE Freq.		1842.97			0.00			0.00	26.26	999.45	157.60	0.0171
				SLE Q.P.		1817.81			0.00			0.00	25.90	985.80	155.45	0.0169
Camp.	2.35	6.03	6.03	520.00	717.84	0.00	7803.06	0.15	-2152.04	-7803.06	0.15					
				SLE Rare		0.00			-1188.29			16.93	0.00	101.62	644.41	
				SLE Freq.		0.00			-1148.50			16.36	0.00	98.22	622.83	0.0675
				SLE Q.P.		0.00			-1135.23			16.18	0.00	97.08	615.64	0.0668
4819	4.57	6.03	6.03			1196.29	7803.06	0.15	-3747.08	-7803.06	0.15					
				SLE Rare		0.00			-2284.46			32.55	0.00	195.36	1238.87	
				SLE Freq.		0.00			-2139.11			30.48	0.00	182.93	1160.04	0.1258
				SLE Q.P.		0.00			-2090.65			29.79	0.00	178.78	1133.77	0.1230

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 157 4819 Sez. 1 Rett. 40x40 [cm]</b>										
0.12	0.52	0.40	2489.71	7037.02	38935.73	63800.94	198.17	5004.46	2832.32	ø 10 2br. 7.5'
0.52	4.17	3.65	2281.71	7037.02	38935.73	38280.56	198.17	5004.46	2832.32	ø 10 2br. 12.5'
4.17	4.57	0.40	1237.32	7037.02	38935.73	63800.94	198.17	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 29 Nodi 8914 305

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
8914	0.13	8.04	8.04			10493.20	13228.33	0.13	0.00	-13228.33	0.13					
				SLE Rare		6987.36			0.00			0.00	56.53	2186.42	449.83	
				SLE Freq.		6624.07			0.00			0.00	53.59	2072.75	426.44	0.0447
				SLE Q.P.		6501.72			0.00			0.00	52.61	2034.46	418.57	0.0439
Camp.	1.77	8.04	8.04	650.00	511.98	4172.75	13228.33	0.13	-874.38	-13228.33	0.13					
				SLE Rare		1029.47			-393.83			3.19	8.33	322.13	123.23	
				SLE Freq.		1001.87			-393.83			3.19	8.11	313.50	123.23	0.0129
				SLE Q.P.		992.61			-393.83			3.19	8.03	310.60	123.23	0.0129
305	3.42	8.04	8.04			0.00	13228.33	0.13	-5599.11	-13228.33	0.13					
				SLE Rare		0.00			-3564.88			28.84	0.00	229.50	1115.49	
				SLE Freq.		0.00			-3256.82			26.35	0.00	209.67	1019.10	0.1069
				SLE Q.P.		0.00			-3152.98			25.51	0.00	202.98	986.60	0.1034

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 8914 305 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	5948.96	8701.28	50188.84	61680.39	43.75	6941.10	4173.10	ø 10 2br. 10.0'
0.63	2.92	2.30	5623.96	8701.28	50188.84	41120.26	43.75	6941.10	4173.10	ø 10 2br. 15.0'
2.92	3.42	0.50	4128.96	8701.28	50188.84	61680.39	43.75	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 3 Nodi 148 4373

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
148	0.13	6.03	6.03			3730.23	7803.06	0.15	0.00	-7803.06	0.15					
				SLE Rare		2721.67			0.00			0.00	38.78	1475.97	232.75	
				SLE Freq.		2648.67			0.00			0.00	37.74	1436.38	226.50	0.0246
				SLE Q.P.		2624.76			0.00			0.00	37.40	1423.42	224.46	0.0243
Camp.	2.13	6.03	6.03	520.00	587.03	192.00	7803.06	0.15	-1462.07	-7803.06	0.15					
				SLE Rare		0.00			-612.72			8.73	0.00	52.40	332.28	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-602.62			8.59	0.00	51.53	326.80	0.0354
				SLE Q.P.	0.00			-599.32			8.54	0.00	51.25	325.02	0.0352
4373	4.13	6.03	6.03		0.00	7803.06	0.15	-3244.53	-7803.06	0.15					
				SLE Rare	0.00			-2279.16			32.48	0.00	194.90	1235.99	
				SLE Freq.	0.00			-2183.72			31.12	0.00	186.74	1184.24	0.1284
				SLE Q.P.	0.00			-2152.49			30.67	0.00	184.07	1167.30	0.1266

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 148 4373 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	2783.69	7037.02	38935.73	63800.94	298.86	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.72	3.20	2575.69	7037.02	38935.73	38280.56	298.86	5004.46	2832.32	ø 10 2br. 12.5'
3.72	4.13	0.40	911.69	7037.02	38935.73	63800.94	298.86	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 301 Nodi 333 9432

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
333	0.13	8.04	8.04			1235.51	13228.33	0.13	-288.21	-13228.33	0.13					
				SLE Rare		156.89			0.00			0.00	1.27	49.09	10.10	
				SLE Freq.		174.75			0.00			0.00	1.41	54.68	11.25	0.0012
				SLE Q.P.		185.12			0.00			0.00	1.50	57.93	11.92	0.0012
Camp.	2.13	8.04	8.04	650.00	733.79	224.95	13228.33	0.13	-733.79	-13228.33	0.13					
				SLE Rare		0.00			-564.45			4.57	0.00	36.34	176.62	
				SLE Freq.		0.00			-564.45			4.57	0.00	36.34	176.62	0.0185
				SLE Q.P.		0.00			-564.45			4.57	0.00	36.34	176.62	0.0185
9432	4.13	8.04	8.04			191.40	13228.33	0.13	-128.26	-13228.33	0.13					
				SLE Rare		128.92			0.00			0.00	1.04	40.34	8.30	
				SLE Freq.		131.77			0.00			0.00	1.07	41.23	8.48	0.0009
				SLE Q.P.		131.92			0.00			0.00	1.07	41.28	8.49	0.0009

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 333 9432 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	1599.17	8701.28	50188.84	61680.39	963.56	6941.10	4173.10	ø 10 2br. 10.0'
0.63	3.63	3.00	2113.75	8701.28	50188.84	41120.26	963.56	6941.10	4173.10	ø 10 2br. 15.0'
3.63	4.13	0.50	404.70	8701.28	50188.84	61680.39	963.56	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 304 Nodi 351 9938

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
351	0.13	8.04	8.04			858.35	13228.33	0.13	0.00	-13228.33	0.13					
				SLE Rare		589.91			0.00			0.00	4.77	184.59	37.98	
				SLE Freq.		591.88			0.00			0.00	4.79	185.21	38.10	0.0040
				SLE Q.P.		591.80			0.00			0.00	4.79	185.18	38.10	0.0040
Camp.	2.36	8.04	8.04	650.00	905.14	642.01	13228.33	0.13	-905.04	-13228.33	0.13					
				SLE Rare		364.25			-696.18			5.63	2.95	113.98	217.84	
				SLE Freq.		351.55			-696.18			5.63	2.84	110.00	217.84	0.0228
				SLE Q.P.		347.34			-696.18			5.63	2.81	108.69	217.84	0.0228
9938	4.60	8.04	8.04			494.24	13228.33	0.13	0.00	-13228.33	0.13					
				SLE Rare		284.35			0.00			0.00	2.30	88.98	18.31	
				SLE Freq.		277.13			0.00			0.00	2.24	86.72	17.84	0.0019
				SLE Q.P.		274.74			0.00			0.00	2.22	85.97	17.69	0.0019



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 351 9938 Sez. 5 Rett. 40x50 [cm]</b>										
0.12	0.62	0.50	678.01	8701.28	50188.84	61680.39	1877.58	6941.10	4173.10	ø 10 2br. 10.0'
0.62	4.10	3.47	640.89	8701.28	50188.84	41120.26	1877.58	6941.10	4173.10	ø 10 2br. 15.0'
4.10	4.60	0.50	715.06	8701.28	50188.84	61680.39	1877.58	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 31 Nodi 8919 307

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
8919	0.13	8.04	8.04			9750.93	13228.33	0.13	0.00	-13228.33	0.13					
					SLE Rare	6485.60			0.00			0.00	52.47	2029.42	417.53	
					SLE Freq.	6174.14			0.00			0.00	49.95	1931.96	397.48	0.0417
					SLE Q.P.	6068.42			0.00			0.00	49.10	1898.88	390.67	0.0410
Camp.	1.77	8.04	8.04	650.00	511.98	3791.77	13228.33	0.13	-925.18	-13228.33	0.13					
					SLE Rare	883.57			-393.83			3.19	7.15	276.48	123.23	
					SLE Freq.	869.50			-393.83			3.19	7.04	272.08	123.23	0.0129
					SLE Q.P.	864.78			-393.83			3.19	7.00	270.60	123.23	0.0129
307	3.42	8.04	8.04			0.00	13228.33	0.13	-5288.61	-13228.33	0.13					
					SLE Rare	0.00			-3354.93			27.14	0.00	215.98	1049.80	
					SLE Freq.	0.00			-3071.63			24.85	0.00	197.74	961.15	0.1008
					SLE Q.P.	0.00			-2975.35			24.07	0.00	191.55	931.02	0.0976

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 8919 307 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	5629.94	8701.28	50188.84	61680.39	97.52	6941.10	4173.10	ø 10 2br. 10.0'
0.63	2.92	2.30	5304.94	8701.28	50188.84	41120.26	97.52	6941.10	4173.10	ø 10 2br. 15.0'
2.92	3.42	0.50	3809.94	8701.28	50188.84	61680.39	97.52	6941.10	4173.10	ø 10 2br. 10.0'

Travata: Travata 334 Nodi 101 2978 2980 2992 3032 3038 3088 3122 111

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
101	0.12	15.62	6.49			15030.18	17260.20	0.28	-25.49	-8203.77	0.21					
					SLE Rare	10158.30			-17.25			0.26	115.63	2364.60	543.19	
					SLE Freq.	9221.24			-15.68			0.23	104.97	2146.48	493.08	0.0400
					SLE Q.P.	8908.88			-15.16			0.22	101.41	2073.77	476.38	0.0387
Camp.	0.43	14.24	9.42	5320.00	178.82	15030.18	15899.04	0.26	-168.10	-11119.63	0.22					
					SLE Rare	7246.03			-113.75			1.44	82.12	1846.07	521.57	
					SLE Freq.	6574.94			-103.42			1.31	74.52	1675.10	473.27	0.0374
					SLE Q.P.	6351.25			-99.98			1.26	71.98	1618.11	457.17	0.0362
2978	0.73	13.08	9.42			11864.06	14757.60	0.25	0.00	-11117.74	0.22					
					SLE Rare	4666.77			0.00			0.00	54.46	1288.39	331.07	
					SLE Freq.	4231.42			0.00			0.00	49.38	1168.20	300.18	0.0253
					SLE Q.P.	4086.31			0.00			0.00	47.69	1128.13	289.89	0.0245
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
2978	0.00	12.63	9.42			6664.46	14307.31	0.24	0.00	-11116.93	0.22					
					SLE Rare	4499.08			0.00			0.00	53.16	1284.49	316.97	
					SLE Freq.	4077.96			0.00			0.00	48.18	1164.26	287.30	0.0249
					SLE Q.P.	3937.58			0.00			0.00	46.53	1124.18	277.41	0.0241
Camp.	0.37	11.17	9.42	5320.00	183.71	6664.46	12854.87	0.23	-593.13	-11113.99	0.22					
					SLE Rare	1800.02			-124.31			1.61	22.23	577.59	123.26	
					SLE Freq.	1625.83			-113.02			1.47	20.08	521.70	111.33	0.0107
					SLE Q.P.	1567.77			-109.26			1.42	19.37	503.07	107.36	0.0103
2980	0.74	9.71	9.42			2835.67	11397.24	0.22	-593.13	-11110.44	0.22					
					SLE Rare	0.00			-408.90			5.37	0.00	26.38	154.31	

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00				-379.77			4.99	0.00	24.50	143.31	0.0161
				SLE Q.P.	0.00				-369.75			4.86	0.00	23.86	139.53	0.0157
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
2980	0.00	9.42	9.42			0.00	11109.65	0.22	-3550.92	-11109.65	0.22					
				SLE Rare	0.00				-642.49			8.46	0.00	41.73	242.37	
				SLE Freq.	0.00				-592.57			7.81	0.00	38.48	223.54	0.0251
				SLE Q.P.	0.00				-575.63			7.58	0.00	37.38	217.15	0.0244
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5169.04	-11109.65	0.22					
				SLE Rare	0.00				-2308.96			30.42	0.00	149.95	871.04	
				SLE Freq.	0.00				-2106.11			27.74	0.00	136.78	794.51	0.0894
				SLE Q.P.	0.00				-2038.26			26.85	0.00	132.37	768.92	0.0865
2992	0.72	9.42	9.42			0.00	11109.65	0.22	-5169.04	-11109.65	0.22					
				SLE Rare	0.00				-3502.75			46.14	0.00	227.48	1321.39	
				SLE Freq.	0.00				-3189.90			42.02	0.00	207.16	1203.37	0.1353
				SLE Q.P.	0.00				-3085.46			40.65	0.00	200.38	1163.97	0.1309
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
2992	0.00	9.42	9.42			0.00	11109.65	0.22	-6532.42	-11109.65	0.22					
				SLE Rare	0.00				-3669.95			48.35	0.00	238.34	1384.46	
				SLE Freq.	0.00				-3342.11			44.03	0.00	217.05	1260.79	0.1418
				SLE Q.P.	0.00				-3232.70			42.59	0.00	209.94	1219.51	0.1372
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6853.37	-11109.65	0.22					
				SLE Rare	0.00				-4400.39			57.97	0.00	285.77	1660.02	
				SLE Freq.	0.00				-4004.61			52.75	0.00	260.07	1510.71	0.1739
				SLE Q.P.	0.00				-3872.62			51.02	0.00	251.50	1460.92	0.1646
3032	0.74	9.42	9.42			0.00	11109.65	0.22	-6853.37	-11109.65	0.22					
				SLE Rare	0.00				-4639.61			61.12	0.00	301.31	1750.26	
				SLE Freq.	0.00				-4220.50			55.60	0.00	274.09	1592.15	0.1892
				SLE Q.P.	0.00				-4080.82			53.76	0.00	265.02	1539.46	0.1793
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
3032	0.00	9.42	9.42			0.00	11109.65	0.22	-6859.11	-11109.65	0.22					
				SLE Rare	0.00				-4643.43			61.17	0.00	301.56	1751.70	
				SLE Freq.	0.00				-4224.02			55.64	0.00	274.32	1593.48	0.1894
				SLE Q.P.	0.00				-4084.26			53.80	0.00	265.24	1540.76	0.1796
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6859.11	-11109.65	0.22					
				SLE Rare	0.00				-4391.43			57.85	0.00	285.19	1656.64	
				SLE Freq.	0.00				-3993.59			52.61	0.00	259.36	1506.55	0.1731
				SLE Q.P.	0.00				-3860.98			50.86	0.00	250.74	1456.53	0.1638
3038	0.74	9.42	9.42			0.00	11109.65	0.22	-6524.43	-11109.65	0.22					
				SLE Rare	0.00				-3649.74			48.08	0.00	237.03	1376.84	
				SLE Freq.	0.00				-3317.51			43.70	0.00	215.45	1251.51	0.1408
				SLE Q.P.	0.00				-3206.77			42.24	0.00	208.26	1209.73	0.1361
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
3038	0.00	9.42	9.42			0.00	11109.65	0.22	-5160.49	-11109.65	0.22					
				SLE Rare	0.00				-3490.90			45.99	0.00	226.71	1316.92	
				SLE Freq.	0.00				-3173.15			41.80	0.00	206.07	1197.05	0.1346
				SLE Q.P.	0.00				-3067.24			40.41	0.00	199.20	1157.09	0.1301
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5160.49	-11109.65	0.22					
				SLE Rare	0.00				-2286.07			30.12	0.00	148.46	862.41	
				SLE Freq.	0.00				-2076.04			27.35	0.00	134.82	783.17	0.0881
				SLE Q.P.	0.00				-2006.02			26.43	0.00	130.28	756.76	0.0851
3088	0.72	9.42	9.42			0.00	11109.65	0.22	-3531.29	-11109.65	0.22					
				SLE Rare	0.00				-608.57			8.02	0.00	39.52	229.58	
				SLE Freq.	0.00				-549.18			7.23	0.00	35.67	207.17	0.0233
				SLE Q.P.	0.00				-529.38			6.97	0.00	34.38	199.71	0.0225
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																

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**Parcheggio interrato - Tabulato di calcolo**

3088	0.00	9.71	9.42			2864.49	11397.24	0.22	-573.00	-11110.44	0.22				
				SLE Rare		0.00			-383.63			5.04	0.00	24.75	144.77
				SLE Freq.		0.00			-344.80			4.53	0.00	22.25	130.11
				SLE Q.P.		0.00			-331.85			4.36	0.00	21.41	125.23
Camp.	0.37	11.17	9.42	5320.00	183.71	6704.97	12854.87	0.23	-573.00	-11113.99	0.22				
				SLE Rare		1833.89			-124.31			1.61	22.65	588.46	125.58
				SLE Freq.		1672.76			-113.02			1.47	20.66	536.76	114.55
				SLE Q.P.		1618.60			-109.26			1.42	19.99	519.38	110.84
3122	0.74	12.63	9.42			6704.97	14307.31	0.24	0.00	-11116.93	0.22				
				SLE Rare		4544.27			0.00			0.00	53.69	1297.39	320.16
				SLE Freq.		4138.55			0.00			0.00	48.90	1181.56	291.57
				SLE Q.P.		4002.78			0.00			0.00	47.30	1142.80	282.01
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3122	0.00	13.08	9.42			11903.19	14757.60	0.25	0.00	-11117.74	0.22				
				SLE Rare		4701.41			0.00			0.00	54.86	1297.95	333.52
				SLE Freq.		4281.09			0.00			0.00	49.96	1181.91	303.71
				SLE Q.P.		4140.47			0.00			0.00	48.32	1143.09	293.73
Camp.	0.30	14.24	9.42	5320.00	178.82	15076.55	15899.04	0.26	-168.10	-11119.63	0.22				
				SLE Rare		7289.93			-113.75			1.44	82.62	1857.25	524.73
				SLE Freq.		6635.80			-103.42			1.31	75.21	1690.60	477.65
				SLE Q.P.		6417.18			-99.98			1.26	72.73	1634.90	461.91
111	0.61	15.62	6.49			15076.55	17260.20	0.28	-25.49	-8203.77	0.21				
				SLE Rare		10211.46			-17.25			0.26	116.24	2376.98	546.04
				SLE Freq.		9293.28			-15.68			0.23	105.79	2163.25	496.94
				SLE Q.P.		8986.57			-15.16			0.22	102.30	2091.85	480.54

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 101 2978 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14963.21	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 2978 2980 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11726.80	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 2980 2992 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7772.42	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 2992 3032 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3916.99	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3032 3038 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3949.90	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3038 3088 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7805.34	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3088 3122 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11759.72	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3122 111 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14996.13	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 335 Nodi 111 3176 3216 3266 3273 3307 3314 3321 120

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
111	0.13	15.62	6.49			15094.24	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare		10207.21			-17.25			0.26	116.19	2375.99	545.81	
				SLE Freq.		9273.07			-15.68			0.23	105.56	2158.54	495.86	0.0402
				SLE Q.P.		8961.69			-15.16			0.22	102.01	2086.06	479.21	0.0389
Camp.	0.43	14.24	9.42	5320.00	178.82	15094.24	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare		7287.37			-113.76			1.44	82.59	1856.60	524.55	
				SLE Freq.		6618.85			-103.42			1.31	75.02	1686.28	476.43	0.0377
				SLE Q.P.		6396.01			-99.98			1.26	72.49	1629.51	460.39	0.0364

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**Parcheggio interrato - Tabulato di calcolo**

3176	0.73	13.08	9.42			11920.84	14757.60	0.25	0.00	-11117.74	0.22				
				SLE Rare		4700.55			0.00			0.00	54.85	1297.71	333.46
				SLE Freq.		4267.39			0.00			0.00	49.80	1178.13	302.73
				SLE Q.P.		4123.01			0.00			0.00	48.11	1138.27	292.49
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3176	0.00	12.63	9.42			6712.13	14307.30	0.24	0.00	-11116.93	0.22				
				SLE Rare		4535.64			0.00			0.00	53.59	1294.93	319.55
				SLE Freq.		4116.98			0.00			0.00	48.65	1175.40	290.05
				SLE Q.P.		3977.43			0.00			0.00	47.00	1135.56	280.22
Camp.	0.37	11.17	9.42	5320.00	183.71	6712.13	12854.87	0.23	-562.85	-11113.99	0.22				
				SLE Rare		1827.34			-124.31			1.61	22.57	586.36	125.13
				SLE Freq.		1655.18			-113.02			1.47	20.45	531.11	113.34
				SLE Q.P.		1597.79			-109.26			1.42	19.74	512.70	109.41
3216	0.74	9.71	9.42			2871.63	11397.24	0.22	-562.85	-11110.44	0.22				
				SLE Rare		0.00			-386.05			5.07	0.00	24.91	145.68
				SLE Freq.		0.00			-356.02			4.68	0.00	22.97	134.35
				SLE Q.P.		0.00			-345.91			4.54	0.00	22.32	130.54
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3216	0.00	9.42	9.42			0.00	11109.65	0.22	-3533.33	-11109.65	0.22				
				SLE Rare		0.00			-617.78			8.14	0.00	40.12	233.05
				SLE Freq.		0.00			-566.88			7.47	0.00	36.82	213.85
				SLE Q.P.		0.00			-549.82			7.24	0.00	35.71	207.42
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5164.69	-11109.65	0.22				
				SLE Rare		0.00			-2294.78			30.23	0.00	149.03	865.69
				SLE Freq.		0.00			-2091.10			27.55	0.00	135.80	788.85
				SLE Q.P.		0.00			-2023.15			26.65	0.00	131.39	763.22
3266	0.72	9.42	9.42			0.00	11109.65	0.22	-5164.69	-11109.65	0.22				
				SLE Rare		0.00			-3499.10			46.09	0.00	227.24	1320.01
				SLE Freq.		0.00			-3185.58			41.96	0.00	206.88	1201.73
				SLE Q.P.		0.00			-3081.04			40.59	0.00	200.09	1162.30
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3266	0.00	9.42	9.42			0.00	11109.65	0.22	-6541.30	-11109.65	0.22				
				SLE Rare		0.00			-3664.87			48.28	0.00	238.01	1382.54
				SLE Freq.		0.00			-3336.29			43.95	0.00	216.67	1258.59
				SLE Q.P.		0.00			-3226.74			42.51	0.00	209.55	1217.27
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6876.04	-11109.65	0.22				
				SLE Rare		0.00			-4406.04			58.04	0.00	286.14	1662.15
				SLE Freq.		0.00			-4009.67			52.82	0.00	260.40	1512.62
				SLE Q.P.		0.00			-3877.57			51.08	0.00	251.82	1462.78
3273	0.74	9.42	9.42			0.00	11109.65	0.22	-6876.04	-11109.65	0.22				
				SLE Rare		0.00			-4655.99			61.33	0.00	302.37	1756.44
				SLE Freq.		0.00			-4236.45			55.81	0.00	275.13	1598.17
				SLE Q.P.		0.00			-4096.66			53.97	0.00	266.05	1545.44
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3273	0.00	9.42	9.42			0.00	11109.65	0.22	-6879.54	-11109.65	0.22				
				SLE Rare		0.00			-4658.24			61.36	0.00	302.52	1757.29
				SLE Freq.		0.00			-4238.36			55.83	0.00	275.25	1598.89
				SLE Q.P.		0.00			-4098.46			53.99	0.00	266.17	1546.12
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6879.54	-11109.65	0.22				
				SLE Rare		0.00			-4416.97			58.19	0.00	286.85	1666.27
				SLE Freq.		0.00			-4018.54			52.94	0.00	260.98	1515.97
				SLE Q.P.		0.00			-3885.83			51.19	0.00	252.36	1465.90
3307	0.74	9.42	9.42			0.00	11109.65	0.22	-6558.64	-11109.65	0.22				
				SLE Rare		0.00			-3684.48			48.54	0.00	239.28	1389.94
				SLE Freq.		0.00			-3352.12			44.16	0.00	217.70	1264.56

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				SLE Q.P.	0.00				-3241.47			42.70	0.00	210.51	1222.82	0.1375
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
3307	0.00	9.42	9.42			0.00	11109.65	0.22	-5203.98	-11109.65	0.22					
				SLE Rare	0.00				-3523.00			46.41	0.00	228.79	1329.02	
				SLE Freq.	0.00				-3205.05			42.22	0.00	208.15	1209.08	0.1360
				SLE Q.P.	0.00				-3099.21			40.83	0.00	201.27	1169.15	0.1315
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5203.98	-11109.65	0.22					
				SLE Rare	0.00				-2327.19			30.66	0.00	151.14	877.92	
				SLE Freq.	0.00				-2117.41			27.89	0.00	137.51	798.78	0.0898
				SLE Q.P.	0.00				-2047.66			26.97	0.00	132.98	772.46	0.0869
3314	0.72	9.42	9.42			0.00	11109.65	0.22	-3585.92	-11109.65	0.22					
				SLE Rare	0.00				-658.71			8.68	0.00	42.78	248.49	
				SLE Freq.	0.00				-600.03			7.90	0.00	38.97	226.36	0.0255
				SLE Q.P.	0.00				-580.67			7.65	0.00	37.71	219.05	0.0246
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
3314	0.00	9.71	9.42			2783.30	11397.24	0.22	-635.00	-11110.44	0.22					
				SLE Rare	0.00				-429.81			5.65	0.00	27.73	162.19	
				SLE Freq.	0.00				-391.62			5.15	0.00	25.27	147.78	0.0166
				SLE Q.P.	0.00				-379.09			4.98	0.00	24.46	143.06	0.0161
Camp.	0.37	11.17	9.42	5320.00	183.71	6609.84	12854.87	0.23	-635.00	-11113.99	0.22					
				SLE Rare	1774.29				-124.31			1.61	21.92	569.34	121.50	
				SLE Freq.	1612.30				-113.02			1.47	19.92	517.36	110.41	0.0106
				SLE Q.P.	1558.30				-109.26			1.42	19.25	500.03	106.71	0.0103
3321	0.74	12.63	9.42			6609.84	14307.31	0.24	0.00	-11116.93	0.22					
				SLE Rare	4473.89				0.00			0.00	52.86	1277.30	315.20	
				SLE Freq.	4067.17				0.00			0.00	48.06	1161.18	286.54	0.0249
				SLE Q.P.	3931.59				0.00			0.00	46.46	1122.47	276.99	0.0240
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
3321	0.00	13.08	9.42			11801.75	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare	4637.56				0.00			0.00	54.12	1280.32	328.99	
				SLE Freq.	4216.39				0.00			0.00	49.20	1164.05	299.12	0.0252
				SLE Q.P.	4076.00				0.00			0.00	47.57	1125.29	289.16	0.0244
Camp.	0.30	14.24	9.42	5320.00	178.82	14966.47	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare	7217.26				-113.75			1.44	81.80	1838.74	519.50	
				SLE Freq.	6562.16				-103.42			1.31	74.37	1671.84	472.35	0.0374
				SLE Q.P.	6343.80				-99.98			1.26	71.90	1616.21	456.63	0.0361
120	0.61	15.62	6.49			14966.47	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare	10129.97				-17.25			0.26	115.31	2358.01	541.68	
				SLE Freq.	9210.70				-15.68			0.23	104.85	2144.02	492.52	0.0400
				SLE Q.P.	8904.27				-15.16			0.22	101.36	2072.70	476.14	0.0386

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 111 3176 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14996.29	7069.47	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 3176 3216 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11759.88	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 3216 3266 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7805.51	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 3266 3273 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3950.07	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 3273 3307 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3910.65	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 3307 3314 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7766.09	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'



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Trave 3314 3321 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11720.47			8004.72			37247.76			36621.00			ø 10 2br. 12.5'	
Trave 3321 120 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	14956.88			7069.46			37247.76			36621.00			ø 10 2br. 12.5'	
Travata: Travata 336 Nodi 120 3320 3313 3306 3272 3265 3215 3175 110																
Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
120	0.13	15.62	6.49			15254.21	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare		10323.94			-17.25			0.26	117.52	2403.16	552.05	
				SLE Freq.		9383.90			-15.68			0.23	106.82	2184.34	501.78	0.0407
				SLE Q.P.		9070.56			-15.16			0.22	103.25	2111.40	485.03	0.0394
Camp.	0.43	14.24	9.42	5320.00	178.82	15254.21	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare		7388.57			-113.75			1.44	83.74	1882.38	531.83	
				SLE Freq.		6714.92			-103.42			1.31	76.10	1710.76	483.34	0.0382
				SLE Q.P.		6490.37			-99.98			1.26	73.56	1653.55	467.18	0.0369
3320	0.73	13.08	9.42			12065.28	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare		4786.22			0.00			0.00	55.85	1321.36	339.54	
				SLE Freq.		4348.71			0.00			0.00	50.75	1200.58	308.50	0.0260
				SLE Q.P.		4202.87			0.00			0.00	49.05	1160.31	298.16	0.0252
Trave Sez. 2 Rett. 40x40 [cm]																
3320	0.00	12.63	9.42			6845.05	14307.30	0.24	0.00	-11116.93	0.22					
				SLE Rare		4632.27			0.00			0.00	54.73	1322.52	326.36	
				SLE Freq.		4208.38			0.00			0.00	49.73	1201.50	296.49	0.0257
				SLE Q.P.		4067.09			0.00			0.00	48.06	1161.16	286.54	0.0249
Camp.	0.37	11.17	9.42	5320.00	183.71	6845.05	12854.87	0.23	-482.12	-11113.99	0.22					
				SLE Rare		1905.00			-124.31			1.61	23.53	611.28	130.45	
				SLE Freq.		1728.54			-113.02			1.47	21.35	554.65	118.37	0.0114
				SLE Q.P.		1669.72			-109.26			1.42	20.63	535.78	114.34	0.0110
3313	0.74	9.71	9.42			2979.48	11397.24	0.22	-482.12	-11110.44	0.22					
				SLE Rare		0.00			-327.21			4.30	0.00	21.11	123.48	
				SLE Freq.		0.00			-300.39			3.95	0.00	19.38	113.36	0.0128
				SLE Q.P.		0.00			-291.53			3.83	0.00	18.81	110.01	0.0124
Trave Sez. 2 Rett. 40x40 [cm]																
3313	0.00	9.42	9.42			0.00	11109.65	0.22	-3469.67	-11109.65	0.22					
				SLE Rare		0.00			-551.89			7.27	0.00	35.84	208.20	
				SLE Freq.		0.00			-504.86			6.65	0.00	32.79	190.45	0.0214
				SLE Q.P.		0.00			-489.25			6.44	0.00	31.77	184.56	0.0208
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5124.87	-11109.65	0.22					
				SLE Rare		0.00			-2247.46			29.61	0.00	145.96	847.84	
				SLE Freq.		0.00			-2046.72			26.96	0.00	132.92	772.11	0.0868
				SLE Q.P.		0.00			-1979.86			26.08	0.00	128.58	746.89	0.0840
3306	0.72	9.42	9.42			0.00	11109.65	0.22	-5124.87	-11109.65	0.22					
				SLE Rare		0.00			-3470.35			45.72	0.00	225.38	1309.16	
				SLE Freq.		0.00			-3158.84			41.61	0.00	205.14	1191.65	0.1340
				SLE Q.P.		0.00			-3055.05			40.24	0.00	198.40	1152.49	0.1296
Trave Sez. 2 Rett. 40x40 [cm]																
3306	0.00	9.42	9.42			0.00	11109.65	0.22	-6520.34	-11109.65	0.22					
				SLE Rare		0.00			-3630.39			47.82	0.00	235.77	1369.54	
				SLE Freq.		0.00			-3304.42			43.53	0.00	214.60	1246.57	0.1402
				SLE Q.P.		0.00			-3195.78			42.10	0.00	207.54	1205.59	0.1356
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6879.91	-11109.65	0.22					
				SLE Rare		0.00			-4390.49			57.84	0.00	285.13	1656.28	
				SLE Freq.		0.00			-3995.79			52.64	0.00	259.50	1507.38	0.1733
				SLE Q.P.		0.00			-3864.23			50.90	0.00	250.96	1457.75	0.1640

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3272	0.74	9.42	9.42			0.00	11109.65	0.22	-6879.91	-11109.65	0.22								
				SLE Rare		0.00			-4659.37			61.38	0.00	302.59	1757.71				
				SLE Freq.		0.00			-4240.56			55.86	0.00	275.40	1599.72	0.1906			
				SLE Q.P.		0.00			-4100.96			54.02	0.00	266.33	1547.06	0.1807			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
3272	0.00	9.42	9.42			0.00	11109.65	0.22	-6876.09	-11109.65	0.22								
				SLE Rare		0.00			-4656.76			61.34	0.00	302.42	1756.73				
				SLE Freq.		0.00			-4238.11			55.83	0.00	275.24	1598.80	0.1904			
				SLE Q.P.		0.00			-4098.54			53.99	0.00	266.17	1546.14	0.1806			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6876.09	-11109.65	0.22								
				SLE Rare		0.00			-4434.42			58.42	0.00	287.98	1672.85				
				SLE Freq.		0.00			-4036.28			53.17	0.00	262.13	1522.66	0.1762			
				SLE Q.P.		0.00			-3903.53			51.42	0.00	253.51	1472.58	0.1668			
3265	0.74	9.42	9.42			0.00	11109.65	0.22	-6579.99	-11109.65	0.22								
				SLE Rare		0.00			-3720.86			49.02	0.00	241.64	1403.67				
				SLE Freq.		0.00			-3387.85			44.63	0.00	220.02	1278.04	0.1437			
				SLE Q.P.		0.00			-3276.80			43.17	0.00	212.81	1236.15	0.1390			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
3265	0.00	9.42	9.42			0.00	11109.65	0.22	-5244.17	-11109.65	0.22								
				SLE Rare		0.00			-3553.58			46.81	0.00	230.78	1340.56				
				SLE Freq.		0.00			-3235.49			42.62	0.00	210.12	1220.57	0.1373			
				SLE Q.P.		0.00			-3129.40			41.22	0.00	203.23	1180.54	0.1328			
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5244.17	-11109.65	0.22								
				SLE Rare		0.00			-2376.34			31.30	0.00	154.33	896.46				
				SLE Freq.		0.00			-2165.50			28.53	0.00	140.63	816.92	0.0919			
				SLE Q.P.		0.00			-2095.14			27.60	0.00	136.06	790.38	0.0889			
3215	0.72	9.42	9.42			0.00	11109.65	0.22	-3649.93	-11109.65	0.22								
				SLE Rare		0.00			-726.43			9.57	0.00	47.18	274.04				
				SLE Freq.		0.00			-665.76			8.77	0.00	43.24	251.15	0.0282			
				SLE Q.P.		0.00			-645.45			8.50	0.00	41.92	243.49	0.0274			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
3215	0.00	9.71	9.42			2676.18	11397.24	0.22	-716.07	-11110.44	0.22								
				SLE Rare		0.00			-490.34			6.44	0.00	31.64	185.04				
				SLE Freq.		0.00			-450.68			5.92	0.00	29.08	170.07	0.0191			
				SLE Q.P.		0.00			-437.36			5.75	0.00	28.22	165.04	0.0186			
Camp.	0.37	11.17	9.42	5320.00	183.71	6477.65	12854.87	0.23	-716.07	-11113.99	0.22								
				SLE Rare		1695.66			-124.31			1.61	20.95	544.11	116.12				
				SLE Freq.		1536.04			-113.02			1.47	18.97	492.89	105.19	0.0101			
				SLE Q.P.		1482.84			-109.26			1.42	18.32	475.81	101.54	0.0098			
3175	0.74	12.63	9.42			6477.65	14307.30	0.24	0.00	-11116.93	0.22								
				SLE Rare		4376.27			0.00			0.00	51.71	1249.43	308.32				
				SLE Freq.		3972.87			0.00			0.00	46.94	1134.26	279.90	0.0243			
				SLE Q.P.		3838.40			0.00			0.00	45.35	1095.87	270.43	0.0235			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
3175	0.00	13.08	9.42			11657.95	14757.60	0.25	0.00	-11117.74	0.22								
				SLE Rare		4551.04			0.00			0.00	53.11	1256.43	322.86				
				SLE Freq.		4132.55			0.00			0.00	48.23	1140.90	293.17	0.0247			
				SLE Q.P.		3993.06			0.00			0.00	46.60	1102.39	283.27	0.0239			
Camp.	0.30	14.24	9.42	5320.00	178.82	14807.14	15899.04	0.26	-168.10	-11119.63	0.22								
				SLE Rare		7115.20			-113.76			1.44	80.64	1812.74	512.16				
				SLE Freq.		6463.56			-103.42			1.31	73.26	1646.72	465.25	0.0368			
				SLE Q.P.		6246.35			-99.98			1.26	70.79	1591.38	449.62	0.0356			
110	0.61	15.62	6.49			14807.14	17260.20	0.28	-25.49	-8203.77	0.21								
				SLE Rare		10012.38			-17.25			0.26	113.97	2330.64	535.39				
				SLE Freq.		9097.34			-15.68			0.23	103.56	2117.64	486.46	0.0395			

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

	SLE Q.P.	8792.33			-15.16		0.22	100.08	2046.64	470.15	0.0381
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Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 120 3320 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	15067.11	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3320 3313 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11830.70	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3313 3306 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7876.32	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3306 3272 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4020.88	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3272 3265 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3840.09	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3265 3215 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7695.53	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3215 3175 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11649.90	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3175 110 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14886.32	7069.46	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 339 Nodi 201 6038 6040 6052 6092 6098 6148 6182 211

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
201	0.12	15.62	6.49			15026.92	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare		10162.13			-17.25			0.26	115.68	2365.49	543.40	
				SLE Freq.		9234.57			-15.68			0.23	105.12	2149.58	493.80	0.0401
				SLE Q.P.		8925.38			-15.16			0.22	101.60	2077.61	477.26	0.0387
Camp.	0.43	14.24	9.42	5320.00	178.82	15026.92	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare		7256.57			-113.75			1.44	82.24	1848.75	522.33	
				SLE Freq.		6593.94			-103.42			1.31	74.73	1679.94	474.64	0.0375
				SLE Q.P.		6373.07			-99.98			1.26	72.23	1623.66	458.74	0.0363
6038	0.73	13.08	9.42			11868.64	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare		4684.03			0.00			0.00	54.66	1293.15	332.29	
				SLE Freq.		4256.09			0.00			0.00	49.67	1175.01	301.93	0.0255
				SLE Q.P.		4113.44			0.00			0.00	48.00	1135.62	291.81	0.0246
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
6038	0.00	12.63	9.42			6680.92	14307.31	0.24	0.00	-11116.93	0.22					
				SLE Rare		4515.31			0.00			0.00	53.35	1289.13	318.12	
				SLE Freq.		4102.02			0.00			0.00	48.47	1171.13	289.00	0.0251
				SLE Q.P.		3964.26			0.00			0.00	46.84	1131.80	279.29	0.0242
Camp.	0.37	11.17	9.42	5320.00	183.71	6680.92	12854.87	0.23	-542.79	-11113.99	0.22					
				SLE Rare		1824.45			-124.31			1.61	22.54	585.43	124.94	
				SLE Freq.		1656.82			-113.02			1.47	20.47	531.64	113.46	0.0109
				SLE Q.P.		1600.94			-109.26			1.42	19.78	513.71	109.63	0.0105
6040	0.74	9.71	9.42			2864.76	11397.24	0.22	-542.79	-11110.44	0.22					
				SLE Rare		0.00			-371.29			4.88	0.00	23.95	140.11	
				SLE Freq.		0.00			-339.34			4.46	0.00	21.89	128.06	0.0144
				SLE Q.P.		0.00			-327.96			4.31	0.00	21.16	123.76	0.0139
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
6040	0.00	9.42	9.42			0.00	11109.65	0.22	-3490.46	-11109.65	0.22					
				SLE Rare		0.00			-606.69			7.99	0.00	39.40	228.87	
				SLE Freq.		0.00			-553.79			7.30	0.00	35.96	208.91	0.0235
				SLE Q.P.		0.00			-535.44			7.05	0.00	34.77	201.99	0.0227
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5097.38	-11109.65	0.22					
				SLE Rare		0.00			-2265.71			29.85	0.00	147.14	854.72	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-2061.08			27.15	0.00	133.85	777.53	0.0875
				SLE Q.P.	0.00			-1992.17			26.24	0.00	129.38	751.53	0.0845
6052	0.72	9.42	9.42			0.00	11109.65	0.22	-5097.38	-11109.65	0.22				
				SLE Rare	0.00			-3452.05			45.47	0.00	224.19	1302.26	
				SLE Freq.	0.00			-3138.63			41.35	0.00	203.83	1184.02	0.1332
				SLE Q.P.	0.00			-3033.46			39.96	0.00	197.00	1144.35	0.1287
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6052	0.00	9.42	9.42			0.00	11109.65	0.22	-6453.44	-11109.65	0.22				
				SLE Rare	0.00			-3622.89			47.73	0.00	235.28	1366.71	
				SLE Freq.	0.00			-3294.36			43.40	0.00	213.95	1242.77	0.1398
				SLE Q.P.	0.00			-3184.22			41.95	0.00	206.79	1201.22	0.1351
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6764.11	-11109.65	0.22				
				SLE Rare	0.00			-4345.86			57.25	0.00	282.23	1639.44	
				SLE Freq.	0.00			-3950.50			52.04	0.00	256.56	1490.30	0.1701
				SLE Q.P.	0.00			-3818.12			50.30	0.00	247.96	1440.36	0.1620
6092	0.74	9.42	9.42			0.00	11109.65	0.22	-6764.11	-11109.65	0.22				
				SLE Rare	0.00			-4578.46			60.31	0.00	297.34	1727.19	
				SLE Freq.	0.00			-4160.03			54.80	0.00	270.16	1569.34	0.1849
				SLE Q.P.	0.00			-4020.29			52.96	0.00	261.09	1516.63	0.1750
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6092	0.00	9.42	9.42			0.00	11109.65	0.22	-6777.45	-11109.65	0.22				
				SLE Rare	0.00			-4587.52			60.43	0.00	297.93	1730.61	
				SLE Freq.	0.00			-4168.93			54.92	0.00	270.74	1572.70	0.1855
				SLE Q.P.	0.00			-4029.13			53.08	0.00	261.66	1519.96	0.1757
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6777.45	-11109.65	0.22				
				SLE Rare	0.00			-4328.89			57.03	0.00	281.13	1633.04	
				SLE Freq.	0.00			-3932.01			51.80	0.00	255.36	1483.32	0.1688
				SLE Q.P.	0.00			-3799.72			50.05	0.00	246.77	1433.42	0.1612
6098	0.74	9.42	9.42			0.00	11109.65	0.22	-6432.49	-11109.65	0.22				
				SLE Rare	0.00			-3579.05			47.15	0.00	232.43	1350.17	
				SLE Freq.	0.00			-3249.05			42.80	0.00	211.00	1225.68	0.1379
				SLE Q.P.	0.00			-3139.05			41.35	0.00	203.86	1184.18	0.1332
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6098	0.00	9.42	9.42			0.00	11109.65	0.22	-5066.55	-11109.65	0.22				
				SLE Rare	0.00			-3428.19			45.16	0.00	222.64	1293.26	
				SLE Freq.	0.00			-3112.70			41.00	0.00	202.15	1174.24	0.1321
				SLE Q.P.	0.00			-3007.53			39.62	0.00	195.32	1134.57	0.1276
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5066.55	-11109.65	0.22				
				SLE Rare	0.00			-2215.37			29.18	0.00	143.87	835.73	
				SLE Freq.	0.00			-2008.83			26.46	0.00	130.46	757.82	0.0852
				SLE Q.P.	0.00			-1939.99			25.56	0.00	125.99	731.85	0.0823
6148	0.72	9.42	9.42			0.00	11109.65	0.22	-3425.38	-11109.65	0.22				
				SLE Rare	0.00			-529.86			6.98	0.00	34.41	199.89	
				SLE Freq.	0.00			-475.22			6.26	0.00	30.86	179.27	0.0202
				SLE Q.P.	0.00			-457.01			6.02	0.00	29.68	172.40	0.0194
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6148	0.00	9.71	9.42			2981.53	11397.24	0.22	-468.07	-11110.44	0.22				
				SLE Rare	0.00			-314.94			4.14	0.00	20.32	118.85	
				SLE Freq.	0.00			-280.76			3.69	0.00	18.11	105.95	0.0119
				SLE Q.P.	0.00			-269.37			3.54	0.00	17.38	101.65	0.0114
Camp.	0.37	11.17	9.42	5320.00	183.71	6833.84	12854.87	0.23	-468.07	-11113.99	0.22				
				SLE Rare	1909.68			-124.31			1.61	23.59	612.78	130.77	
				SLE Freq.	1741.44			-113.02			1.47	21.51	558.80	119.25	0.0115
				SLE Q.P.	1685.67			-109.26			1.42	20.82	540.90	115.43	0.0111
6182	0.74	12.63	9.42			6833.84	14307.31	0.24	0.00	-11116.93	0.22				

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	4627.70			0.00		0.00	54.68	1321.21	326.03	
				SLE Freq.	4213.64			0.00		0.00	49.79	1203.00	296.86	0.0258
				SLE Q.P.	4075.91			0.00		0.00	48.16	1163.68	287.16	0.0249
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>														
6182	0.00	13.08	9.42			12023.63	14757.60	0.25	0.00	-11117.74	0.22			
				SLE Rare	4770.50			0.00		0.00	55.67	1317.02	338.43	
				SLE Freq.	4342.58			0.00		0.00	50.68	1198.88	308.07	0.0260
				SLE Q.P.	4200.11			0.00		0.00	49.01	1159.55	297.96	0.0251
Camp.	0.30	14.24	9.42	5320.00	178.82	15204.33	15899.04	0.26	-168.10	-11119.63	0.22			
				SLE Rare	7365.27			-113.75		1.44	83.48	1876.45	530.16	
				SLE Freq.	6702.53			-103.42		1.31	75.96	1707.60	482.45	0.0382
				SLE Q.P.	6481.77			-99.98		1.26	73.46	1651.36	466.56	0.0369
211	0.61	15.62	6.49			15204.33	17260.20	0.28	-25.49	-8203.77	0.21			
				SLE Rare	10293.07			-17.25		0.26	117.17	2395.97	550.40	
				SLE Freq.	9365.24			-15.68		0.23	106.61	2180.00	500.79	0.0406
				SLE Q.P.	9056.12			-15.16		0.22	103.09	2108.04	484.26	0.0393

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 201 6038 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14927.64	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6038 6040 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11691.23	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6040 6052 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7736.85	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6052 6092 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3881.42	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6092 6098 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3983.19	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6098 6148 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7838.63	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6148 6182 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11793.01	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6182 211 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	15029.42	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 344 Nodi 211 6236 6276 6326 6333 6367 6374 6381 220

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
211	0.13	15.62	6.49			15114.25	17260.20	0.28	-25.49	-8203.77	0.21					
						SLE Rare	10226.37		-17.25			0.26	116.41	2380.45	546.83	
						SLE Freq.	9298.38		-15.68			0.23	105.85	2164.44	497.21	0.0403
						SLE Q.P.	8989.32		-15.16			0.22	102.33	2092.49	480.68	0.0390
Camp.	0.43	14.24	9.42	5320.00	178.82	15114.25	15899.04	0.26	-168.10	-11119.63	0.22					
						SLE Rare	7306.92		-113.76			1.44	82.81	1861.58	525.96	
						SLE Freq.	6643.96		-103.42			1.31	75.30	1692.68	478.24	0.0378
						SLE Q.P.	6423.24		-99.98			1.26	72.80	1636.45	462.35	0.0366
6236	0.73	13.08	9.42			11941.76	14757.60	0.25	0.00	-11117.74	0.22					
						SLE Rare	4720.48		0.00			0.00	55.09	1303.21	334.88	
						SLE Freq.	4292.31		0.00			0.00	50.09	1185.01	304.50	0.0257
						SLE Q.P.	4149.84		0.00			0.00	48.43	1145.67	294.40	0.0248
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
6236	0.00	12.63	9.42			6744.63	14307.30	0.24	0.00	-11116.93	0.22					
						SLE Rare	4562.58		0.00			0.00	53.91	1302.62	321.45	
						SLE Freq.	4148.82		0.00			0.00	49.02	1184.50	292.30	0.0254
						SLE Q.P.	4011.19		0.00			0.00	47.40	1145.20	282.60	0.0245



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Camp.	0.37	11.17	9.42	5320.00	183.71	6744.63	12854.87	0.23	-525.54	-11113.99	0.22						
				SLE Rare		1854.76			-124.31			1.61	22.91	595.16	127.01		
				SLE Freq.		1686.78			-113.02			1.47	20.84	541.25	115.51	0.0111	
				SLE Q.P.		1631.06			-109.26			1.42	20.15	523.38	111.69	0.0107	
6276	0.74	9.71	9.42			2905.59	11397.24	0.22	-525.54	-11110.44	0.22						
				SLE Rare		0.00			-357.00			4.69	0.00	23.03	134.72		
				SLE Freq.		0.00			-323.64			4.25	0.00	20.88	122.13	0.0137	
				SLE Q.P.		0.00			-312.52			4.11	0.00	20.16	117.93	0.0133	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
6276	0.00	9.42	9.42			0.00	11109.65	0.22	-3485.98	-11109.65	0.22						
				SLE Rare		0.00			-583.37			7.68	0.00	37.89	220.07		
				SLE Freq.		0.00			-529.35			6.97	0.00	34.38	199.69	0.0225	
				SLE Q.P.		0.00			-511.35			6.74	0.00	33.21	192.90	0.0217	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5115.39	-11109.65	0.22						
				SLE Rare		0.00			-2259.51			29.77	0.00	146.74	852.38		
				SLE Freq.		0.00			-2053.49			27.05	0.00	133.36	774.66	0.0871	
				SLE Q.P.		0.00			-1984.81			26.15	0.00	128.90	748.76	0.0842	
6326	0.72	9.42	9.42			0.00	11109.65	0.22	-5115.39	-11109.65	0.22						
				SLE Rare		0.00			-3462.97			45.62	0.00	224.90	1306.38		
				SLE Freq.		0.00			-3147.95			41.47	0.00	204.44	1187.54	0.1336	
				SLE Q.P.		0.00			-3042.86			40.08	0.00	197.61	1147.90	0.1291	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
6326	0.00	9.42	9.42			0.00	11109.65	0.22	-6483.26	-11109.65	0.22						
				SLE Rare		0.00			-3624.37			47.74	0.00	235.38	1367.27		
				SLE Freq.		0.00			-3294.59			43.40	0.00	213.96	1242.86	0.1398	
				SLE Q.P.		0.00			-3184.60			41.95	0.00	206.82	1201.37	0.1351	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6816.24	-11109.65	0.22						
				SLE Rare		0.00			-4364.67			57.50	0.00	283.45	1646.54		
				SLE Freq.		0.00			-3968.18			52.27	0.00	257.71	1496.97	0.1713	
				SLE Q.P.		0.00			-3835.82			50.53	0.00	249.11	1447.04	0.1628	
6333	0.74	9.42	9.42			0.00	11109.65	0.22	-6816.24	-11109.65	0.22						
				SLE Rare		0.00			-4613.92			60.78	0.00	299.64	1740.57		
				SLE Freq.		0.00			-4195.17			55.26	0.00	272.45	1582.60	0.1874	
				SLE Q.P.		0.00			-4055.33			53.42	0.00	263.37	1529.84	0.1775	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
6333	0.00	9.42	9.42			0.00	11109.65	0.22	-6815.63	-11109.65	0.22						
				SLE Rare		0.00			-4613.51			60.77	0.00	299.62	1740.41		
				SLE Freq.		0.00			-4194.75			55.26	0.00	272.42	1582.44	0.1874	
				SLE Q.P.		0.00			-4054.91			53.42	0.00	263.34	1529.68	0.1775	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6815.63	-11109.65	0.22						
				SLE Rare		0.00			-4371.75			57.59	0.00	283.91	1649.21		
				SLE Freq.		0.00			-3975.14			52.37	0.00	258.16	1499.59	0.1718	
				SLE Q.P.		0.00			-3842.69			50.62	0.00	249.56	1449.63	0.1630	
6367	0.74	9.42	9.42			0.00	11109.65	0.22	-6493.27	-11109.65	0.22						
				SLE Rare		0.00			-3638.78			47.93	0.00	236.31	1372.70		
				SLE Freq.		0.00			-3308.92			43.59	0.00	214.89	1248.27	0.1404	
				SLE Q.P.		0.00			-3198.74			42.14	0.00	207.74	1206.70	0.1357	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
6367	0.00	9.42	9.42			0.00	11109.65	0.22	-5135.24	-11109.65	0.22						
				SLE Rare		0.00			-3476.28			45.79	0.00	225.76	1311.40		
				SLE Freq.		0.00			-3161.12			41.64	0.00	205.29	1192.51	0.1341	
				SLE Q.P.		0.00			-3055.85			40.26	0.00	198.46	1152.80	0.1297	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5135.24	-11109.65	0.22						
				SLE Rare		0.00			-2280.00			30.04	0.00	148.07	860.11		
				SLE Freq.		0.00			-2073.69			27.32	0.00	134.67	782.28	0.0880	

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-2004.70			26.41	0.00	130.19	756.26	0.0851
6374	0.72	9.42	9.42		0.00	11109.65	0.22	-3515.76	-11109.65	0.22					
				SLE Rare	0.00			-611.04			8.05	0.00	39.68	230.51	
				SLE Freq.	0.00			-556.51			7.33	0.00	36.14	209.94	0.0236
				SLE Q.P.	0.00			-538.12			7.09	0.00	34.95	203.00	0.0228
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6374	0.00	9.71	9.42		2855.93	11397.24	0.22	-564.16	-11110.44	0.22					
				SLE Rare	0.00			-382.91			5.03	0.00	24.70	144.50	
				SLE Freq.	0.00			-349.00			4.59	0.00	22.52	131.70	0.0148
				SLE Q.P.	0.00			-337.52			4.43	0.00	21.78	127.37	0.0143
Camp.	0.37	11.17	9.42	5320.00	183.71	6684.50	12854.87	0.23	-564.16	-11113.99	0.22				
				SLE Rare	1821.76			-124.31			1.61	22.50	584.57	124.75	
				SLE Freq.	1655.38			-113.02			1.47	20.45	531.18	113.36	0.0109
				SLE Q.P.	1599.92			-109.26			1.42	19.76	513.38	109.56	0.0105
6381	0.74	12.63	9.42		6684.50	14307.31	0.24	0.00	-11116.93	0.22					
				SLE Rare	4522.23			0.00			0.00	53.43	1291.10	318.60	
				SLE Freq.	4110.31			0.00			0.00	48.57	1173.50	289.58	0.0251
				SLE Q.P.	3973.00			0.00			0.00	46.94	1134.30	279.91	0.0243
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6381	0.00	13.08	9.42		11874.99	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare	4683.36			0.00			0.00	54.65	1292.96	332.24	
				SLE Freq.	4256.91			0.00			0.00	49.68	1175.23	301.99	0.0255
				SLE Q.P.	4114.77			0.00			0.00	48.02	1135.99	291.91	0.0246
Camp.	0.30	14.24	9.42	5320.00	178.82	15040.97	15899.04	0.26	-168.10	-11119.63	0.22				
				SLE Rare	7263.76			-113.75			1.44	82.33	1850.58	522.85	
				SLE Freq.	6602.73			-103.42			1.31	74.83	1682.17	475.27	0.0376
				SLE Q.P.	6382.38			-99.98			1.26	72.34	1626.04	459.41	0.0363
220	0.61	15.62	6.49		15040.97	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare	10177.17			-17.25			0.26	115.85	2369.00	544.20	
				SLE Freq.	9251.31			-15.68			0.23	105.31	2153.48	494.69	0.0401
				SLE Q.P.	8942.69			-15.16			0.22	101.80	2081.64	478.19	0.0388

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 211 6236 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14992.09	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6236 6276 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11755.67	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6276 6326 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7801.30	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6326 6333 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3945.86	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6333 6367 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3916.36	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6367 6374 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7771.80	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6374 6381 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11726.18	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6381 220 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14962.59	7069.46	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 345 Nodi 220 6380 6373 6366 6332 6325 6275 6235 210

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
220	0.13	15.62	6.49			15167.67	17260.20	0.28	-25.49	-8203.77	0.21					
						10264.07			-17.25			0.26	116.84	2389.22	548.85	

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**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	9331.75			-15.68			0.23	106.22	2172.20	498.99	0.0405
				SLE Q.P.	9020.98			-15.16			0.22	102.69	2099.86	482.38	0.0391
Camp.	0.43	14.24	9.42	5320.00	178.82	15167.67	15899.04	0.26	-168.10	-11119.63	0.22				
				SLE Rare	7341.40			-113.75			1.44	83.21	1870.36	528.44	
				SLE Freq.	6674.59			-103.42			1.31	75.65	1700.48	480.44	0.0380
				SLE Q.P.	6452.32			-99.98			1.26	73.13	1643.85	464.44	0.0367
6380	0.73	13.08	9.42			11991.93	14757.60	0.25	0.00	-11117.74	0.22				
				SLE Rare	4751.75			0.00			0.00	55.45	1311.85	337.10	
				SLE Freq.	4320.19			0.00			0.00	50.42	1192.70	306.48	0.0259
				SLE Q.P.	4176.34			0.00			0.00	48.74	1152.99	296.28	0.0250
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6380	0.00	12.63	9.42			6805.94	14307.30	0.24	0.00	-11116.93	0.22				
				SLE Rare	4605.36			0.00			0.00	54.42	1314.84	324.46	
				SLE Freq.	4187.84			0.00			0.00	49.48	1195.64	295.05	0.0256
				SLE Q.P.	4048.67			0.00			0.00	47.84	1155.90	285.24	0.0248
Camp.	0.37	11.17	9.42	5320.00	183.71	6805.94	12854.87	0.23	-473.84	-11113.99	0.22				
				SLE Rare	1893.60			-124.31			1.61	23.39	607.62	129.67	
				SLE Freq.	1722.44			-113.02			1.47	21.28	552.70	117.95	0.0113
				SLE Q.P.	1665.38			-109.26			1.42	20.57	534.39	114.04	0.0110
6373	0.74	9.71	9.42			2961.66	11397.24	0.22	-473.84	-11110.44	0.22				
				SLE Rare	0.00			-321.20			4.22	0.00	20.72	121.21	
				SLE Freq.	0.00			-291.82			3.83	0.00	18.83	110.12	0.0124
				SLE Q.P.	0.00			-281.67			3.70	0.00	18.17	106.29	0.0120
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6373	0.00	9.42	9.42			0.00	11109.65	0.22	-3426.62	-11109.65	0.22				
				SLE Rare	0.00			-538.12			7.09	0.00	34.95	203.00	
				SLE Freq.	0.00			-488.66			6.44	0.00	31.74	184.34	0.0207
				SLE Q.P.	0.00			-471.71			6.21	0.00	30.63	177.95	0.0200
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5061.53	-11109.65	0.22				
				SLE Rare	0.00			-2218.42			29.22	0.00	144.07	836.88	
				SLE Freq.	0.00			-2016.27			26.56	0.00	130.94	760.62	0.0856
				SLE Q.P.	0.00			-1948.44			25.67	0.00	126.54	735.03	0.0827
6366	0.72	9.42	9.42			0.00	11109.65	0.22	-5061.53	-11109.65	0.22				
				SLE Rare	0.00			-3426.10			45.13	0.00	222.50	1292.47	
				SLE Freq.	0.00			-3114.13			41.02	0.00	202.24	1174.78	0.1321
				SLE Q.P.	0.00			-3009.73			39.65	0.00	195.46	1135.40	0.1277
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6366	0.00	9.42	9.42			0.00	11109.65	0.22	-6423.54	-11109.65	0.22				
				SLE Rare	0.00			-3579.22			47.15	0.00	232.45	1350.24	
				SLE Freq.	0.00			-3252.76			42.85	0.00	211.24	1227.08	0.1380
				SLE Q.P.	0.00			-3143.50			41.41	0.00	204.15	1185.86	0.1334
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6761.97	-11109.65	0.22				
				SLE Rare	0.00			-4323.82			56.96	0.00	280.80	1631.13	
				SLE Freq.	0.00			-3929.60			51.77	0.00	255.20	1482.41	0.1686
				SLE Q.P.	0.00			-3797.79			50.03	0.00	246.64	1432.69	0.1611
6332	0.74	9.42	9.42			0.00	11109.65	0.22	-6761.97	-11109.65	0.22				
				SLE Rare	0.00			-4577.20			60.30	0.00	297.26	1726.71	
				SLE Freq.	0.00			-4159.84			54.80	0.00	270.15	1569.27	0.1849
				SLE Q.P.	0.00			-4020.36			52.96	0.00	261.09	1516.65	0.1750
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6332	0.00	9.42	9.42			0.00	11109.65	0.22	-6752.08	-11109.65	0.22				
				SLE Rare	0.00			-4570.49			60.21	0.00	296.82	1724.18	
				SLE Freq.	0.00			-4153.23			54.71	0.00	269.72	1566.78	0.1844
				SLE Q.P.	0.00			-4013.78			52.87	0.00	260.67	1514.17	0.1746
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6752.08	-11109.65	0.22				

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	0.00				-4332.65			57.08	0.00	281.38	1634.46	
				SLE Freq.	0.00				-3936.87			51.86	0.00	255.67	1485.15	0.1691
				SLE Q.P.	0.00				-3804.61			50.12	0.00	247.08	1435.26	0.1614
6325	0.74	9.42	9.42			0.00	11109.65	0.22	-6434.89	-11109.65	0.22					
				SLE Rare	0.00				-3603.58			47.47	0.00	234.03	1359.43	
				SLE Freq.	0.00				-3273.91			43.13	0.00	212.62	1235.06	0.1389
				SLE Q.P.	0.00				-3163.72			41.68	0.00	205.46	1193.49	0.1342
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
6325	0.00	9.42	9.42			0.00	11109.65	0.22	-5075.14	-11109.65	0.22					
				SLE Rare	0.00				-3436.02			45.26	0.00	223.15	1296.21	
				SLE Freq.	0.00				-3121.12			41.12	0.00	202.69	1177.42	0.1324
				SLE Q.P.	0.00				-3015.87			39.73	0.00	195.86	1137.71	0.1280
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5075.14	-11109.65	0.22					
				SLE Rare	0.00				-2243.58			29.56	0.00	145.70	846.37	
				SLE Freq.	0.00				-2036.87			26.83	0.00	132.28	768.39	0.0864
				SLE Q.P.	0.00				-1967.72			25.92	0.00	127.79	742.31	0.0835
6275	0.72	9.42	9.42			0.00	11109.65	0.22	-3460.62	-11109.65	0.22					
				SLE Rare	0.00				-578.45			7.62	0.00	37.57	218.22	
				SLE Freq.	0.00				-522.87			6.89	0.00	33.96	197.25	0.0222
				SLE Q.P.	0.00				-504.13			6.64	0.00	32.74	190.18	0.0214
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
6275	0.00	9.71	9.42			2904.39	11397.24	0.22	-509.78	-11110.44	0.22					
				SLE Rare	0.00				-346.92			4.56	0.00	22.38	130.92	
				SLE Freq.	0.00				-312.06			4.10	0.00	20.13	117.76	0.0132
				SLE Q.P.	0.00				-300.24			3.94	0.00	19.37	113.30	0.0127
Camp.	0.37	11.17	9.42	5320.00	183.71	6727.32	12854.87	0.23	-509.78	-11113.99	0.22					
				SLE Rare	1853.69				-124.31			1.61	22.90	594.81	126.94	
				SLE Freq.	1687.47				-113.02			1.47	20.84	541.48	115.55	0.0111
				SLE Q.P.	1632.64				-109.26			1.42	20.17	523.88	111.80	0.0107
6235	0.74	12.63	9.42			6727.32	14307.30	0.24	0.00	-11116.93	0.22					
				SLE Rare	4549.94				0.00			0.00	53.76	1299.02	320.56	
				SLE Freq.	4138.73				0.00			0.00	48.90	1181.61	291.59	0.0253
				SLE Q.P.	4002.28				0.00			0.00	47.29	1142.66	281.97	0.0245
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
6235	0.00	13.08	9.42			11915.50	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare	4713.76				0.00			0.00	55.01	1301.36	334.40	
				SLE Freq.	4287.78				0.00			0.00	50.04	1183.76	304.18	0.0257
				SLE Q.P.	4146.42				0.00			0.00	48.39	1144.73	294.15	0.0248
Camp.	0.30	14.24	9.42	5320.00	178.82	15078.00	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare	7290.72				-113.76			1.44	82.63	1857.45	524.79	
				SLE Freq.	6630.61				-103.42			1.31	75.15	1689.28	477.27	0.0377
				SLE Q.P.	6411.24				-99.98			1.26	72.66	1633.39	461.48	0.0365
210	0.61	15.62	6.49			15078.00	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare	10200.70				-17.25			0.26	116.12	2374.47	545.46	
				SLE Freq.	9276.21				-15.68			0.23	105.59	2159.27	496.02	0.0402
				SLE Q.P.	8968.79				-15.16			0.22	102.09	2087.71	479.59	0.0389

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 220 6380 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	15006.84	7069.47	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 6380 6373 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11770.43	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 6373 6366 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7816.05	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

Trave 6366 6332 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3960.61		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 6332 6325 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3900.53		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 6325 6275 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	7755.97		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 6275 6235 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11710.34		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 6235 210 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	14946.76		7069.46		37247.76		36621.00		ø 10 2br. 12.5'					
Travata: Travata 346 Nodi 210 6181 6147 6097 6091 6051 6039 6037 201																
Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
210	0.13	15.62	9.42			15000.21	17258.31	0.27	-25.49	-11121.61	0.22					
				SLE Rare		10152.77			-17.25			0.22	111.55	2368.90	740.40	
				SLE Freq.		9232.19			-15.68			0.20	101.43	2154.11	673.26	0.0497
				SLE Q.P.		8924.75			-15.16			0.19	98.05	2082.38	650.84	0.0481
Camp.	0.43	14.24	9.42	5320.00	178.82	15000.21	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare		7233.64			-113.75			1.44	81.98	1842.91	520.68	
				SLE Freq.		6577.63			-103.42			1.31	74.55	1675.78	473.46	0.0374
				SLE Q.P.		6358.38			-99.98			1.26	72.06	1619.92	457.68	0.0362
6181	0.73	13.08	9.42			11828.49	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare		4647.53			0.00			0.00	54.24	1283.07	329.70	
				SLE Freq.		4225.83			0.00			0.00	49.31	1166.65	299.79	0.0253
				SLE Q.P.		4084.70			0.00			0.00	47.67	1127.69	289.77	0.0245
Trave Sez. 2 Rett. 40x40 [cm]																
6181	0.00	12.63	9.42			6619.57	14307.31	0.24	0.00	-11116.93	0.22					
				SLE Rare		4481.00			0.00			0.00	52.95	1279.33	315.70	
				SLE Freq.		4074.28			0.00			0.00	48.14	1163.21	287.04	0.0249
				SLE Q.P.		3938.06			0.00			0.00	46.53	1124.32	277.45	0.0241
Camp.	0.37	11.17	9.42	5320.00	183.71	6619.57	12854.87	0.23	-646.27	-11113.99	0.22					
				SLE Rare		1773.57			-124.31			1.61	21.91	569.10	121.45	
				SLE Freq.		1612.05			-113.02			1.47	19.91	517.28	110.39	0.0106
				SLE Q.P.		1557.57			-109.26			1.42	19.24	499.79	106.66	0.0103
6147	0.74	9.71	9.42			2781.74	11397.24	0.22	-646.27	-11110.44	0.22					
				SLE Rare		0.00			-436.62			5.74	0.00	28.17	164.77	
				SLE Freq.		0.00			-399.31			5.25	0.00	25.76	150.69	0.0170
				SLE Q.P.		0.00			-386.92			5.08	0.00	24.96	146.01	0.0164
Trave Sez. 2 Rett. 40x40 [cm]																
6147	0.00	9.42	9.42			0.00	11109.65	0.22	-3613.33	-11109.65	0.22					
				SLE Rare		0.00			-667.83			8.80	0.00	43.37	251.93	
				SLE Freq.		0.00			-609.71			8.03	0.00	39.60	230.01	0.0259
				SLE Q.P.		0.00			-590.39			7.78	0.00	38.34	222.72	0.0251
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5242.12	-11109.65	0.22					
				SLE Rare		0.00			-2343.96			30.88	0.00	152.22	884.24	
				SLE Freq.		0.00			-2133.89			28.11	0.00	138.58	804.99	0.0905
				SLE Q.P.		0.00			-2064.12			27.19	0.00	134.05	778.67	0.0876
6097	0.72	9.42	9.42			0.00	11109.65	0.22	-5242.12	-11109.65	0.22					
				SLE Rare		0.00			-3547.42			46.73	0.00	230.38	1338.24	
				SLE Freq.		0.00			-3228.33			42.53	0.00	209.66	1217.86	0.1370
				SLE Q.P.		0.00			-3122.42			41.13	0.00	202.78	1177.91	0.1325
Trave Sez. 2 Rett. 40x40 [cm]																
6097	0.00	9.42	9.42			0.00	11109.65	0.22	-6612.15	-11109.65	0.22					
				SLE Rare		0.00			-3710.71			48.88	0.00	240.98	1399.84	



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-3376.87			44.48	0.00	219.30	1273.90	0.1433
				SLE Q.P.	0.00			-3266.05			43.02	0.00	212.11	1232.09	0.1386
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6944.21	-11109.65	0.22				
				SLE Rare	0.00			-4451.00			58.63	0.00	289.06	1679.11	
				SLE Freq.	0.00			-4050.22			53.35	0.00	263.03	1527.92	0.1771
				SLE Q.P.	0.00			-3917.29			51.60	0.00	254.40	1477.77	0.1677
6091	0.74	9.42	9.42			0.00	11109.65	0.22	-6944.21	-11109.65	0.22				
				SLE Rare	0.00			-4700.08			61.92	0.00	305.24	1773.07	
				SLE Freq.	0.00			-4277.31			56.35	0.00	277.78	1613.59	0.1932
				SLE Q.P.	0.00			-4137.08			54.50	0.00	268.67	1560.68	0.1833
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6091	0.00	9.42	9.42			0.00	11109.65	0.22	-6941.59	-11109.65	0.22				
				SLE Rare	0.00			-4698.27			61.89	0.00	305.12	1772.39	
				SLE Freq.	0.00			-4275.60			56.32	0.00	277.67	1612.94	0.1931
				SLE Q.P.	0.00			-4135.39			54.48	0.00	268.56	1560.05	0.1832
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6941.59	-11109.65	0.22				
				SLE Rare	0.00			-4456.13			58.70	0.00	289.39	1681.04	
				SLE Freq.	0.00			-4056.16			53.43	0.00	263.42	1530.16	0.1776
				SLE Q.P.	0.00			-3923.52			51.69	0.00	254.81	1480.12	0.1682
6051	0.74	9.42	9.42			0.00	11109.65	0.22	-6618.02	-11109.65	0.22				
				SLE Rare	0.00			-3722.76			49.04	0.00	241.77	1404.39	
				SLE Freq.	0.00			-3390.13			44.66	0.00	220.17	1278.90	0.1438
				SLE Q.P.	0.00			-3279.93			43.21	0.00	213.01	1237.33	0.1392
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6051	0.00	9.42	9.42			0.00	11109.65	0.22	-5251.64	-11109.65	0.22				
				SLE Rare	0.00			-3555.49			46.84	0.00	230.90	1341.28	
				SLE Freq.	0.00			-3237.78			42.65	0.00	210.27	1221.43	0.1374
				SLE Q.P.	0.00			-3132.52			41.27	0.00	203.44	1181.72	0.1329
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5251.64	-11109.65	0.22				
				SLE Rare	0.00			-2358.82			31.07	0.00	153.19	889.85	
				SLE Freq.	0.00			-2150.52			28.33	0.00	139.66	811.27	0.0912
				SLE Q.P.	0.00			-2081.72			27.42	0.00	135.19	785.31	0.0883
6039	0.72	9.42	9.42			0.00	11109.65	0.22	-3631.01	-11109.65	0.22				
				SLE Rare	0.00			-689.48			9.08	0.00	44.78	260.10	
				SLE Freq.	0.00			-633.51			8.35	0.00	41.14	238.99	0.0269
				SLE Q.P.	0.00			-615.48			8.11	0.00	39.97	232.19	0.0261
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6039	0.00	9.71	9.42			2758.82	11397.24	0.22	-667.32	-11110.44	0.22				
				SLE Rare	0.00			-454.01			5.97	0.00	29.29	171.33	
				SLE Freq.	0.00			-418.96			5.50	0.00	27.03	158.10	0.0178
				SLE Q.P.	0.00			-407.85			5.36	0.00	26.31	153.91	0.0173
Camp.	0.37	11.17	9.42	5320.00	183.71	6588.90	12854.87	0.23	-667.32	-11113.99	0.22				
				SLE Rare	1754.19			-124.31			1.61	21.67	562.89	120.12	
				SLE Freq.	1585.62			-113.02			1.47	19.59	508.79	108.58	0.0104
				SLE Q.P.	1529.43			-109.26			1.42	18.89	490.76	104.73	0.0101
6037	0.74	12.63	9.42			6588.90	14307.30	0.24	0.00	-11116.93	0.22				
				SLE Rare	4455.25			0.00			0.00	52.64	1271.98	313.88	
				SLE Freq.	4040.48			0.00			0.00	47.74	1153.56	284.66	0.0247
				SLE Q.P.	3902.23			0.00			0.00	46.11	1114.09	274.92	0.0239
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
6037	0.00	13.08	9.42			11796.34	14757.60	0.25	0.00	-11117.74	0.22				
				SLE Rare	4626.87			0.00			0.00	53.99	1277.37	328.24	
				SLE Freq.	4197.59			0.00			0.00	48.98	1158.85	297.78	0.0251
				SLE Q.P.	4054.49			0.00			0.00	47.32	1119.35	287.63	0.0243
Camp.	0.30	14.24	9.42	5320.00	178.82	14963.26	15899.04	0.26	-168.10	-11119.63	0.22				

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	7207.76			-113.75		1.44	81.69	1836.32	518.82	
				SLE Freq.	6543.36			-103.42		1.31	74.16	1667.05	470.99	0.0373
				SLE Q.P.	6321.89			-99.98		1.26	71.65	1610.62	455.05	0.0360
201	0.61	15.62	9.42		14963.26	17258.31	0.27	-25.49	-11121.61	0.22				
				SLE Rare	10121.67			-17.25		0.22	111.20	2361.65	738.13	
				SLE Freq.	9191.89			-15.68		0.20	100.99	2144.71	670.32	0.0495
				SLE Q.P.	8881.97			-15.16		0.19	97.58	2072.39	647.72	0.0479

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 210 6181 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14988.66	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6181 6147 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11752.24	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6147 6097 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7797.87	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6097 6091 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3942.43	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6091 6051 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3920.64	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6051 6039 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7776.08	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6039 6037 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11730.45	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 6037 201 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14966.87	8004.72	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 347 Nodi 301 9044 9047 9055 9057 9090 9098 9124 311

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
301	0.12	18.71	6.49			14392.07	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	9736.88		-17.25			0.25	104.79	1910.07	529.28	
						SLE Freq.	8808.24		-15.68			0.23	94.80	1727.90	478.80	0.0342
						SLE Q.P.	8498.69		-15.16			0.22	91.47	1667.17	461.97	0.0330
Camp.	0.43	16.64	9.42	5320.00	178.82	14392.07	18263.85	0.28	-168.10	-11122.91	0.22					
						SLE Rare	6887.03		-113.75			1.41	74.11	1512.65	505.99	
						SLE Freq.	6223.40		-103.42			1.28	66.96	1366.89	457.23	0.0323
						SLE Q.P.	6002.19		-99.98			1.24	64.58	1318.30	440.98	0.0311
9044	0.73	14.91	9.42			11293.83	16566.54	0.26	0.00	-11120.64	0.22					
						SLE Rare	4370.21		0.00			0.00	48.76	1065.32	316.75	
						SLE Freq.	3941.33		0.00			0.00	43.97	960.78	285.66	0.0218
						SLE Q.P.	3798.38		0.00			0.00	42.38	925.93	275.30	0.0210
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9044	0.00	14.23	9.42			6217.85	15895.24	0.26	0.00	-11119.63	0.22					
						SLE Rare	4205.67		0.00			0.00	47.67	1071.75	302.71	
						SLE Freq.	3791.53		0.00			0.00	42.98	966.22	272.91	0.0216
						SLE Q.P.	3653.49		0.00			0.00	41.41	931.04	262.97	0.0208
Camp.	0.37	12.04	9.42	5320.00	183.71	6217.85	13724.82	0.24	-812.47	-11115.81	0.22					
						SLE Rare	1582.89		-124.31			1.60	19.02	472.81	110.39	
						SLE Freq.	1414.50		-113.02			1.46	17.00	422.51	98.65	0.0089
						SLE Q.P.	1358.37		-109.26			1.41	16.33	405.74	94.73	0.0085
9047	0.74	9.86	9.42			2498.54	11540.97	0.22	-812.47	-11110.82	0.22					
						SLE Rare	0.00		-550.98			7.23	0.00	35.43	207.96	
						SLE Freq.	0.00		-512.18			6.72	0.00	32.94	193.31	0.0218
						SLE Q.P.	0.00		-501.22			6.58	0.00	32.23	189.18	0.0213
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

9047	0.00	9.42	9.42			0.00	11109.65	0.22	-3630.68	-11109.65	0.22						
				SLE Rare		0.00			-772.99			10.18	0.00	50.20	291.60		
				SLE Freq.		0.00			-713.63			9.40	0.00	46.35	269.21	0.0303	
				SLE Q.P.		0.00			-695.69			9.16	0.00	45.18	262.44	0.0295	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5142.43	-11109.65	0.22						
				SLE Rare		0.00			-2363.20			31.13	0.00	153.47	891.50		
				SLE Freq.		0.00			-2154.69			28.38	0.00	139.93	812.84	0.0914	
				SLE Q.P.		0.00			-2086.11			27.48	0.00	135.48	786.97	0.0885	
9055	0.72	9.42	9.42			0.00	11109.65	0.22	-5142.43	-11109.65	0.22						
				SLE Rare		0.00			-3480.74			45.85	0.00	226.05	1313.09		
				SLE Freq.		0.00			-3166.00			41.71	0.00	205.61	1194.35	0.1343	
				SLE Q.P.		0.00			-3061.11			40.32	0.00	198.80	1154.78	0.1299	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
9055	0.00	9.42	9.42			0.00	11109.65	0.22	-6365.85	-11109.65	0.22						
				SLE Rare		0.00			-3633.55			47.87	0.00	235.97	1370.73		
				SLE Freq.		0.00			-3304.28			43.53	0.00	214.59	1246.51	0.1402	
				SLE Q.P.		0.00			-3194.36			42.08	0.00	207.45	1205.05	0.1355	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6590.51	-11109.65	0.22						
				SLE Rare		0.00			-4288.79			56.50	0.00	278.53	1617.92		
				SLE Freq.		0.00			-3892.89			51.28	0.00	252.82	1468.56	0.1660	
				SLE Q.P.		0.00			-3760.68			49.54	0.00	244.23	1418.69	0.1596	
9057	0.74	9.42	9.42			0.00	11109.65	0.22	-6590.51	-11109.65	0.22						
				SLE Rare		0.00			-4453.73			58.67	0.00	289.24	1680.14		
				SLE Freq.		0.00			-4034.90			53.15	0.00	262.04	1522.14	0.1761	
				SLE Q.P.		0.00			-3895.27			51.31	0.00	252.97	1469.46	0.1662	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
9057	0.00	9.42	9.42			0.00	11109.65	0.22	-6572.80	-11109.65	0.22						
				SLE Rare		0.00			-4448.35			58.60	0.00	288.89	1678.11		
				SLE Freq.		0.00			-4029.25			53.08	0.00	261.67	1520.01	0.1757	
				SLE Q.P.		0.00			-3889.50			51.24	0.00	252.60	1467.29	0.1658	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6572.80	-11109.65	0.22						
				SLE Rare		0.00			-4122.07			54.30	0.00	267.70	1555.02		
				SLE Freq.		0.00			-3725.04			49.07	0.00	241.92	1405.24	0.1581	
				SLE Q.P.		0.00			-3592.69			47.33	0.00	233.32	1355.32	0.1524	
9090	0.74	9.42	9.42			0.00	11109.65	0.22	-6132.22	-11109.65	0.22						
				SLE Rare		0.00			-3304.57			43.53	0.00	214.61	1246.62		
				SLE Freq.		0.00			-2974.33			39.18	0.00	193.16	1122.04	0.1262	
				SLE Q.P.		0.00			-2864.25			37.73	0.00	186.01	1080.52	0.1215	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
9090	0.00	9.42	9.42			0.00	11109.65	0.22	-4650.07	-11109.65	0.22						
				SLE Rare		0.00			-3146.78			41.45	0.00	204.36	1187.10		
				SLE Freq.		0.00			-2830.91			37.29	0.00	183.85	1067.94	0.1201	
				SLE Q.P.		0.00			-2725.62			35.91	0.00	177.01	1028.22	0.1156	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4650.07	-11109.65	0.22						
				SLE Rare		0.00			-1867.58			24.60	0.00	121.29	704.53		
				SLE Freq.		0.00			-1660.58			21.88	0.00	107.84	626.44	0.0705	
				SLE Q.P.		0.00			-1591.58			20.97	0.00	103.36	600.41	0.0675	
9098	0.72	9.42	9.42			0.00	11109.65	0.22	-2917.13	-11109.65	0.22						
				SLE Rare		0.00			-115.71			1.52	0.00	7.51	43.65		
				SLE Freq.		0.00			-60.52			0.80	0.00	3.93	22.83	0.0026	
				SLE Q.P.		0.00			-42.12			0.55	0.00	2.74	15.89	0.0018	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
9098	0.00	9.86	9.42			3719.51	11540.97	0.22	0.00	-11110.82	0.22						
				SLE Rare		163.67			0.00			0.00	2.12	59.17	10.80		
				SLE Freq.		147.77			0.00			0.00	1.91	53.42	9.75	0.0010	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	140.94			0.00			0.00	1.82	50.95	9.30	0.0010
Camp.	0.37	12.04	9.42	5320.00	183.71	7672.24	13724.81	0.24	-183.71	-11115.81	0.22				
				SLE Rare	2403.70				-124.31			1.60	28.89	717.99	167.64
				SLE Freq.	2217.57				-113.02			1.46	26.65	662.39	154.66
				SLE Q.P.	2162.15				-109.26			1.41	25.99	645.83	150.79
9124	0.74	14.23	9.42			7672.24	15895.24	0.26	0.00	-11119.63	0.22				0.0136
				SLE Rare	5192.29				0.00			0.00	58.85	1323.18	373.73
				SLE Freq.	4757.70				0.00			0.00	53.93	1212.43	342.45
				SLE Q.P.	4620.39				0.00			0.00	52.37	1177.44	332.56
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
9124	0.00	14.91	9.42			12932.12	16566.54	0.26	0.00	-11120.64	0.22				
				SLE Rare	5308.30				0.00			0.00	59.22	1294.00	384.74
				SLE Freq.	4860.88				0.00			0.00	54.23	1184.93	352.31
				SLE Q.P.	4718.85				0.00			0.00	52.65	1150.31	342.02
Camp.	0.30	16.64	9.42	5320.00	178.82	16175.08	18263.84	0.28	-168.10	-11122.91	0.22				
				SLE Rare	7960.83				-113.75			1.41	85.66	1748.49	584.88
				SLE Freq.	7276.42				-103.42			1.28	78.30	1598.17	534.60
				SLE Q.P.	7056.17				-99.98			1.24	75.93	1549.80	518.42
311	0.61	18.71	6.49			16175.08	20249.27	0.32	-25.49	-8214.47	0.21				
				SLE Rare	10946.37				-17.25			0.25	117.81	2147.33	595.02
				SLE Freq.	9994.74				-15.68			0.23	107.57	1960.65	543.29
				SLE Q.P.	9686.17				-15.16			0.22	104.25	1900.12	526.52

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 301 9044 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14654.98	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9044 9047 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11418.57	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9047 9055 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7464.19	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9055 9057 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3608.75	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9057 9090 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4265.91	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9090 9098 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	8121.35	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9098 9124 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12075.73	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9124 311 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	15312.14	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 349 Nodi 311 9162 9164 9202 9204 9206 9217 9245 320

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
311	0.13	18.71	9.42			15116.83	20274.91	0.30	-25.49	-11125.18	0.22					
				SLE Rare		10230.09			-17.25			0.21	106.06	2010.33	759.80	
				SLE Freq.		9303.99			-15.68			0.19	96.46	1828.34	691.02	0.0450
				SLE Q.P.		8995.53			-15.16			0.19	93.26	1767.73	668.11	0.0435
Camp.	0.43	16.64	9.42	5320.00	178.82	15116.83	18263.84	0.28	-168.10	-11122.91	0.22					
				SLE Rare		7311.47			-113.76			1.41	78.67	1605.87	537.17	
				SLE Freq.		6650.22			-103.42			1.28	71.56	1460.64	488.59	0.0345
				SLE Q.P.		6430.03			-99.98			1.24	69.19	1412.27	472.41	0.0334
9162	0.73	14.91	9.42			11945.35	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare		4725.88			0.00			0.00	52.73	1152.02	342.53	
				SLE Freq.		4299.21			0.00			0.00	47.97	1048.02	311.60	0.0238

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.		4157.22			0.00			0.00	46.38	1013.40	301.31	0.0230
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9162	0.00	14.23	9.42			6753.40	15895.23	0.26	0.00	-11119.63	0.22					
				SLE Rare		4570.45			0.00			0.00	51.80	1164.71	328.97	
				SLE Freq.		4158.16			0.00			0.00	47.13	1059.64	299.29	0.0237
				SLE Q.P.		4020.98			0.00			0.00	45.58	1024.69	289.42	0.0229
Camp.	0.37	12.04	9.42	5320.00	183.71	6753.40	13724.82	0.24	-515.13	-11115.81	0.22					
				SLE Rare		1863.65			-124.31			1.60	22.40	556.67	129.97	
				SLE Freq.		1696.90			-113.02			1.46	20.39	506.86	118.34	0.0107
				SLE Q.P.		1641.57			-109.26			1.41	19.73	490.34	114.48	0.0103
9164	0.74	9.86	9.42			2915.99	11540.97	0.22	-515.13	-11110.82	0.22					
				SLE Rare		0.00			-348.27			4.57	0.00	22.40	131.45	
				SLE Freq.		0.00			-313.51			4.11	0.00	20.16	118.33	0.0133
				SLE Q.P.		0.00			-301.92			3.96	0.00	19.42	113.95	0.0128
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9164	0.00	9.42	9.42			0.00	11109.65	0.22	-3471.01	-11109.65	0.22					
				SLE Rare		0.00			-572.73			7.54	0.00	37.19	216.06	
				SLE Freq.		0.00			-517.37			6.82	0.00	33.60	195.18	0.0220
				SLE Q.P.		0.00			-498.92			6.57	0.00	32.40	188.21	0.0212
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5098.80	-11109.65	0.22					
				SLE Rare		0.00			-2247.82			29.61	0.00	145.98	847.97	
				SLE Freq.		0.00			-2040.70			26.88	0.00	132.53	769.84	0.0866
				SLE Q.P.		0.00			-1971.66			25.97	0.00	128.05	743.79	0.0837
9202	0.72	9.42	9.42			0.00	11109.65	0.22	-5098.80	-11109.65	0.22					
				SLE Rare		0.00			-3450.22			45.45	0.00	224.07	1301.57	
				SLE Freq.		0.00			-3134.28			41.29	0.00	203.55	1182.38	0.1330
				SLE Q.P.		0.00			-3028.96			39.90	0.00	196.71	1142.65	0.1285
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9202	0.00	9.42	9.42			0.00	11109.65	0.22	-6462.49	-11109.65	0.22					
				SLE Rare		0.00			-3610.04			47.56	0.00	234.45	1361.86	
				SLE Freq.		0.00			-3279.47			43.20	0.00	212.98	1237.16	0.1392
				SLE Q.P.		0.00			-3169.29			41.75	0.00	205.82	1195.59	0.1345
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6793.50	-11109.65	0.22					
				SLE Rare		0.00			-4349.26			57.29	0.00	282.45	1640.73	
				SLE Freq.		0.00			-3951.95			52.06	0.00	256.65	1490.84	0.1702
				SLE Q.P.		0.00			-3819.51			50.32	0.00	248.05	1440.88	0.1621
9204	0.74	9.42	9.42			0.00	11109.65	0.22	-6793.50	-11109.65	0.22					
				SLE Rare		0.00			-4597.26			60.56	0.00	298.56	1734.28	
				SLE Freq.		0.00			-4177.85			55.04	0.00	271.32	1576.06	0.1862
				SLE Q.P.		0.00			-4038.03			53.19	0.00	262.24	1523.32	0.1763
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9204	0.00	9.42	9.42			0.00	11109.65	0.22	-6791.57	-11109.65	0.22					
				SLE Rare		0.00			-4595.97			60.54	0.00	298.48	1733.80	
				SLE Freq.		0.00			-4176.66			55.02	0.00	271.24	1575.61	0.1861
				SLE Q.P.		0.00			-4036.87			53.18	0.00	262.17	1522.88	0.1762
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6791.57	-11109.65	0.22					
				SLE Rare		0.00			-4352.75			57.34	0.00	282.68	1642.04	
				SLE Freq.		0.00			-3956.26			52.12	0.00	256.93	1492.47	0.1705
				SLE Q.P.		0.00			-3823.94			50.37	0.00	248.34	1442.55	0.1623
9206	0.74	9.42	9.42			0.00	11109.65	0.22	-6466.95	-11109.65	0.22					
				SLE Rare		0.00			-3618.42			47.67	0.00	234.99	1365.02	
				SLE Freq.		0.00			-3289.27			43.33	0.00	213.62	1240.85	0.1396
				SLE Q.P.		0.00			-3179.28			41.88	0.00	206.47	1199.36	0.1349
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9206	0.00	9.42	9.42			0.00	11109.65	0.22	-5106.24	-11109.65	0.22					



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**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	0.00			-3455.75			45.52	0.00	224.43	1303.66	
				SLE Freq.	0.00			-3141.40			41.38	0.00	204.01	1185.07	0.1333
				SLE Q.P.	0.00			-3036.35			40.00	0.00	197.19	1145.44	0.1288
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5106.24	-11109.65	0.22				
				SLE Rare	0.00			-2258.48			29.75	0.00	146.67	851.99	
				SLE Freq.	0.00			-2053.20			27.05	0.00	133.34	774.55	0.0871
				SLE Q.P.	0.00			-1984.51			26.14	0.00	128.88	748.64	0.0842
9217	0.72	9.42	9.42			0.00	11109.65	0.22	-3485.22	-11109.65	0.22				
				SLE Rare	0.00			-588.53			7.75	0.00	38.22	222.02	
				SLE Freq.	0.00			-535.25			7.05	0.00	34.76	201.92	0.0227
				SLE Q.P.	0.00			-517.24			6.81	0.00	33.59	195.12	0.0219
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
9217	0.00	9.86	9.42			2888.60	11540.97	0.22	-532.63	-11110.82	0.22				
				SLE Rare	0.00				-361.02			4.74	0.00	23.22	136.26
				SLE Freq.	0.00				-328.43			4.31	0.00	21.12	123.96
				SLE Q.P.	0.00				-317.33			4.16	0.00	20.41	119.77
Camp.	0.37	12.04	9.42	5320.00	183.71	6718.89	13724.82	0.24	-532.63	-11115.81	0.22				
				SLE Rare	1844.25				-124.31			1.60	22.16	550.88	128.62
				SLE Freq.	1676.51				-113.02			1.46	20.15	500.77	116.92
				SLE Q.P.	1620.60				-109.26			1.41	19.48	484.07	113.02
9245	0.74	14.23	9.42			6718.89	15895.24	0.26	0.00	-11119.63	0.22				
				SLE Rare	4545.80				0.00			0.00	51.53	1158.43	327.20
				SLE Freq.	4132.27				0.00			0.00	46.84	1053.05	297.43
				SLE Q.P.	3994.42				0.00			0.00	45.28	1017.92	287.51
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
9245	0.00	14.91	9.42			11909.25	16566.54	0.26	0.00	-11120.64	0.22				
				SLE Rare	4705.45				0.00			0.00	52.50	1147.04	341.05
				SLE Freq.	4277.35				0.00			0.00	47.72	1042.69	310.02
				SLE Q.P.	4134.66				0.00			0.00	46.13	1007.90	299.67
Camp.	0.30	16.64	9.42	5320.00	178.82	15076.29	18263.85	0.28	-168.10	-11122.91	0.22				
				SLE Rare	7286.74				-113.75			1.41	78.41	1600.44	535.36
				SLE Freq.	6623.85				-103.42			1.28	71.27	1454.84	486.65
				SLE Q.P.	6402.88				-99.98			1.24	68.90	1406.31	470.42
320	0.61	18.71	9.42			15076.29	20274.91	0.30	-25.49	-11125.18	0.22				
				SLE Rare	10201.04				-17.25			0.21	105.75	2004.62	757.64
				SLE Freq.	9273.11				-15.68			0.19	96.13	1822.27	688.72
				SLE Q.P.	8963.79				-15.16			0.19	92.93	1761.49	665.75

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 311 9162 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14987.51	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9162 9164 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11751.10	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9164 9202 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7796.73	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9202 9204 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3941.29	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9204 9206 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3921.20	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9206 9217 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7776.64	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9217 9245 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11731.01	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9245 320 Sez. 2 Rett. 40x40 [cm]</b>							

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

0.00	0.61	0.61	14967.43	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
Travata: Travata 350 Nodi 320 9244 9216 9205 9203 9201 9163 9161 310							

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
320	0.13	18.71	6.49			16110.85	20249.27	0.32	-25.49	-8214.47	0.21					
					SLE Rare	10899.82			-17.25			0.25	117.31	2138.20	592.49	
					SLE Freq.	9947.75			-15.68			0.23	107.06	1951.43	540.74	0.0386
					SLE Q.P.	9638.33			-15.16			0.22	103.73	1890.73	523.92	0.0374
Camp.	0.43	16.64	9.42	5320.00	178.82	16110.85	18263.84	0.28	-168.10	-11122.91	0.22					
					SLE Rare	7921.13			-113.75			1.41	85.23	1739.77	581.96	
					SLE Freq.	7236.26			-103.42			1.28	77.86	1589.35	531.65	0.0375
					SLE Q.P.	7015.23			-99.98			1.24	75.48	1540.81	515.41	0.0364
9244	0.73	14.91	9.42			12874.81	16566.54	0.26	0.00	-11120.64	0.22					
					SLE Rare	5275.45			0.00			0.00	58.86	1285.99	382.36	
					SLE Freq.	4827.55			0.00			0.00	53.86	1176.81	349.89	0.0267
					SLE Q.P.	4684.82			0.00			0.00	52.27	1142.02	339.55	0.0259
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9244	0.00	14.23	9.42			7619.17	15895.23	0.26	0.00	-11119.63	0.22					
					SLE Rare	5153.89			0.00			0.00	58.42	1313.39	370.96	
					SLE Freq.	4718.98			0.00			0.00	53.49	1202.56	339.66	0.0269
					SLE Q.P.	4580.99			0.00			0.00	51.92	1167.40	329.73	0.0261
Camp.	0.37	12.04	9.42	5320.00	183.71	7619.17	13724.82	0.24	-183.71	-11115.81	0.22					
					SLE Rare	2373.67			-124.31			1.60	28.53	709.02	165.54	
					SLE Freq.	2187.20			-113.02			1.46	26.29	653.32	152.54	0.0138
					SLE Q.P.	2131.20			-109.26			1.41	25.61	636.59	148.63	0.0134
9216	0.74	9.86	9.42			3677.63	11540.97	0.22	0.00	-11110.82	0.22					
					SLE Rare	140.78			0.00			0.00	1.82	50.89	9.29	
					SLE Freq.	124.54			0.00			0.00	1.61	45.02	8.22	0.0009
					SLE Q.P.	118.43			0.00			0.00	1.53	42.81	7.81	0.0008
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9216	0.00	9.42	9.42			0.00	11109.65	0.22	-2936.56	-11109.65	0.22					
					SLE Rare	0.00			-137.79			1.82	0.00	8.95	51.98	
					SLE Freq.	0.00			-85.46			1.13	0.00	5.55	32.24	0.0036
					SLE Q.P.	0.00			-67.63			0.89	0.00	4.39	25.51	0.0029
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4660.23	-11109.65	0.22					
					SLE Rare	0.00			-1882.45			24.80	0.00	122.25	710.14	
					SLE Freq.	0.00			-1677.66			22.10	0.00	108.95	632.89	0.0712
					SLE Q.P.	0.00			-1609.11			21.20	0.00	104.50	607.03	0.0683
9205	0.72	9.42	9.42			0.00	11109.65	0.22	-4660.23	-11109.65	0.22					
					SLE Rare	0.00			-3154.43			41.55	0.00	204.86	1189.98	
					SLE Freq.	0.00			-2840.12			37.41	0.00	184.45	1071.42	0.1205
					SLE Q.P.	0.00			-2735.16			36.03	0.00	177.63	1031.82	0.1161
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9205	0.00	9.42	9.42			0.00	11109.65	0.22	-6136.74	-11109.65	0.22					
					SLE Rare	0.00			-3315.67			43.68	0.00	215.33	1250.81	
					SLE Freq.	0.00			-2986.86			39.35	0.00	193.98	1126.77	0.1267
					SLE Q.P.	0.00			-2877.06			37.90	0.00	186.85	1085.35	0.1221
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6567.65	-11109.65	0.22					
					SLE Rare	0.00			-4125.81			54.35	0.00	267.94	1556.43	
					SLE Freq.	0.00			-3729.56			49.13	0.00	242.21	1406.95	0.1582
					SLE Q.P.	0.00			-3597.36			47.39	0.00	233.62	1357.08	0.1526
9203	0.74	9.42	9.42			0.00	11109.65	0.22	-6567.65	-11109.65	0.22					
					SLE Rare	0.00			-4444.73			58.55	0.00	288.65	1676.74	
					SLE Freq.	0.00			-4025.65			53.03	0.00	261.44	1518.65	0.1754

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00				-3885.94			51.19	0.00	252.36	1465.94	0.1655
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9203	0.00	9.42	9.42			0.00	11109.65	0.22	-6588.13	-11109.65	0.22					
				SLE Rare	0.00				-4453.26			58.66	0.00	289.21	1679.96	
				SLE Freq.	0.00				-4034.35			53.15	0.00	262.00	1521.93	0.1760
				SLE Q.P.	0.00				-3894.70			51.31	0.00	252.93	1469.25	0.1662
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6588.13	-11109.65	0.22					
				SLE Rare	0.00				-4280.96			56.39	0.00	278.02	1614.96	
				SLE Freq.	0.00				-3884.01			51.17	0.00	252.24	1465.22	0.1654
				SLE Q.P.	0.00				-3751.70			49.42	0.00	243.65	1415.30	0.1592
9201	0.74	9.42	9.42			0.00	11109.65	0.22	-6355.67	-11109.65	0.22					
				SLE Rare	0.00				-3617.45			47.65	0.00	234.93	1364.66	
				SLE Freq.	0.00				-3287.10			43.30	0.00	213.47	1240.04	0.1395
				SLE Q.P.	0.00				-3176.99			41.85	0.00	206.32	1198.50	0.1348
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9201	0.00	9.42	9.42			0.00	11109.65	0.22	-5124.83	-11109.65	0.22					
				SLE Rare	0.00				-3467.84			45.68	0.00	225.21	1308.22	
				SLE Freq.	0.00				-3152.40			41.53	0.00	204.73	1189.22	0.1338
				SLE Q.P.	0.00				-3047.25			40.14	0.00	197.90	1149.55	0.1293
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5124.83	-11109.65	0.22					
				SLE Rare	0.00				-2341.66			30.85	0.00	152.07	883.37	
				SLE Freq.	0.00				-2132.94			28.10	0.00	138.52	804.64	0.0905
				SLE Q.P.	0.00				-2064.03			27.19	0.00	134.04	778.64	0.0876
9163	0.72	9.42	9.42			0.00	11109.65	0.22	-3601.76	-11109.65	0.22					
				SLE Rare	0.00				-743.28			9.79	0.00	48.27	280.40	
				SLE Freq.	0.00				-683.74			9.01	0.00	44.40	257.94	0.0290
				SLE Q.P.	0.00				-665.37			8.77	0.00	43.21	251.00	0.0282
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9163	0.00	9.86	9.42			2538.96	11540.98	0.22	-777.54	-11110.82	0.22					
				SLE Rare	0.00				-525.56			6.90	0.00	33.80	198.36	
				SLE Freq.	0.00				-486.41			6.38	0.00	31.28	183.59	0.0207
				SLE Q.P.	0.00				-474.98			6.23	0.00	30.54	179.27	0.0202
Camp.	0.37	12.04	9.42	5320.00	183.71	6268.04	13724.82	0.24	-777.54	-11115.81	0.22					
				SLE Rare	1612.24				-124.31			1.60	19.38	481.58	112.44	
				SLE Freq.	1447.34				-113.02			1.46	17.39	432.32	100.94	0.0091
				SLE Q.P.	1391.95				-109.26			1.41	16.73	415.77	97.08	0.0088
9161	0.74	14.23	9.42			6268.04	15895.23	0.26	0.00	-11119.63	0.22					
				SLE Rare	4242.42				0.00			0.00	48.09	1081.12	305.36	
				SLE Freq.	3832.44				0.00			0.00	43.44	976.64	275.85	0.0218
				SLE Q.P.	3695.26				0.00			0.00	41.88	941.68	265.98	0.0210
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9161	0.00	14.91	9.42			11346.73	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare	4401.36				0.00			0.00	49.11	1072.92	319.01	
				SLE Freq.	3976.55				0.00			0.00	44.37	969.36	288.22	0.0220
				SLE Q.P.	3834.45				0.00			0.00	42.78	934.72	277.92	0.0212
Camp.	0.30	16.64	9.42	5320.00	178.82	14451.04	18263.84	0.28	-168.10	-11122.91	0.22					
				SLE Rare	6924.25				-113.76			1.41	74.51	1520.82	508.72	
				SLE Freq.	6265.22				-103.42			1.28	67.41	1376.08	460.30	0.0325
				SLE Q.P.	6044.97				-99.98			1.24	65.04	1327.70	444.12	0.0314
310	0.61	18.71	6.49			14451.04	20249.27	0.32	-25.49	-8214.46	0.21					
				SLE Rare	9780.15				-17.25			0.25	105.26	1918.56	531.63	
				SLE Freq.	8856.66				-15.68			0.23	95.32	1737.39	481.43	0.0344
				SLE Q.P.	8548.18				-15.16			0.22	92.00	1676.88	464.66	0.0332

Da	A	Dx	V <sub>Ed</sub>	V <sub>Rd,c</sub>	V <sub>Rcd</sub>	V <sub>Rd</sub>	Staffe
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**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

[m]	[m]	[m]	[kg]	[kg]	[kg]	[kg]										
Trave 320 9244 Sez. 2 Rett. 40x40 [cm]																
0.13	0.73	0.61	15280.69	7069.47	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9244 9216 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	12044.28	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9216 9205 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	8089.90	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9205 9203 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	4234.46	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9203 9201 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3636.31	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9201 9163 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	7491.75	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9163 9161 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11446.12	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 9161 310 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	14682.54	7069.46	37247.76	36621.00	ø 10 2br. 12.5'									
Travata: Travata 351 Nodi 310 9123 9097 9089 9056 9054 9046 9043 301																
Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
310	0.13	18.71	6.49			15377.80	20249.27	0.32	-25.49	-8214.47	0.21					
					SLE Rare	10407.60			-17.25			0.25	112.01	2041.64	565.74	
					SLE Freq.	9477.97			-15.68			0.23	102.01	1859.28	515.20	0.0368
					SLE Q.P.	9170.68			-15.16			0.22	98.70	1799.00	498.50	0.0356
Camp.	0.43	16.64	9.42	5320.00	178.82	15377.80	18263.84	0.28	-168.10	-11122.91	0.22					
					SLE Rare	7486.88			-113.75			1.41	80.56	1644.40	550.06	
					SLE Freq.	6821.95			-103.42			1.28	73.41	1498.35	501.21	0.0354
					SLE Q.P.	6602.90			-99.98			1.24	71.05	1450.24	485.11	0.0343
9123	0.73	14.91	9.42			12204.33	16566.54	0.26	0.00	-11120.64	0.22					
					SLE Rare	4899.17			0.00			0.00	54.66	1194.27	355.09	
					SLE Freq.	4468.70			0.00			0.00	49.86	1089.33	323.89	0.0247
					SLE Q.P.	4327.80			0.00			0.00	48.28	1054.98	313.67	0.0240
Trave Sez. 2 Rett. 40x40 [cm]																
9123	0.00	14.23	9.42			7046.06	15895.24	0.26	0.00	-11119.63	0.22					
					SLE Rare	4768.93			0.00			0.00	54.05	1215.29	343.26	
					SLE Freq.	4352.22			0.00			0.00	49.33	1109.10	313.26	0.0248
					SLE Q.P.	4216.28			0.00			0.00	47.79	1074.46	303.48	0.0240
Camp.	0.37	12.04	9.42	5320.00	183.71	7046.06	13724.82	0.24	-241.89	-11115.81	0.22					
					SLE Rare	2059.54			-124.31			1.60	24.75	615.19	143.63	
					SLE Freq.	1888.20			-113.02			1.46	22.69	564.01	131.69	0.0119
					SLE Q.P.	1834.06			-109.26			1.41	22.04	547.83	127.91	0.0115
9097	0.74	9.86	9.42			3205.40	11540.97	0.22	-241.89	-11110.82	0.22					
					SLE Rare	0.00			-163.40			2.14	0.00	10.51	61.67	
					SLE Freq.	0.00			-125.06			1.64	0.00	8.04	47.20	0.0053
					SLE Q.P.	0.00			-112.28			1.47	0.00	7.22	42.38	0.0048
Trave Sez. 2 Rett. 40x40 [cm]																
9097	0.00	9.42	9.42			0.00	11109.65	0.22	-3178.53	-11109.65	0.22					
					SLE Rare	0.00			-372.63			4.91	0.00	24.20	140.57	
					SLE Freq.	0.00			-313.42			4.13	0.00	20.35	118.24	0.0133
					SLE Q.P.	0.00			-293.69			3.87	0.00	19.07	110.79	0.0125
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4809.13	-11109.65	0.22					
					SLE Rare	0.00			-2050.06			27.01	0.00	133.14	773.37	
					SLE Freq.	0.00			-1839.33			24.23	0.00	119.45	693.87	0.0780
					SLE Q.P.	0.00			-1769.08			23.30	0.00	114.89	667.37	0.0751

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

9089	0.72	9.42	9.42			0.00	11109.65	0.22	-4809.13	-11109.65	0.22								
				SLE Rare		0.00			-3254.81			42.88	0.00	211.38	1227.85				
				SLE Freq.		0.00			-2935.49			38.67	0.00	190.64	1107.39	0.1246			
				SLE Q.P.		0.00			-2829.05			37.27	0.00	183.73	1067.24	0.1200			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
9089	0.00	9.42	9.42			0.00	11109.65	0.22	-6163.42	-11109.65	0.22								
				SLE Rare		0.00			-3406.04			44.87	0.00	221.20	1284.90				
				SLE Freq.		0.00			-3071.94			40.47	0.00	199.50	1158.87	0.1303			
				SLE Q.P.		0.00			-2960.58			39.00	0.00	192.27	1116.86	0.1256			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6497.37	-11109.65	0.22								
				SLE Rare		0.00			-4147.65			54.64	0.00	269.36	1564.67				
				SLE Freq.		0.00			-3747.05			49.36	0.00	243.34	1413.55	0.1590			
				SLE Q.P.		0.00			-3613.51			47.60	0.00	234.67	1363.17	0.1533			
9056	0.74	9.42	9.42			0.00	11109.65	0.22	-6497.37	-11109.65	0.22								
				SLE Rare		0.00			-4398.03			57.94	0.00	285.62	1659.13				
				SLE Freq.		0.00			-3975.84			52.37	0.00	258.20	1499.86	0.1719			
				SLE Q.P.		0.00			-3834.97			50.52	0.00	249.05	1446.71	0.1627			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
9056	0.00	9.42	9.42			0.00	11109.65	0.22	-6494.61	-11109.65	0.22								
				SLE Rare		0.00			-4396.13			57.91	0.00	285.50	1658.41				
				SLE Freq.		0.00			-3973.99			52.35	0.00	258.08	1499.16	0.1718			
				SLE Q.P.		0.00			-3833.15			50.50	0.00	248.94	1446.03	0.1626			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6494.61	-11109.65	0.22								
				SLE Rare		0.00			-4155.30			54.74	0.00	269.86	1567.56				
				SLE Freq.		0.00			-3756.33			49.48	0.00	243.95	1417.05	0.1594			
				SLE Q.P.		0.00			-3623.00			47.73	0.00	235.29	1366.75	0.1537			
9054	0.74	9.42	9.42			0.00	11109.65	0.22	-6172.93	-11109.65	0.22								
				SLE Rare		0.00			-3423.25			45.10	0.00	222.32	1291.40				
				SLE Freq.		0.00			-3092.07			40.73	0.00	200.81	1166.46	0.1312			
				SLE Q.P.		0.00			-2981.13			39.27	0.00	193.60	1124.61	0.1265			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
9054	0.00	9.42	9.42			0.00	11109.65	0.22	-4826.02	-11109.65	0.22								
				SLE Rare		0.00			-3267.72			43.05	0.00	212.22	1232.72				
				SLE Freq.		0.00			-2951.38			38.88	0.00	191.67	1113.39	0.1252			
				SLE Q.P.		0.00			-2845.42			37.48	0.00	184.79	1073.41	0.1207			
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4826.02	-11109.65	0.22								
				SLE Rare		0.00			-2072.34			27.30	0.00	134.58	781.78				
				SLE Freq.		0.00			-1865.86			24.58	0.00	121.17	703.88	0.0792			
				SLE Q.P.		0.00			-1796.31			23.66	0.00	116.66	677.64	0.0762			
9046	0.72	9.42	9.42			0.00	11109.65	0.22	-3207.19	-11109.65	0.22								
				SLE Rare		0.00			-404.29			5.33	0.00	26.26	152.51				
				SLE Freq.		0.00			-350.59			4.62	0.00	22.77	132.26	0.0149			
				SLE Q.P.		0.00			-331.76			4.37	0.00	21.55	125.15	0.0141			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
9046	0.00	9.86	9.42			3147.61	11540.97	0.22	-277.28	-11110.82	0.22								
				SLE Rare		0.00			-190.24			2.50	0.00	12.23	71.80				
				SLE Freq.		0.00			-157.32			2.06	0.00	10.12	59.38	0.0067			
				SLE Q.P.		0.00			-145.47			1.91	0.00	9.35	54.90	0.0062			
Camp.	0.37	12.04	9.42	5320.00	183.71	6974.01	13724.81	0.24	-277.28	-11115.81	0.22								
				SLE Rare		2017.26			-124.31			1.60	24.24	602.55	140.69				
				SLE Freq.		1845.52			-113.02			1.46	22.18	551.26	128.71	0.0116			
				SLE Q.P.		1790.15			-109.26			1.41	21.51	534.72	124.85	0.0113			
9043	0.74	14.23	9.42			6974.01	15895.23	0.26	0.00	-11119.63	0.22								
				SLE Rare		4715.76			0.00			0.00	53.45	1201.74	339.43				
				SLE Freq.		4298.63			0.00			0.00	48.72	1095.44	309.40	0.0245			



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.		4161.24			0.00			0.00	47.17	1060.43	299.52	0.0237
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
9043	0.00	14.91	9.42			12126.92	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare		4853.24			0.00			0.00	54.15	1183.07	351.76	
				SLE Freq.		4422.13			0.00			0.00	49.34	1077.98	320.51	0.0245
				SLE Q.P.		4279.81			0.00			0.00	47.75	1043.29	310.20	0.0237
Camp.	0.30	16.64	9.42	5320.00	178.82	15291.56	18263.84	0.28	-168.10	-11122.91	0.22					
				SLE Rare		7432.04			-113.75			1.41	79.97	1632.35	546.03	
				SLE Freq.		6766.46			-103.42			1.28	72.81	1486.17	497.13	0.0351
				SLE Q.P.		6545.81			-99.98			1.24	70.43	1437.70	480.92	0.0340
301	0.61	18.71	6.49			15291.56	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		10343.86			-17.25			0.25	111.32	2029.14	562.27	
				SLE Freq.		9413.56			-15.68			0.23	101.31	1846.64	511.70	0.0365
				SLE Q.P.		9104.49			-15.16			0.22	97.99	1786.01	494.90	0.0353

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 310 9123 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14996.62	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9123 9097 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11760.20	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9097 9089 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7805.82	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9089 9056 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3950.39	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9056 9054 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3912.83	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9054 9046 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7768.27	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9046 9043 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11722.65	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 9043 301 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14959.06	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 357 Nodi 110 3121 3087 3037 3031 2991 2979 2977 101

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
110	0.13	15.62	6.49			15155.18	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare		10259.86			-17.25			0.26	116.79	2388.24	548.62	
				SLE Freq.		9332.80			-15.68			0.23	106.24	2172.45	499.05	0.0405
				SLE Q.P.		9023.53			-15.16			0.22	102.72	2100.46	482.51	0.0392
Camp.	0.43	14.24	9.42	5320.00	178.82	15155.18	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare		7332.61			-113.75			1.44	83.11	1868.12	527.81	
				SLE Freq.		6670.64			-103.42			1.31	75.60	1699.48	480.16	0.0380
				SLE Q.P.		6449.73			-99.98			1.26	73.10	1643.19	464.26	0.0367
3121	0.73	13.08	9.42			11975.03	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare		4738.37			0.00			0.00	55.30	1308.15	336.15	
				SLE Freq.		4311.25			0.00			0.00	50.31	1190.23	305.85	0.0258
				SLE Q.P.		4168.62			0.00			0.00	48.65	1150.86	295.73	0.0250
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
3121	0.00	12.63	9.42			6752.84	14307.31	0.24	0.00	-11116.93	0.22					
				SLE Rare		4572.97			0.00			0.00	54.03	1305.59	322.18	
				SLE Freq.		4160.89			0.00			0.00	49.16	1187.94	293.15	0.0254
				SLE Q.P.		4023.23			0.00			0.00	47.54	1148.64	283.45	0.0246
Camp.	0.37	11.17	9.42	5320.00	183.71	6752.84	12854.87	0.23	-542.73	-11113.99	0.22					
				SLE Rare		1855.60			-124.31			1.61	22.92	595.43	127.07	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	1689.38			-113.02			1.47	20.87	542.09	115.69	0.0111
				SLE Q.P.	1633.66			-109.26			1.42	20.18	524.21	111.87	0.0108
3087	0.74	9.71	9.42		2901.41	11397.24	0.22	-542.73	-11110.44	0.22					
				SLE Rare	0.00			-365.36			4.80	0.00	23.57	137.88	
				SLE Freq.	0.00			-331.19			4.35	0.00	21.37	124.98	0.0141
				SLE Q.P.	0.00			-319.80			4.20	0.00	20.63	120.68	0.0136
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3087	0.00	9.42	9.42		0.00	11109.65	0.22	-3526.69	-11109.65	0.22					
				SLE Rare	0.00			-598.58			7.89	0.00	38.87	225.81	
				SLE Freq.	0.00			-543.35			7.16	0.00	35.29	204.97	0.0231
				SLE Q.P.	0.00			-524.94			6.92	0.00	34.09	198.03	0.0223
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5168.00	-11109.65	0.22				
				SLE Rare	0.00			-2283.83			30.09	0.00	148.32	861.56	
				SLE Freq.	0.00			-2076.63			27.36	0.00	134.86	783.39	0.0881
				SLE Q.P.	0.00			-2007.57			26.45	0.00	130.38	757.34	0.0852
3037	0.72	9.42	9.42		0.00	11109.65	0.22	-5168.00	-11109.65	0.22					
				SLE Rare	0.00			-3496.69			46.06	0.00	227.09	1319.10	
				SLE Freq.	0.00			-3180.17			41.89	0.00	206.53	1199.70	0.1349
				SLE Q.P.	0.00			-3074.76			40.50	0.00	199.68	1159.93	0.1305
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3037	0.00	9.42	9.42		0.00	11109.65	0.22	-6559.45	-11109.65	0.22					
				SLE Rare	0.00			-3664.46			48.27	0.00	237.98	1382.39	
				SLE Freq.	0.00			-3332.82			43.90	0.00	216.44	1257.28	0.1414
				SLE Q.P.	0.00			-3222.37			42.45	0.00	209.27	1215.62	0.1367
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6904.94	-11109.65	0.22				
				SLE Rare	0.00			-4414.62			58.15	0.00	286.70	1665.38	
				SLE Freq.	0.00			-4015.45			52.90	0.00	260.78	1514.80	0.1747
				SLE Q.P.	0.00			-3882.68			51.15	0.00	252.15	1464.71	0.1653
3031	0.74	9.42	9.42		0.00	11109.65	0.22	-6904.94	-11109.65	0.22					
				SLE Rare	0.00			-4673.57			61.57	0.00	303.52	1763.07	
				SLE Freq.	0.00			-4251.70			56.01	0.00	276.12	1603.92	0.1914
				SLE Q.P.	0.00			-4111.45			54.16	0.00	267.01	1551.01	0.1815
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
3031	0.00	9.42	9.42		0.00	11109.65	0.22	-6910.59	-11109.65	0.22					
				SLE Rare	0.00			-4677.42			61.62	0.00	303.77	1764.52	
				SLE Freq.	0.00			-4255.22			56.06	0.00	276.35	1605.25	0.1916
				SLE Q.P.	0.00			-4114.86			54.21	0.00	267.23	1552.30	0.1817
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6910.59	-11109.65	0.22				
				SLE Rare	0.00			-4445.14			58.56	0.00	288.68	1676.90	
				SLE Freq.	0.00			-4045.02			53.29	0.00	262.70	1525.95	0.1768
				SLE Q.P.	0.00			-3912.02			51.53	0.00	254.06	1475.78	0.1674
2991	0.74	9.42	9.42		0.00	11109.65	0.22	-6600.45	-11109.65	0.22					
				SLE Rare	0.00			-3721.65			49.03	0.00	241.70	1403.96	
				SLE Freq.	0.00			-3388.21			44.63	0.00	220.04	1278.18	0.1438
				SLE Q.P.	0.00			-3277.44			43.17	0.00	212.85	1236.39	0.1391
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
2991	0.00	9.42	9.42		0.00	11109.65	0.22	-5258.26	-11109.65	0.22					
				SLE Rare	0.00			-3560.72			46.91	0.00	231.24	1343.26	
				SLE Freq.	0.00			-3241.78			42.70	0.00	210.53	1222.94	0.1376
				SLE Q.P.	0.00			-3135.83			41.31	0.00	203.65	1182.97	0.1331
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5258.26	-11109.65	0.22				
				SLE Rare	0.00			-2373.74			31.27	0.00	154.16	895.48	
				SLE Freq.	0.00			-2163.57			28.50	0.00	140.51	816.19	0.0918
				SLE Q.P.	0.00			-2093.88			27.58	0.00	135.98	789.90	0.0888
2979	0.72	9.42	9.42		0.00	11109.65	0.22	-3650.51	-11109.65	0.22					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	0.00				-714.08			9.41	0.00	46.37	269.38	
				SLE Freq.	0.00				-655.61			8.64	0.00	42.58	247.32	0.0278
				SLE Q.P.	0.00				-636.49			8.38	0.00	41.34	240.11	0.0270
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
2979	0.00	9.71	9.42			2700.11	11397.24	0.22	-709.67	-11110.44	0.22					
				SLE Rare	0.00				-484.01			6.36	0.00	31.23	182.65	
				SLE Freq.	0.00				-446.13			5.86	0.00	28.78	168.35	0.0189
				SLE Q.P.	0.00				-433.85			5.70	0.00	27.99	163.72	0.0184
Camp.	0.37	11.17	9.42	5320.00	183.71	6516.57	12854.87	0.23	-709.67	-11113.99	0.22					
				SLE Rare	1713.26				-124.31			1.61	21.16	549.75	117.32	
				SLE Freq.	1548.85				-113.02			1.47	19.13	497.00	106.06	0.0102
				SLE Q.P.	1494.04				-109.26			1.42	18.46	479.41	102.31	0.0098
2977	0.74	12.63	9.42			6516.57	14307.30	0.24	0.00	-11116.93	0.22					
				SLE Rare	4404.37				0.00			0.00	52.04	1257.45	310.30	
				SLE Freq.	3994.38				0.00			0.00	47.20	1140.40	281.42	0.0244
				SLE Q.P.	3857.72				0.00			0.00	45.58	1101.38	271.79	0.0236
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
2977	0.00	13.08	9.42			11702.93	14757.60	0.25	0.00	-11117.74	0.22					
				SLE Rare	4571.87				0.00			0.00	53.35	1262.19	324.33	
				SLE Freq.	4147.47				0.00			0.00	48.40	1145.02	294.23	0.0248
				SLE Q.P.	4006.00				0.00			0.00	46.75	1105.96	284.19	0.0240
Camp.	0.30	14.24	9.42	5320.00	178.82	14861.41	15899.04	0.26	-168.10	-11119.63	0.22					
				SLE Rare	7144.63				-113.75			1.44	80.98	1820.23	514.27	
				SLE Freq.	6485.60				-103.42			1.31	73.51	1652.33	466.84	0.0369
				SLE Q.P.	6265.93				-99.98			1.26	71.02	1596.37	451.03	0.0357
101	0.61	15.62	6.49			14861.41	17260.20	0.28	-25.49	-8203.77	0.21					
				SLE Rare	10050.39				-17.25			0.26	114.41	2339.49	537.42	
				SLE Freq.	9126.50				-15.68			0.23	103.89	2124.43	488.02	0.0396
				SLE Q.P.	8818.54				-15.16			0.22	100.38	2052.74	471.55	0.0383

Da [m]	A [m]	Dx [m]	V <sub>ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 110 3121 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	15026.95	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3121 3087 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11790.54	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3087 3037 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7836.16	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3037 3031 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3980.72	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 3031 2991 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3882.28	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 2991 2979 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7737.72	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 2979 2977 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11692.10	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 2977 101 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14928.51	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 358 Nodi 109 5802 5804 5806 5808 5810 5812 5814 119

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
109	0.13	18.71	6.49			14839.43	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	10032.17		-17.25			0.25	107.97	1967.99	545.33	
						SLE Freq.	9106.92		-15.68			0.23	98.01	1786.49	495.03	0.0353
						SLE Q.P.	8798.51		-15.16			0.22	94.69	1725.99	478.27	0.0341

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Camp.	0.43	16.64	9.42	5320.00	178.82	14839.43	18263.83	0.28	-168.11	-11122.91	0.22						
				SLE Rare		7128.17			-113.76			1.41	76.70	1565.61	523.71		
				SLE Freq.		6467.97			-103.42			1.28	69.60	1420.61	475.20	0.0336	
				SLE Q.P.		6247.91			-99.98			1.24	67.23	1372.27	459.03	0.0324	
5802	0.73	14.91	9.42			11682.41	16566.52	0.26	0.00	-11120.64	0.22						
				SLE Rare		4557.19			0.00			0.00	50.84	1110.90	330.30		
				SLE Freq.		4131.79			0.00			0.00	46.10	1007.21	299.47	0.0229	
				SLE Q.P.		3990.00			0.00			0.00	44.52	972.64	289.19	0.0221	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5802	0.00	14.23	9.42			6496.51	15895.21	0.26	0.00	-11119.63	0.22						
				SLE Rare		4388.00			0.00			0.00	49.74	1118.22	315.84		
				SLE Freq.		3976.99			0.00			0.00	45.08	1013.48	286.25	0.0226	
				SLE Q.P.		3839.98			0.00			0.00	43.53	978.56	276.39	0.0219	
Camp.	0.37	12.04	9.42	5320.00	183.71	6496.51	13724.80	0.24	-726.35	-11115.81	0.22						
				SLE Rare		1699.07			-124.31			1.60	20.42	507.51	118.50		
				SLE Freq.		1533.86			-113.02			1.46	18.43	458.16	106.97	0.0096	
				SLE Q.P.		1478.79			-109.26			1.41	17.77	441.72	103.13	0.0093	
5804	0.74	9.86	9.42			2682.50	11540.96	0.22	-726.35	-11110.82	0.22						
				SLE Rare		0.00			-497.18			6.52	0.00	31.97	187.65		
				SLE Freq.		0.00			-459.59			6.03	0.00	29.55	173.46	0.0195	
				SLE Q.P.		0.00			-447.37			5.87	0.00	28.77	168.85	0.0190	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5804	0.00	9.42	9.42			0.00	11109.65	0.22	-3665.52	-11109.65	0.22						
				SLE Rare		0.00			-728.33			9.59	0.00	47.30	274.76		
				SLE Freq.		0.00			-670.14			8.83	0.00	43.52	252.80	0.0284	
				SLE Q.P.		0.00			-651.08			8.58	0.00	42.28	245.61	0.0276	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5270.55	-11109.65	0.22						
				SLE Rare		0.00			-2385.58			31.43	0.00	154.93	899.94		
				SLE Freq.		0.00			-2175.53			28.66	0.00	141.29	820.70	0.0923	
				SLE Q.P.		0.00			-2105.86			27.74	0.00	136.76	794.42	0.0894	
5806	0.72	9.42	9.42			0.00	11109.65	0.22	-5270.55	-11109.65	0.22						
				SLE Rare		0.00			-3570.14			47.03	0.00	231.86	1346.81		
				SLE Freq.		0.00			-3251.18			42.83	0.00	211.14	1226.48	0.1379	
				SLE Q.P.		0.00			-3145.21			41.43	0.00	204.26	1186.51	0.1335	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5806	0.00	9.42	9.42			0.00	11109.65	0.22	-6610.58	-11109.65	0.22						
				SLE Rare		0.00			-3731.77			49.16	0.00	242.35	1407.78		
				SLE Freq.		0.00			-3398.29			44.77	0.00	220.70	1281.98	0.1442	
				SLE Q.P.		0.00			-3287.49			43.31	0.00	213.50	1240.18	0.1395	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6917.90	-11109.65	0.22						
				SLE Rare		0.00			-4452.80			58.66	0.00	289.18	1679.79		
				SLE Freq.		0.00			-4052.48			53.38	0.00	263.18	1528.77	0.1773	
				SLE Q.P.		0.00			-3919.42			51.63	0.00	254.54	1478.57	0.1679	
5808	0.74	9.42	9.42			0.00	11109.65	0.22	-6917.90	-11109.65	0.22						
				SLE Rare		0.00			-4682.62			61.69	0.00	304.10	1766.48		
				SLE Freq.		0.00			-4260.07			56.12	0.00	276.66	1607.08	0.1920	
				SLE Q.P.		0.00			-4119.61			54.27	0.00	267.54	1554.09	0.1821	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5808	0.00	9.42	9.42			0.00	11109.65	0.22	-6912.78	-11109.65	0.22						
				SLE Rare		0.00			-4679.15			61.64	0.00	303.88	1765.17		
				SLE Freq.		0.00			-4256.92			56.08	0.00	276.46	1605.89	0.1918	
				SLE Q.P.		0.00			-4116.56			54.23	0.00	267.34	1552.94	0.1818	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6912.78	-11109.65	0.22						
				SLE Rare		0.00			-4417.74			58.20	0.00	286.90	1666.56		
				SLE Freq.		0.00			-4018.22			52.93	0.00	260.96	1515.84	0.1749	

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**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-3885.27			51.18	0.00	252.32	1465.69	0.1655
5810	0.74	9.42	9.42		0.00	11109.65	0.22	-6564.47	-11109.65	0.22					
				SLE Rare	0.00			-3665.31			48.28	0.00	238.04	1382.71	
				SLE Freq.	0.00			-3333.20			43.91	0.00	216.47	1257.43	0.1414
				SLE Q.P.	0.00			-3222.50			42.45	0.00	209.28	1215.66	0.1367
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5810	0.00	9.42	9.42		0.00	11109.65	0.22	-5170.53	-11109.65	0.22					
				SLE Rare	0.00			-3497.80			46.08	0.00	227.16	1319.52	
				SLE Freq.	0.00			-3180.82			41.90	0.00	206.57	1199.94	0.1350
				SLE Q.P.	0.00			-3075.15			40.51	0.00	199.71	1160.08	0.1305
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5170.53	-11109.65	0.22				
				SLE Rare	0.00			-2283.11			30.08	0.00	148.27	861.29	
				SLE Freq.	0.00			-2074.94			27.33	0.00	134.75	782.76	0.0880
				SLE Q.P.	0.00			-2005.55			26.42	0.00	130.25	756.58	0.0851
5812	0.72	9.42	9.42		0.00	11109.65	0.22	-3527.35	-11109.65	0.22					
				SLE Rare	0.00			-595.73			7.85	0.00	38.69	224.74	
				SLE Freq.	0.00			-539.32			7.10	0.00	35.02	203.45	0.0229
				SLE Q.P.	0.00			-520.51			6.86	0.00	33.80	196.36	0.0221
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5812	0.00	9.86	9.42		2907.73	11540.97	0.22	-541.05	-11110.82	0.22					
				SLE Rare	0.00			-362.79			4.76	0.00	23.33	136.93	
				SLE Freq.	0.00			-327.47			4.30	0.00	21.06	123.60	0.0139
				SLE Q.P.	0.00			-315.70			4.14	0.00	20.30	119.15	0.0134
Camp.	0.37	12.04	9.42	5320.00	183.71	6762.03	13724.81	0.24	-541.05	-11115.81	0.22				
				SLE Rare	1861.65			-124.31			1.60	22.37	556.08	129.83	
				SLE Freq.	1696.50			-113.02			1.46	20.39	506.75	118.32	0.0107
				SLE Q.P.	1641.08			-109.26			1.41	19.72	490.19	114.45	0.0103
5814	0.74	14.23	9.42		6762.03	15895.24	0.26	0.00	-11119.63	0.22					
				SLE Rare	4581.49			0.00			0.00	51.93	1167.52	329.76	
				SLE Freq.	4170.64			0.00			0.00	47.27	1062.83	300.19	0.0237
				SLE Q.P.	4033.31			0.00			0.00	45.72	1027.83	290.31	0.0230
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5814	0.00	14.91	9.42		11986.69	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare	4746.31			0.00			0.00	52.95	1157.01	344.01	
				SLE Freq.	4320.34			0.00			0.00	48.20	1053.17	313.13	0.0239
				SLE Q.P.	4178.02			0.00			0.00	46.61	1018.47	302.82	0.0231
Camp.	0.30	16.64	9.42	5320.00	178.82	15168.62	18263.85	0.28	-168.10	-11122.91	0.22				
				SLE Rare	7342.57			-113.75			1.41	79.01	1612.70	539.46	
				SLE Freq.	6681.88			-103.42			1.28	71.90	1467.59	490.92	0.0347
				SLE Q.P.	6461.32			-99.98			1.24	69.52	1419.15	474.71	0.0335
119	0.61	18.71	6.49		15168.62	20249.27	0.32	-25.49	-8214.46	0.21					
				SLE Rare	10271.85			-17.25			0.25	110.55	2015.01	558.36	
				SLE Freq.	9346.20			-15.68			0.23	100.59	1833.43	508.04	0.0363
				SLE Q.P.	9037.29			-15.16			0.22	97.26	1772.83	491.25	0.0351

Da [m]	A [m]	Dx [m]	V <sub>ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 109 5802 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14921.65	7069.47	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 5802 5804 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11685.21	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 5804 5806 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7730.85	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 5806 5808 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3875.41	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'



**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Trave 5808 5810 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3988.78		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 5810 5812 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	7844.21		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 5812 5814 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11798.59		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 5814 119 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	15035.00		7069.46		37247.76		36621.00		ø 10 2br. 12.5'					
Travata: Travata 383 Nodi 119 5816 5818 5820 5822 5824 5826 5828 125																
Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
119	0.13	18.71	6.49			14830.57	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		10032.20			-17.25			0.25	107.97	1968.00	545.33	
				SLE Freq.		9117.71			-15.68			0.23	98.13	1788.60	495.62	0.0354
				SLE Q.P.		8812.88			-15.16			0.22	94.85	1728.81	479.05	0.0342
Camp.	0.43	16.64	9.42	5320.00	178.82	14830.57	18263.84	0.28	-168.10	-11122.91	0.22					
				SLE Rare		7133.07			-113.76			1.41	76.75	1566.69	524.07	
				SLE Freq.		6481.84			-103.42			1.28	69.75	1423.65	476.22	0.0336
				SLE Q.P.		6264.76			-99.98			1.24	67.41	1375.97	460.27	0.0325
5816	0.73	14.91	9.42			11679.79	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare		4566.96			0.00			0.00	50.95	1113.29	331.01	
				SLE Freq.		4148.74			0.00			0.00	46.29	1011.34	300.70	0.0230
				SLE Q.P.		4009.33			0.00			0.00	44.73	977.35	290.59	0.0222
Trave Sez. 2 Rett. 40x40 [cm]																
5816	0.00	14.23	9.42			6497.30	15895.23	0.26	0.00	-11119.63	0.22					
				SLE Rare		4392.77			0.00			0.00	49.79	1119.43	316.18	
				SLE Freq.		3989.62			0.00			0.00	45.22	1016.70	287.16	0.0227
				SLE Q.P.		3855.24			0.00			0.00	43.70	982.45	277.49	0.0220
Camp.	0.37	12.04	9.42	5320.00	183.71	6497.30	13724.81	0.24	-700.59	-11115.81	0.22					
				SLE Rare		1709.78			-124.31			1.60	20.55	510.71	119.24	
				SLE Freq.		1550.24			-113.02			1.46	18.63	463.06	108.12	0.0098
				SLE Q.P.		1497.06			-109.26			1.41	17.99	447.17	104.41	0.0094
5818	0.74	9.86	9.42			2693.30	11540.97	0.22	-700.59	-11110.82	0.22					
				SLE Rare		0.00			-477.84			6.27	0.00	30.73	180.35	
				SLE Freq.		0.00			-438.37			5.75	0.00	28.19	165.46	0.0186
				SLE Q.P.		0.00			-425.17			5.58	0.00	27.34	160.47	0.0181
Trave Sez. 2 Rett. 40x40 [cm]																
5818	0.00	9.42	9.42			0.00	11109.65	0.22	-3637.76	-11109.65	0.22					
				SLE Rare		0.00			-713.91			9.40	0.00	46.36	269.32	
				SLE Freq.		0.00			-653.44			8.61	0.00	42.44	246.51	0.0277
				SLE Q.P.		0.00			-633.25			8.34	0.00	41.13	238.89	0.0269
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5234.79	-11109.65	0.22					
				SLE Rare		0.00			-2366.43			31.17	0.00	153.68	892.72	
				SLE Freq.		0.00			-2155.92			28.40	0.00	140.01	813.30	0.0915
				SLE Q.P.		0.00			-2085.70			27.48	0.00	135.45	786.82	0.0885
5820	0.72	9.42	9.42			0.00	11109.65	0.22	-5234.79	-11109.65	0.22					
				SLE Rare		0.00			-3546.27			46.72	0.00	230.31	1337.80	
				SLE Freq.		0.00			-3228.65			42.53	0.00	209.68	1217.98	0.1370
				SLE Q.P.		0.00			-3122.73			41.14	0.00	202.80	1178.03	0.1325
Trave Sez. 2 Rett. 40x40 [cm]																
5820	0.00	9.42	9.42			0.00	11109.65	0.22	-6574.42	-11109.65	0.22					
				SLE Rare		0.00			-3713.93			48.92	0.00	241.19	1401.05	
				SLE Freq.		0.00			-3381.37			44.54	0.00	219.60	1275.60	0.1435
				SLE Q.P.		0.00			-3270.49			43.08	0.00	212.40	1233.77	0.1388

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6873.40	-11109.65	0.22						
				SLE Rare		0.00			-4430.15			58.36	0.00	287.71	1671.24		
				SLE Freq.		0.00			-4032.60			53.12	0.00	261.89	1521.27	0.1759	
				SLE Q.P.		0.00			-3900.04			51.38	0.00	253.28	1471.26	0.1665	
5822	0.74	9.42	9.42			0.00	11109.65	0.22	-6873.40	-11109.65	0.22						
				SLE Rare		0.00			-4655.14			61.32	0.00	302.32	1756.12		
				SLE Freq.		0.00			-4237.22			55.82	0.00	275.18	1598.46	0.1904	
				SLE Q.P.		0.00			-4097.87			53.98	0.00	266.13	1545.89	0.1805	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5822	0.00	9.42	9.42			0.00	11109.65	0.22	-6878.02	-11109.65	0.22						
				SLE Rare		0.00			-4658.26			61.36	0.00	302.52	1757.30		
				SLE Freq.		0.00			-4240.16			55.86	0.00	275.37	1599.57	0.1906	
				SLE Q.P.		0.00			-4100.76			54.02	0.00	266.32	1546.98	0.1807	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6878.02	-11109.65	0.22						
				SLE Rare		0.00			-4392.04			57.86	0.00	285.23	1656.86		
				SLE Freq.		0.00			-3998.18			52.67	0.00	259.65	1508.28	0.1735	
				SLE Q.P.		0.00			-3866.86			50.94	0.00	251.13	1458.74	0.1642	
5824	0.74	9.42	9.42			0.00	11109.65	0.22	-6521.37	-11109.65	0.22						
				SLE Rare		0.00			-3634.60			47.88	0.00	236.04	1371.12		
				SLE Freq.		0.00			-3309.60			43.60	0.00	214.94	1248.52	0.1404	
				SLE Q.P.		0.00			-3201.23			42.17	0.00	207.90	1207.64	0.1358	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5824	0.00	9.42	9.42			0.00	11109.65	0.22	-5129.88	-11109.65	0.22						
				SLE Rare		0.00			-3475.03			45.78	0.00	225.68	1310.93		
				SLE Freq.		0.00			-3164.43			41.69	0.00	205.51	1193.76	0.1343	
				SLE Q.P.		0.00			-3060.88			40.32	0.00	198.78	1154.70	0.1299	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5129.88	-11109.65	0.22						
				SLE Rare		0.00			-2254.75			29.70	0.00	146.43	850.59		
				SLE Freq.		0.00			-2055.06			27.07	0.00	133.46	775.26	0.0872	
				SLE Q.P.		0.00			-1988.47			26.19	0.00	129.14	750.14	0.0844	
5826	0.72	9.42	9.42			0.00	11109.65	0.22	-3477.50	-11109.65	0.22						
				SLE Rare		0.00			-561.79			7.40	0.00	36.48	211.93		
				SLE Freq.		0.00			-515.94			6.80	0.00	33.51	194.63	0.0219	
				SLE Q.P.		0.00			-500.62			6.59	0.00	32.51	188.86	0.0212	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5826	0.00	9.86	9.42			2967.43	11540.95	0.22	-493.58	-11110.82	0.22						
				SLE Rare		0.00			-337.29			4.43	0.00	21.69	127.30		
				SLE Freq.		0.00			-311.55			4.09	0.00	20.03	117.59	0.0132	
				SLE Q.P.		0.00			-302.96			3.98	0.00	19.48	114.35	0.0129	
Camp.	0.37	12.04	9.42	5320.00	183.71	6830.45	13724.79	0.24	-493.58	-11115.81	0.22						
				SLE Rare		1893.99			-124.31			1.60	22.76	565.74	132.09		
				SLE Freq.		1716.09			-113.02			1.46	20.62	512.60	119.68	0.0108	
				SLE Q.P.		1656.79			-109.26			1.41	19.91	494.88	115.55	0.0104	
5828	0.74	14.23	9.42			6830.45	15895.21	0.26	0.00	-11119.63	0.22						
				SLE Rare		4618.88			0.00			0.00	52.35	1177.05	332.46		
				SLE Freq.		4193.38			0.00			0.00	47.53	1068.62	301.83	0.0239	
				SLE Q.P.		4051.54			0.00			0.00	45.92	1032.48	291.62	0.0231	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5828	0.00	14.91	9.42			12047.82	16566.52	0.26	0.00	-11120.64	0.22						
				SLE Rare		4773.00			0.00			0.00	53.25	1163.51	345.94		
				SLE Freq.		4334.05			0.00			0.00	48.35	1056.51	314.13	0.0240	
				SLE Q.P.		4187.73			0.00			0.00	46.72	1020.84	303.52	0.0232	
Camp.	0.30	16.64	9.42	5320.00	178.82	15235.23	18263.83	0.28	-168.11	-11122.91	0.22						
				SLE Rare		7373.42			-113.76			1.41	79.34	1619.48	541.72		
				SLE Freq.		6698.18			-103.42			1.28	72.07	1471.17	492.11	0.0348	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	6473.10			-99.98			1.24	69.65	1421.74	475.58	0.0336
125	0.61	18.71	6.49		15235.23	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare	10306.86			-17.25			0.25	110.93	2021.88	560.26	
				SLE Freq.	9365.09			-15.68			0.23	100.79	1837.13	509.07	0.0363
				SLE Q.P.	9051.17			-15.16			0.22	97.41	1775.55	492.00	0.0351

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 119 5816 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14894.32	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5816 5818 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11657.90	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5818 5820 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7703.53	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5820 5822 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3848.10	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5822 5824 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4013.40	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5824 5826 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7868.84	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5826 5828 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11823.21	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5828 125 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	15059.64	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 384 Nodi 125 5827 5825 5823 5821 5819 5817 5815 118

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
125	0.12	18.71	6.49			14986.68	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	10143.30			-17.25		0.25	109.17	1989.79	551.37	
						SLE Freq.	9224.44			-15.68		0.23	99.28	1809.54	501.42	0.0358
						SLE Q.P.	8917.96			-15.16		0.22	95.98	1749.42	484.76	0.0346
Camp.	0.43	16.64	9.42	5320.00	178.82	14986.68	18263.83	0.28	-168.11	-11122.91	0.22					
						SLE Rare	7229.02			-113.76		1.41	77.79	1587.76	531.12	
						SLE Freq.	6574.36			-103.42		1.28	70.74	1443.97	483.02	0.0341
						SLE Q.P.	6355.95			-99.98		1.24	68.39	1396.00	466.97	0.0330
5827	0.73	14.91	9.42			11820.17	16566.52	0.26	0.00	-11120.64	0.22					
						SLE Rare	4647.91			0.00		0.00	51.86	1133.02	336.87	
						SLE Freq.	4227.04			0.00		0.00	47.16	1030.43	306.37	0.0234
						SLE Q.P.	4086.69			0.00		0.00	45.59	996.21	296.20	0.0226
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
5827	0.00	14.23	9.42			6626.98	15895.21	0.26	0.00	-11119.63	0.22					
						SLE Rare	4485.23			0.00		0.00	50.84	1143.00	322.84	
						SLE Freq.	4078.74			0.00		0.00	46.23	1039.41	293.58	0.0232
						SLE Q.P.	3943.25			0.00		0.00	44.70	1004.88	283.83	0.0225
Camp.	0.37	12.04	9.42	5320.00	183.71	6626.98	13724.80	0.24	-621.81	-11115.81	0.22					
						SLE Rare	1783.93			-124.31		1.60	21.44	532.86	124.41	
						SLE Freq.	1622.13			-113.02		1.46	19.50	484.53	113.13	0.0102
						SLE Q.P.	1568.20			-109.26		1.41	18.85	468.42	109.37	0.0099
5825	0.74	9.86	9.42			2797.92	11540.96	0.22	-621.81	-11110.82	0.22					
						SLE Rare	0.00			-420.99		5.52	0.00	27.07	158.89	
						SLE Freq.	0.00			-382.83		5.02	0.00	24.62	144.49	0.0163
						SLE Q.P.	0.00			-370.25		4.86	0.00	23.81	139.74	0.0157
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
5825	0.00	9.42	9.42			0.00	11109.65	0.22	-3574.91	-11109.65	0.22					
						SLE Rare	0.00			-649.32		8.55	0.00	42.17	244.95	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-590.70			7.78	0.00	38.36	222.84	0.0251
				SLE Q.P.	0.00			-571.30			7.53	0.00	37.10	215.52	0.0242
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5195.64	-11109.65	0.22				
				SLE Rare	0.00			-2319.67			30.56	0.00	150.65	875.08	
				SLE Freq.	0.00			-2109.94			27.79	0.00	137.03	795.96	0.0895
				SLE Q.P.	0.00			-2040.15			26.88	0.00	132.49	769.63	0.0866
5823	0.72	9.42	9.42			0.00	11109.65	0.22	-5195.64	-11109.65	0.22				
				SLE Rare	0.00			-3517.33			46.33	0.00	228.43	1326.89	
				SLE Freq.	0.00			-3199.43			42.15	0.00	207.78	1206.96	0.1358
				SLE Q.P.	0.00			-3093.58			40.75	0.00	200.91	1167.03	0.1313
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5823	0.00	9.42	9.42			0.00	11109.65	0.22	-6552.87	-11109.65	0.22				
				SLE Rare	0.00			-3678.50			48.46	0.00	238.89	1387.69	
				SLE Freq.	0.00			-3346.22			44.08	0.00	217.31	1262.34	0.1420
				SLE Q.P.	0.00			-3235.56			42.62	0.00	210.13	1220.59	0.1373
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6876.54	-11109.65	0.22				
				SLE Rare	0.00			-4412.88			58.13	0.00	286.59	1664.73	
				SLE Freq.	0.00			-4014.53			52.88	0.00	260.72	1514.45	0.1746
				SLE Q.P.	0.00			-3881.82			51.14	0.00	252.10	1464.39	0.1652
5821	0.74	9.42	9.42			0.00	11109.65	0.22	-6876.54	-11109.65	0.22				
				SLE Rare	0.00			-4656.05			61.34	0.00	302.38	1756.46	
				SLE Freq.	0.00			-4236.24			55.81	0.00	275.11	1598.09	0.1903
				SLE Q.P.	0.00			-4096.36			53.96	0.00	266.03	1545.32	0.1804
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5821	0.00	9.42	9.42			0.00	11109.65	0.22	-6872.77	-11109.65	0.22				
				SLE Rare	0.00			-4653.66			61.30	0.00	302.22	1755.56	
				SLE Freq.	0.00			-4234.21			55.78	0.00	274.98	1597.33	0.1902
				SLE Q.P.	0.00			-4094.45			53.94	0.00	265.91	1544.60	0.1803
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6872.77	-11109.65	0.22				
				SLE Rare	0.00			-4405.61			58.04	0.00	286.11	1661.98	
				SLE Freq.	0.00			-4009.32			52.82	0.00	260.38	1512.49	0.1743
				SLE Q.P.	0.00			-3877.26			51.08	0.00	251.80	1462.67	0.1649
5819	0.74	9.42	9.42			0.00	11109.65	0.22	-6540.81	-11109.65	0.22				
				SLE Rare	0.00			-3666.33			48.30	0.00	238.10	1383.10	
				SLE Freq.	0.00			-3337.83			43.97	0.00	216.77	1259.17	0.1416
				SLE Q.P.	0.00			-3228.34			42.53	0.00	209.66	1217.87	0.1370
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5819	0.00	9.42	9.42			0.00	11109.65	0.22	-5167.00	-11109.65	0.22				
				SLE Rare	0.00			-3500.42			46.11	0.00	227.33	1320.51	
				SLE Freq.	0.00			-3186.99			41.98	0.00	206.97	1202.27	0.1352
				SLE Q.P.	0.00			-3082.52			40.61	0.00	200.19	1162.86	0.1308
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5167.00	-11109.65	0.22				
				SLE Rare	0.00			-2297.97			30.27	0.00	149.24	866.89	
				SLE Freq.	0.00			-2094.38			27.59	0.00	136.02	790.09	0.0889
				SLE Q.P.	0.00			-2026.51			26.70	0.00	131.61	764.49	0.0860
5817	0.72	9.42	9.42			0.00	11109.65	0.22	-3538.32	-11109.65	0.22				
				SLE Rare	0.00			-622.84			8.20	0.00	40.45	234.96	
				SLE Freq.	0.00			-572.02			7.54	0.00	37.15	215.79	0.0243
				SLE Q.P.	0.00			-555.06			7.31	0.00	36.05	209.39	0.0236
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5817	0.00	9.86	9.42			2862.28	11540.97	0.22	-570.48	-11110.82	0.22				
				SLE Rare	0.00			-390.86			5.13	0.00	25.14	147.52	
				SLE Freq.	0.00			-360.94			4.74	0.00	23.21	136.23	0.0153
				SLE Q.P.	0.00			-350.93			4.60	0.00	22.57	132.45	0.0149
Camp.	0.37	12.04	9.42	5320.00	183.71	6700.25	13724.81	0.24	-570.48	-11115.81	0.22				

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	1821.52			-124.31		1.60	21.89	544.09	127.03	
				SLE Freq.	1649.03			-113.02		1.46	19.82	492.57	115.01	0.0104
				SLE Q.P.	1591.54			-109.26		1.41	19.13	475.39	111.00	0.0100
5815	0.74	14.23	9.42		6700.25	15895.23	0.26	0.00	-11119.63	0.22				
				SLE Rare	4528.10			0.00		0.00	51.32	1153.92	325.92	
				SLE Freq.	4109.09			0.00		0.00	46.58	1047.14	295.76	0.0234
				SLE Q.P.	3969.41			0.00		0.00	44.99	1011.55	285.71	0.0226
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>														
5815	0.00	14.91	9.42		11907.05	16566.54	0.26	0.00	-11120.64	0.22				
				SLE Rare	4693.52			0.00		0.00	52.37	1144.14	340.18	
				SLE Freq.	4260.00			0.00		0.00	47.53	1038.46	308.76	0.0236
				SLE Q.P.	4115.49			0.00		0.00	45.92	1003.23	298.29	0.0228
Camp.	0.30	16.64	9.42	5320.00	178.82	15078.88	18263.84	0.28	-168.10	-11122.91	0.22			
				SLE Rare	7278.94			-113.76		1.41	78.32	1598.73	534.78	
				SLE Freq.	6610.02			-103.42		1.28	71.12	1451.81	485.64	0.0343
				SLE Q.P.	6387.05			-99.98		1.24	68.73	1402.83	469.26	0.0331
118	0.61	18.71	6.49		15078.88	20249.27	0.32	-25.49	-8214.47	0.21				
				SLE Rare	10197.37			-17.25		0.25	109.75	2000.40	554.31	
				SLE Freq.	9262.80			-15.68		0.23	99.69	1817.07	503.51	0.0359
				SLE Q.P.	8951.28			-15.16		0.22	96.34	1755.96	486.57	0.0347

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 125 5827 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14964.76	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5827 5825 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11728.33	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5825 5823 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7773.95	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5823 5821 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3918.52	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5821 5819 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3942.87	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5819 5817 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7798.30	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5817 5815 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11752.67	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5815 118 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14989.09	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 385 Nodi 118 5813 5811 5809 5807 5805 5803 5801 109

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
118	0.13	18.71	6.49			15071.49	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	10208.92		-17.25			0.25	109.87	2002.66	554.94	
						SLE Freq.	9291.61		-15.68			0.23	100.00	1822.72	505.07	0.0360
						SLE Q.P.	8985.08		-15.16			0.22	96.70	1762.59	488.41	0.0349
Camp.	0.43	16.64	9.42	5320.00	178.82	15071.49	18263.84	0.28	-168.10	-11122.91	0.22					
						SLE Rare	7287.65		-113.75			1.41	78.42	1600.64	535.42	
						SLE Freq.	6634.29		-103.42			1.28	71.39	1457.14	487.42	0.0344
						SLE Q.P.	6415.81		-99.98			1.24	69.03	1409.15	471.37	0.0333
5813	0.73	14.91	9.42			11898.51	16566.54	0.26	0.00	-11120.64	0.22					
						SLE Rare	4699.41		0.00			0.00	52.43	1145.57	340.61	
						SLE Freq.	4279.73		0.00			0.00	47.75	1043.27	310.19	0.0237
						SLE Q.P.	4139.23		0.00			0.00	46.18	1009.02	300.01	0.0229
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																



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**Parcheggio interrato - Tabulato di calcolo**

5813	0.00	14.23	9.42			6701.38	15895.24	0.26	0.00	-11119.63	0.22						
				SLE Rare		4542.62			0.00			0.00	51.49	1157.62	326.97		
				SLE Freq.		4137.52			0.00			0.00	46.90	1054.39	297.81	0.0236	
				SLE Q.P.		4001.87			0.00			0.00	45.36	1019.82	288.04	0.0228	
Camp.	0.37	12.04	9.42	5320.00	183.71	6701.38	13724.81	0.24	-575.48	-11115.81	0.22						
				SLE Rare		1832.57			-124.31			1.60	22.02	547.39	127.81		
				SLE Freq.		1671.92			-113.02			1.46	20.09	499.40	116.60	0.0105	
				SLE Q.P.		1617.84			-109.26			1.41	19.44	483.25	112.83	0.0102	
5811	0.74	9.86	9.42			2861.51	11540.97	0.22	-575.48	-11110.82	0.22						
				SLE Rare		0.00			-384.73			5.05	0.00	24.74	145.21		
				SLE Freq.		0.00			-345.48			4.53	0.00	22.22	130.39	0.0147	
				SLE Q.P.		0.00			-332.39			4.36	0.00	21.38	125.45	0.0141	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5811	0.00	9.42	9.42			0.00	11109.65	0.22	-3532.58	-11109.65	0.22						
				SLE Rare		0.00			-609.30			8.03	0.00	39.57	229.85		
				SLE Freq.		0.00			-549.51			7.24	0.00	35.69	207.30	0.0233	
				SLE Q.P.		0.00			-529.59			6.98	0.00	34.39	199.78	0.0225	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5161.17	-11109.65	0.22						
				SLE Rare		0.00			-2286.46			30.12	0.00	148.49	862.55		
				SLE Freq.		0.00			-2076.19			27.35	0.00	134.83	783.23	0.0881	
				SLE Q.P.		0.00			-2006.10			26.43	0.00	130.28	756.79	0.0851	
5809	0.72	9.42	9.42			0.00	11109.65	0.22	-5161.17	-11109.65	0.22						
				SLE Rare		0.00			-3490.95			45.99	0.00	226.71	1316.94		
				SLE Freq.		0.00			-3173.13			41.80	0.00	206.07	1197.04	0.1346	
				SLE Q.P.		0.00			-3067.19			40.40	0.00	199.19	1157.07	0.1301	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5809	0.00	9.42	9.42			0.00	11109.65	0.22	-6523.73	-11109.65	0.22						
				SLE Rare		0.00			-3649.38			48.07	0.00	237.00	1376.70		
				SLE Freq.		0.00			-3317.12			43.70	0.00	215.42	1251.36	0.1407	
				SLE Q.P.		0.00			-3206.37			42.24	0.00	208.23	1209.58	0.1360	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6857.80	-11109.65	0.22						
				SLE Rare		0.00			-4390.72			57.84	0.00	285.15	1656.37		
				SLE Freq.		0.00			-3993.02			52.60	0.00	259.32	1506.34	0.1731	
				SLE Q.P.		0.00			-3860.46			50.85	0.00	250.71	1456.33	0.1638	
5807	0.74	9.42	9.42			0.00	11109.65	0.22	-6857.80	-11109.65	0.22						
				SLE Rare		0.00			-4642.32			61.15	0.00	301.49	1751.28		
				SLE Freq.		0.00			-4223.24			55.63	0.00	274.27	1593.19	0.1894	
				SLE Q.P.		0.00			-4083.57			53.79	0.00	265.20	1540.50	0.1795	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5807	0.00	9.42	9.42			0.00	11109.65	0.22	-6851.55	-11109.65	0.22						
				SLE Rare		0.00			-4638.13			61.10	0.00	301.21	1749.70		
				SLE Freq.		0.00			-4219.40			55.58	0.00	274.02	1591.74	0.1891	
				SLE Q.P.		0.00			-4079.82			53.74	0.00	264.96	1539.08	0.1792	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6851.55	-11109.65	0.22						
				SLE Rare		0.00			-4398.58			57.94	0.00	285.66	1659.33		
				SLE Freq.		0.00			-4003.32			52.74	0.00	259.99	1510.22	0.1738	
				SLE Q.P.		0.00			-3871.47			51.00	0.00	251.43	1460.48	0.1645	
5805	0.74	9.42	9.42			0.00	11109.65	0.22	-6529.99	-11109.65	0.22						
				SLE Rare		0.00			-3667.82			48.32	0.00	238.20	1383.66		
				SLE Freq.		0.00			-3340.64			44.01	0.00	216.95	1260.23	0.1417	
				SLE Q.P.		0.00			-3231.39			42.57	0.00	209.86	1219.02	0.1371	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
5805	0.00	9.42	9.42			0.00	11109.65	0.22	-5165.49	-11109.65	0.22						
				SLE Rare		0.00			-3500.30			46.11	0.00	227.32	1320.46		
				SLE Freq.		0.00			-3188.14			42.00	0.00	207.05	1202.70	0.1353	

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-3083.87			40.62	0.00	200.28	1163.37	0.1309
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5165.49	-11109.65	0.22				
				SLE Rare	0.00			-2306.19			30.38	0.00	149.77	869.99	
				SLE Freq.	0.00			-2104.16			27.72	0.00	136.65	793.78	0.0893
				SLE Q.P.	0.00			-2036.52			26.83	0.00	132.26	768.26	0.0864
5803	0.72	9.42	9.42			0.00	11109.65	0.22	-3546.78	-11109.65	0.22				
				SLE Rare	0.00			-639.40			8.42	0.00	41.52	241.21	
				SLE Freq.	0.00			-590.45			7.78	0.00	38.35	222.74	0.0251
				SLE Q.P.	0.00			-573.74			7.56	0.00	37.26	216.44	0.0243
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5803	0.00	9.86	9.42			2841.43	11540.96	0.22	-588.06	-11110.82	0.22				
				SLE Rare	0.00			-405.62			5.32	0.00	26.08	153.09	
				SLE Freq.	0.00			-377.45			4.95	0.00	24.27	142.46	0.0160
				SLE Q.P.	0.00			-367.65			4.82	0.00	23.64	138.76	0.0156
Camp.	0.37	12.04	9.42	5320.00	183.71	6670.83	13724.80	0.24	-588.06	-11115.81	0.22				
				SLE Rare	1803.63			-124.31			1.60	21.68	538.75	125.79	
				SLE Freq.	1628.30			-113.02			1.46	19.57	486.37	113.56	0.0102
				SLE Q.P.	1569.86			-109.26			1.41	18.87	468.92	109.48	0.0099
5801	0.74	14.23	9.42			6670.83	15895.21	0.26	0.00	-11119.63	0.22				
				SLE Rare	4503.03			0.00			0.00	51.04	1147.53	324.12	
				SLE Freq.	4080.60			0.00			0.00	46.25	1039.88	293.71	0.0232
				SLE Q.P.	3939.79			0.00			0.00	44.66	1004.00	283.58	0.0224
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
5801	0.00	14.91	9.42			11871.20	16566.52	0.26	0.00	-11120.64	0.22				
				SLE Rare	4670.79			0.00			0.00	52.11	1138.60	338.53	
				SLE Freq.	4234.19			0.00			0.00	47.24	1032.17	306.89	0.0234
				SLE Q.P.	4088.66			0.00			0.00	45.62	996.69	296.34	0.0226
Camp.	0.30	16.64	9.42	5320.00	178.82	15037.76	18263.83	0.28	-168.11	-11122.91	0.22				
				SLE Rare	7250.34			-113.76			1.41	78.01	1592.45	532.68	
				SLE Freq.	6577.88			-103.42			1.28	70.78	1444.75	483.28	0.0341
				SLE Q.P.	6353.72			-99.98			1.24	68.37	1395.51	466.81	0.0330
109	0.61	18.71	6.49			15037.76	20249.27	0.32	-25.49	-8214.47	0.21				
				SLE Rare	10162.91			-17.25			0.25	109.38	1993.64	552.44	
				SLE Freq.	9224.33			-15.68			0.23	99.28	1809.52	501.42	0.0358
				SLE Q.P.	8911.47			-15.16			0.22	95.91	1748.15	484.41	0.0346

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 118 5813 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14994.39	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5813 5811 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11757.98	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5811 5809 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7803.60	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5809 5807 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3948.17	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5807 5805 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3918.76	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5805 5803 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7774.20	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5803 5801 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11728.57	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 5801 109 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14965.00	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Travata: Travata 386 Nodi 209 8816 8818 8820 8822 8824 8826 8828 219

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
209	0.13	18.71	6.49			14943.98	20249.27	0.32	-25.49	-8214.47	0.21					
					SLE Rare	10105.47			-17.25			0.25	108.76	1982.37	549.31	
					SLE Freq.	9174.44			-15.68			0.23	98.74	1799.73	498.70	0.0356
					SLE Q.P.	8864.09			-15.16			0.22	95.40	1738.85	481.83	0.0344
Camp.	0.43	16.64	9.42	5320.00	178.82	14943.98	18263.83	0.28	-168.11	-11122.91	0.22					
					SLE Rare	7193.54			-113.76			1.41	77.40	1579.97	528.51	
					SLE Freq.	6528.03			-103.42			1.28	70.24	1433.80	479.61	0.0339
					SLE Q.P.	6306.20			-99.98			1.24	67.86	1385.08	463.32	0.0327
8816	0.73	14.91	9.42			11778.74	16566.52	0.26	0.00	-11120.64	0.22					
					SLE Rare	4614.64			0.00			0.00	51.49	1124.91	334.46	
					SLE Freq.	4184.40			0.00			0.00	46.68	1020.03	303.28	0.0232
					SLE Q.P.	4040.99			0.00			0.00	45.08	985.07	292.89	0.0224
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8816	0.00	14.23	9.42			6572.77	15895.21	0.26	0.00	-11119.63	0.22					
					SLE Rare	4441.71			0.00			0.00	50.35	1131.91	319.70	
					SLE Freq.	4025.90			0.00			0.00	45.63	1025.94	289.77	0.0229
					SLE Q.P.	3887.30			0.00			0.00	44.06	990.62	279.80	0.0221
Camp.	0.37	12.04	9.42	5320.00	183.71	6572.77	13724.80	0.24	-678.86	-11115.81	0.22					
					SLE Rare	1743.11			-124.31			1.60	20.95	520.67	121.57	
					SLE Freq.	1573.67			-113.02			1.46	18.91	470.06	109.75	0.0099
					SLE Q.P.	1517.19			-109.26			1.41	18.23	453.19	105.81	0.0095
8818	0.74	9.86	9.42			2745.50	11540.96	0.22	-678.86	-11110.82	0.22					
					SLE Rare	0.00			-463.50			6.08	0.00	29.81	174.94	
					SLE Freq.	0.00			-428.94			5.63	0.00	27.58	161.89	0.0182
					SLE Q.P.	0.00			-417.93			5.48	0.00	26.88	157.74	0.0177
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8818	0.00	9.42	9.42			0.00	11109.65	0.22	-3640.20	-11109.65	0.22					
					SLE Rare	0.00			-699.82			9.22	0.00	45.45	264.00	
					SLE Freq.	0.00			-644.38			8.49	0.00	41.85	243.09	0.0273
					SLE Q.P.	0.00			-626.46			8.25	0.00	40.68	236.33	0.0266
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5257.86	-11109.65	0.22					
					SLE Rare	0.00			-2366.55			31.18	0.00	153.69	892.76	
					SLE Freq.	0.00			-2158.65			28.44	0.00	140.19	814.33	0.0916
					SLE Q.P.	0.00			-2089.93			27.53	0.00	135.73	788.41	0.0887
8820	0.72	9.42	9.42			0.00	11109.65	0.22	-5257.86	-11109.65	0.22					
					SLE Rare	0.00			-3560.60			46.90	0.00	231.24	1343.21	
					SLE Freq.	0.00			-3243.17			42.72	0.00	210.62	1223.46	0.1376
					SLE Q.P.	0.00			-3137.97			41.34	0.00	203.79	1183.78	0.1331
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8820	0.00	9.42	9.42			0.00	11109.65	0.22	-6621.60	-11109.65	0.22					
					SLE Rare	0.00			-3728.49			49.12	0.00	242.14	1406.55	
					SLE Freq.	0.00			-3396.16			44.74	0.00	220.56	1281.18	0.1441
					SLE Q.P.	0.00			-3286.02			43.29	0.00	213.40	1239.63	0.1394
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6942.08	-11109.65	0.22					
					SLE Rare	0.00			-4459.19			58.74	0.00	289.59	1682.20	
					SLE Freq.	0.00			-4059.40			53.48	0.00	263.63	1531.38	0.1778
					SLE Q.P.	0.00			-3926.80			51.73	0.00	255.02	1481.36	0.1684
8822	0.74	9.42	9.42			0.00	11109.65	0.22	-6942.08	-11109.65	0.22					
					SLE Rare	0.00			-4698.68			61.90	0.00	305.15	1772.54	
					SLE Freq.	0.00			-4276.04			56.33	0.00	277.70	1613.11	0.1931
					SLE Q.P.	0.00			-4135.85			54.48	0.00	268.59	1560.22	0.1832

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Trave Sez. 2 Rett. 40x40 [cm]																
8822	0.00	9.42	9.42			0.00	11109.65	0.22	-6945.30	-11109.65	0.22					
				SLE Rare		0.00			-4700.95			61.93	0.00	305.29	1773.40	
				SLE Freq.		0.00			-4278.24			56.36	0.00	277.84	1613.94	0.1933
				SLE Q.P.		0.00			-4138.03			54.51	0.00	268.74	1561.04	0.1834
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6945.30	-11109.65	0.22					
				SLE Rare		0.00			-4449.21			58.61	0.00	288.95	1678.43	
				SLE Freq.		0.00			-4048.48			53.33	0.00	262.92	1527.26	0.1770
				SLE Q.P.		0.00			-3915.51			51.58	0.00	254.29	1477.10	0.1676
8824	0.74	9.42	9.42			0.00	11109.65	0.22	-6610.15	-11109.65	0.22					
				SLE Rare		0.00			-3706.25			48.82	0.00	240.70	1398.16	
				SLE Freq.		0.00			-3372.52			44.43	0.00	219.02	1272.26	0.1431
				SLE Q.P.		0.00			-3261.60			42.97	0.00	211.82	1230.42	0.1384
Trave Sez. 2 Rett. 40x40 [cm]																
8824	0.00	9.42	9.42			0.00	11109.65	0.22	-5237.41	-11109.65	0.22					
				SLE Rare		0.00			-3543.53			46.68	0.00	230.13	1336.77	
				SLE Freq.		0.00			-3224.53			42.48	0.00	209.41	1216.43	0.1368
				SLE Q.P.		0.00			-3118.53			41.08	0.00	202.53	1176.44	0.1323
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5237.41	-11109.65	0.22					
				SLE Rare		0.00			-2337.46			30.79	0.00	151.80	881.79	
				SLE Freq.		0.00			-2127.53			28.03	0.00	138.17	802.59	0.0903
				SLE Q.P.		0.00			-2057.61			27.11	0.00	133.63	776.22	0.0873
8826	0.72	9.42	9.42			0.00	11109.65	0.22	-3605.67	-11109.65	0.22					
				SLE Rare		0.00			-659.33			8.69	0.00	42.82	248.73	
				SLE Freq.		0.00			-600.79			7.91	0.00	39.02	226.64	0.0255
				SLE Q.P.		0.00			-581.27			7.66	0.00	37.75	219.28	0.0247
Trave Sez. 2 Rett. 40x40 [cm]																
8826	0.00	9.86	9.42			2795.28	11540.97	0.22	-637.08	-11110.82	0.22					
				SLE Rare		0.00			-428.89			5.63	0.00	27.58	161.88	
				SLE Freq.		0.00			-391.14			5.13	0.00	25.15	147.63	0.0166
				SLE Q.P.		0.00			-378.56			4.97	0.00	24.34	142.88	0.0161
Camp.	0.37	12.04	9.42	5320.00	183.71	6636.24	13724.81	0.24	-637.08	-11115.81	0.22					
				SLE Rare		1784.59			-124.31			1.60	21.45	533.06	124.46	
				SLE Freq.		1623.61			-113.02			1.46	19.51	484.97	113.23	0.0102
				SLE Q.P.		1569.22			-109.26			1.41	18.86	468.73	109.44	0.0099
8828	0.74	14.23	9.42			6636.24	15895.24	0.26	0.00	-11119.63	0.22					
				SLE Rare		4494.71			0.00			0.00	50.95	1145.41	323.52	
				SLE Freq.		4088.65			0.00			0.00	46.34	1041.93	294.29	0.0233
				SLE Q.P.		3952.54			0.00			0.00	44.80	1007.24	284.49	0.0225
Trave Sez. 2 Rett. 40x40 [cm]																
8828	0.00	14.91	9.42			11847.00	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare		4659.96			0.00			0.00	51.99	1135.95	337.75	
				SLE Freq.		4238.88			0.00			0.00	47.29	1033.31	307.23	0.0235
				SLE Q.P.		4097.84			0.00			0.00	45.72	998.93	297.01	0.0227
Camp.	0.30	16.64	9.42	5320.00	178.82	15020.66	18263.85	0.28	-168.10	-11122.91	0.22					
				SLE Rare		7248.26			-113.75			1.41	77.99	1591.99	532.53	
				SLE Freq.		6592.97			-103.42			1.28	70.94	1448.06	484.38	0.0342
				SLE Q.P.		6373.84			-99.98			1.24	68.58	1399.93	468.29	0.0331
219	0.61	18.71	6.49			15020.66	20249.27	0.32	-25.49	-8214.46	0.21					
				SLE Rare		10169.58			-17.25			0.25	109.45	1994.95	552.80	
				SLE Freq.		9249.82			-15.68			0.23	99.55	1814.52	502.80	0.0359
				SLE Q.P.		8942.53			-15.16			0.22	96.24	1754.24	486.10	0.0347

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

*Parcheggio interrato - Tabulato di calcolo*

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe									
Trave 209 8816 Sez. 2 Rett. 40x40 [cm]																
0.12	0.73	0.61	14958.99	7069.47	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8816 8818 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11722.56	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8818 8820 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	7768.19	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8820 8822 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3912.75	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8822 8824 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3951.25	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8824 8826 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	7806.68	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8826 8828 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11761.06	8004.72	37247.76	36621.00	ø 10 2br. 12.5'									
Trave 8828 219 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	14997.48	7069.46	37247.76	36621.00	ø 10 2br. 12.5'									
Travata: Travata 387 Nodi 219 8830 8832 8834 8836 8844 8846 8848 225																
Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
219	0.13	18.71	6.49			15079.63	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		10204.81			-17.25			0.25	109.83	2001.86	554.71	
				SLE Freq.		9281.46			-15.68			0.23	99.89	1820.73	504.52	0.0360
				SLE Q.P.		8974.27			-15.16			0.22	96.58	1760.47	487.82	0.0348
Camp.	0.43	16.64	9.42	5320.00	178.82	15079.63	18263.84	0.28	-168.10	-11122.91	0.22					
				SLE Rare		7294.16			-113.76			1.41	78.49	1602.07	535.90	
				SLE Freq.		6634.97			-103.42			1.28	71.39	1457.29	487.47	0.0344
				SLE Q.P.		6415.85			-99.98			1.24	69.04	1409.16	471.37	0.0333
8830	0.73	14.91	9.42			11916.80	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare		4716.52			0.00			0.00	52.62	1149.74	341.85	
				SLE Freq.		4291.25			0.00			0.00	47.88	1046.08	311.02	0.0238
				SLE Q.P.		4150.11			0.00			0.00	46.30	1011.67	300.80	0.0230
Trave Sez. 2 Rett. 40x40 [cm]																
8830	0.00	14.23	9.42			6728.45	15895.23	0.26	0.00	-11119.63	0.22					
				SLE Rare		4553.18			0.00			0.00	51.61	1160.31	327.73	
				SLE Freq.		4142.70			0.00			0.00	46.96	1055.71	298.18	0.0236
				SLE Q.P.		4006.49			0.00			0.00	45.41	1020.99	288.38	0.0228
Camp.	0.37	12.04	9.42	5320.00	183.71	6728.45	13724.81	0.24	-510.51	-11115.81	0.22					
				SLE Rare		1856.10			-124.31			1.60	22.31	554.42	129.45	
				SLE Freq.		1690.34			-113.02			1.46	20.31	504.91	117.89	0.0106
				SLE Q.P.		1635.72			-109.26			1.41	19.66	488.59	114.08	0.0103
8832	0.74	9.86	9.42			2905.00	11540.97	0.22	-510.51	-11110.82	0.22					
				SLE Rare		0.00			-345.85			4.54	0.00	22.24	130.53	
				SLE Freq.		0.00			-310.07			4.07	0.00	19.94	117.03	0.0132
				SLE Q.P.		0.00			-298.15			3.91	0.00	19.17	112.53	0.0127
Trave Sez. 2 Rett. 40x40 [cm]																
8832	0.00	9.42	9.42			0.00	11109.65	0.22	-3461.36	-11109.65	0.22					
				SLE Rare		0.00			-577.08			7.60	0.00	37.48	217.70	
				SLE Freq.		0.00			-520.51			6.86	0.00	33.80	196.36	0.0221
				SLE Q.P.		0.00			-501.66			6.61	0.00	32.58	189.25	0.0213
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5076.13	-11109.65	0.22					
				SLE Rare		0.00			-2242.83			29.55	0.00	145.66	846.09	
				SLE Freq.		0.00			-2035.34			26.81	0.00	132.18	767.82	0.0864
				SLE Q.P.		0.00			-1966.11			25.90	0.00	127.69	741.70	0.0834

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

8834	0.72	9.42	9.42			0.00	11109.65	0.22	-5076.13	-11109.65	0.22								
				SLE Rare		0.00			-3435.91			45.26	0.00	223.14	1296.17				
				SLE Freq.		0.00			-3120.57			41.11	0.00	202.66	1177.21	0.1324			
				SLE Q.P.		0.00			-3015.28			39.72	0.00	195.82	1137.49	0.1279			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
8834	0.00	9.42	9.42			0.00	11109.65	0.22	-6435.87	-11109.65	0.22								
				SLE Rare		0.00			-3603.18			47.47	0.00	234.00	1359.27				
				SLE Freq.		0.00			-3273.02			43.12	0.00	212.56	1234.72	0.1389			
				SLE Q.P.		0.00			-3162.79			41.66	0.00	205.40	1193.14	0.1342			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6753.34	-11109.65	0.22								
				SLE Rare		0.00			-4332.90			57.08	0.00	281.39	1634.55				
				SLE Freq.		0.00			-3936.98			51.86	0.00	255.68	1485.20	0.1691			
				SLE Q.P.		0.00			-3804.72			50.12	0.00	247.09	1435.30	0.1614			
8836	0.74	9.42	9.42			0.00	11109.65	0.22	-6753.34	-11109.65	0.22								
				SLE Rare		0.00			-4571.39			60.22	0.00	296.88	1724.52				
				SLE Freq.		0.00			-4154.35			54.73	0.00	269.80	1567.20	0.1845			
				SLE Q.P.		0.00			-4014.93			52.89	0.00	260.74	1514.60	0.1747			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
8836	0.00	9.42	9.42			0.00	11109.65	0.22	-6762.88	-11109.65	0.22								
				SLE Rare		0.00			-4577.81			60.30	0.00	297.30	1726.94				
				SLE Freq.		0.00			-4160.62			54.81	0.00	270.20	1569.56	0.1850			
				SLE Q.P.		0.00			-4021.17			52.97	0.00	261.15	1516.96	0.1751			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6762.88	-11109.65	0.22								
				SLE Rare		0.00			-4325.08			56.98	0.00	280.88	1631.60				
				SLE Freq.		0.00			-3931.38			51.79	0.00	255.32	1483.09	0.1687			
				SLE Q.P.		0.00			-3799.64			50.05	0.00	246.76	1433.39	0.1612			
8844	0.74	9.42	9.42			0.00	11109.65	0.22	-6424.71	-11109.65	0.22								
				SLE Rare		0.00			-3581.15			47.18	0.00	232.57	1350.96				
				SLE Freq.		0.00			-3255.55			42.89	0.00	211.43	1228.13	0.1381			
				SLE Q.P.		0.00			-3146.39			41.45	0.00	204.34	1186.95	0.1335			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
8844	0.00	9.42	9.42			0.00	11109.65	0.22	-5062.91	-11109.65	0.22								
				SLE Rare		0.00			-3427.86			45.16	0.00	222.62	1293.14				
				SLE Freq.		0.00			-3116.50			41.05	0.00	202.39	1175.68	0.1322			
				SLE Q.P.		0.00			-3012.19			39.68	0.00	195.62	1136.33	0.1278			
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5062.91	-11109.65	0.22								
				SLE Rare		0.00			-2221.11			29.26	0.00	144.25	837.90				
				SLE Freq.		0.00			-2019.62			26.60	0.00	131.16	761.89	0.0857			
				SLE Q.P.		0.00			-1951.92			25.71	0.00	126.76	736.35	0.0828			
8846	0.72	9.42	9.42			0.00	11109.65	0.22	-3428.67	-11109.65	0.22								
				SLE Rare		0.00			-541.67			7.14	0.00	35.18	204.34				
				SLE Freq.		0.00			-493.00			6.49	0.00	32.02	185.98	0.0209			
				SLE Q.P.		0.00			-476.21			6.27	0.00	30.93	179.65	0.0202			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
8846	0.00	9.86	9.42			2960.16	11540.95	0.22	-476.04	-11110.82	0.22								
				SLE Rare		0.00			-324.28			4.26	0.00	20.85	122.39				
				SLE Freq.		0.00			-295.64			3.88	0.00	19.01	111.58	0.0126			
				SLE Q.P.		0.00			-285.64			3.75	0.00	18.37	107.81	0.0121			
Camp.	0.37	12.04	9.42	5320.00	183.71	6804.16	13724.79	0.24	-476.04	-11115.81	0.22								
				SLE Rare		1890.52			-124.31			1.60	22.72	564.70	131.85				
				SLE Freq.		1718.38			-113.02			1.46	20.65	513.28	119.84	0.0108			
				SLE Q.P.		1661.00			-109.26			1.41	19.96	496.14	115.84	0.0104			
8848	0.74	14.23	9.42			6804.16	15895.21	0.26	0.00	-11119.63	0.22								
				SLE Rare		4601.63			0.00			0.00	52.16	1172.66	331.21				
				SLE Freq.		4182.93			0.00			0.00	47.41	1065.96	301.08	0.0238			



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.		4043.37			0.00			0.00	45.83	1030.39	291.03	0.0230
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8848	0.00	14.91	9.42			11990.38	16566.52	0.26	0.00	-11120.64	0.22					
				SLE Rare		4748.58			0.00			0.00	52.98	1157.56	344.17	
				SLE Freq.		4315.95			0.00			0.00	48.15	1052.10	312.82	0.0239
				SLE Q.P.		4171.74			0.00			0.00	46.54	1016.95	302.36	0.0231
Camp.	0.30	16.64	9.42	5320.00	178.82	15165.99	18263.83	0.28	-168.11	-11122.91	0.22					
				SLE Rare		7337.72			-113.76			1.41	78.95	1611.64	539.10	
				SLE Freq.		6669.67			-103.42			1.28	71.77	1464.91	490.02	0.0346
				SLE Q.P.		6446.98			-99.98			1.24	69.37	1416.00	473.66	0.0334
225	0.61	18.71	6.49			15165.99	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		10259.87			-17.25			0.25	110.42	2012.66	557.71	
				SLE Freq.		9326.15			-15.68			0.23	100.37	1829.49	506.95	0.0362
				SLE Q.P.		9014.91			-15.16			0.22	97.02	1768.44	490.03	0.0350

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 219 8830 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14948.22	7069.47	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8830 8832 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11711.80	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8832 8834 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7757.43	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8834 8836 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3902.00	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8836 8844 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3959.85	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8844 8846 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7815.28	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8846 8848 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11769.65	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8848 225 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	15006.09	7069.47	37247.76	36621.00	Ø 10 2br. 12.5'

Travata: Travata 388 Nodi 225 8847 8845 8843 8835 8833 8831 8829 218

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
225	0.12	18.71	9.42			15052.30	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		10183.13			-17.25			0.25	109.59	1997.61	553.53	
				SLE Freq.		9256.47			-15.68			0.23	99.62	1815.82	503.16	0.0359
				SLE Q.P.		8947.58			-15.16			0.22	96.30	1755.23	486.37	0.0347
Camp.	0.43	16.64	9.42	5320.00	178.82	15052.30	18263.83	0.28	-168.11	-11122.91	0.22					
				SLE Rare		7269.11			-113.76			1.41	78.22	1596.57	534.06	
				SLE Freq.		6607.37			-103.42			1.28	71.10	1451.23	485.44	0.0343
				SLE Q.P.		6386.79			-99.98			1.24	68.72	1402.78	469.24	0.0331
8847	0.73	14.91	9.42			11885.40	16566.52	0.26	0.00	-11120.64	0.22					
				SLE Rare		4688.10			0.00			0.00	52.30	1142.82	339.79	
				SLE Freq.		4261.04			0.00			0.00	47.54	1038.71	308.84	0.0236
				SLE Q.P.		4118.69			0.00			0.00	45.95	1004.01	298.52	0.0228
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8847	0.00	14.23	9.42			6693.76	15895.21	0.26	0.00	-11119.63	0.22					
				SLE Rare		4527.08			0.00			0.00	51.31	1153.66	325.85	
				SLE Freq.		4114.48			0.00			0.00	46.64	1048.52	296.15	0.0234
				SLE Q.P.		3976.95			0.00			0.00	45.08	1013.47	286.25	0.0226
Camp.	0.37	12.04	9.42	5320.00	183.71	6693.76	13724.80	0.24	-557.71	-11115.81	0.22					
				SLE Rare		1825.91			-124.31			1.60	21.94	545.40	127.34	

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	1658.95			-113.02			1.46	19.94	495.53	115.70	0.0104
				SLE Q.P.	1603.30			-109.26			1.41	19.27	478.91	111.82	0.0101
8845	0.74	9.86	9.42		2863.82	11540.96	0.22	-557.71	-11110.82	0.22					
				SLE Rare	0.00			-379.43			4.98	0.00	24.40	143.21	
				SLE Freq.	0.00			-346.06			4.54	0.00	22.25	130.61	0.0147
				SLE Q.P.	0.00			-334.66			4.39	0.00	21.52	126.31	0.0142
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8845	0.00	9.42	9.42		0.00	11109.65	0.22	-3510.83	-11109.65	0.22					
				SLE Rare	0.00			-607.63			8.00	0.00	39.46	229.22	
				SLE Freq.	0.00			-553.66			7.29	0.00	35.96	208.86	0.0235
				SLE Q.P.	0.00			-535.37			7.05	0.00	34.77	201.96	0.0227
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5131.64	-11109.65	0.22				
				SLE Rare	0.00			-2277.30			30.00	0.00	147.89	859.09	
				SLE Freq.	0.00			-2071.43			27.29	0.00	134.53	781.43	0.0879
				SLE Q.P.	0.00			-2002.52			26.38	0.00	130.05	755.44	0.0850
8843	0.72	9.42	9.42		0.00	11109.65	0.22	-5131.64	-11109.65	0.22					
				SLE Rare	0.00			-3474.29			45.77	0.00	225.63	1310.65	
				SLE Freq.	0.00			-3159.46			41.62	0.00	205.18	1191.88	0.1341
				SLE Q.P.	0.00			-3054.24			40.23	0.00	198.35	1152.19	0.1296
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8843	0.00	9.42	9.42		0.00	11109.65	0.22	-6491.37	-11109.65	0.22					
				SLE Rare	0.00			-3636.97			47.91	0.00	236.20	1372.02	
				SLE Freq.	0.00			-3307.45			43.57	0.00	214.80	1247.71	0.1403
				SLE Q.P.	0.00			-3197.33			42.12	0.00	207.64	1206.17	0.1357
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6815.13	-11109.65	0.22				
				SLE Rare	0.00			-4370.67			57.58	0.00	283.84	1648.80	
				SLE Freq.	0.00			-3974.27			52.35	0.00	258.10	1499.26	0.1718
				SLE Q.P.	0.00			-3841.87			50.61	0.00	249.50	1449.32	0.1630
8835	0.74	9.42	9.42		0.00	11109.65	0.22	-6815.13	-11109.65	0.22					
				SLE Rare	0.00			-4613.15			60.77	0.00	299.59	1740.28	
				SLE Freq.	0.00			-4194.49			55.26	0.00	272.40	1582.34	0.1874
				SLE Q.P.	0.00			-4054.68			53.41	0.00	263.32	1529.60	0.1775
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8835	0.00	9.42	9.42		0.00	11109.65	0.22	-6815.98	-11109.65	0.22					
				SLE Rare	0.00			-4613.77			60.78	0.00	299.63	1740.51	
				SLE Freq.	0.00			-4195.13			55.26	0.00	272.44	1582.58	0.1874
				SLE Q.P.	0.00			-4055.32			53.42	0.00	263.36	1529.84	0.1775
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6815.98	-11109.65	0.22				
				SLE Rare	0.00			-4365.20			57.50	0.00	283.49	1646.74	
				SLE Freq.	0.00			-3968.74			52.28	0.00	257.74	1497.18	0.1714
				SLE Q.P.	0.00			-3836.40			50.54	0.00	249.15	1447.25	0.1628
8833	0.74	9.42	9.42		0.00	11109.65	0.22	-6484.32	-11109.65	0.22					
				SLE Rare	0.00			-3625.62			47.76	0.00	235.46	1367.74	
				SLE Freq.	0.00			-3295.75			43.42	0.00	214.04	1243.30	0.1398
				SLE Q.P.	0.00			-3185.75			41.97	0.00	206.89	1201.80	0.1352
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8833	0.00	9.42	9.42		0.00	11109.65	0.22	-5118.15	-11109.65	0.22					
				SLE Rare	0.00			-3464.40			45.64	0.00	224.99	1306.92	
				SLE Freq.	0.00			-3149.32			41.49	0.00	204.53	1188.06	0.1336
				SLE Q.P.	0.00			-3044.22			40.10	0.00	197.70	1148.41	0.1292
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5118.15	-11109.65	0.22				
				SLE Rare	0.00			-2261.64			29.79	0.00	146.88	853.19	
				SLE Freq.	0.00			-2055.42			27.08	0.00	133.49	775.39	0.0872
				SLE Q.P.	0.00			-1986.68			26.17	0.00	129.02	749.46	0.0843
8831	0.72	9.42	9.42		0.00	11109.65	0.22	-3490.06	-11109.65	0.22					

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	0.00				-586.21			7.72	0.00	38.07	221.14	
				SLE Freq.	0.00				-531.89			7.01	0.00	34.54	200.65	0.0226
				SLE Q.P.	0.00				-513.79			6.77	0.00	33.37	193.82	0.0218
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8831	0.00	9.86	9.42			2898.28	11540.97	0.22	-531.16	-11110.82	0.22					
				SLE Rare	0.00				-359.94			4.72	0.00	23.15	135.85	
				SLE Freq.	0.00				-326.30			4.28	0.00	20.98	123.15	0.0139
				SLE Q.P.	0.00				-315.08			4.13	0.00	20.26	118.92	0.0134
Camp.	0.37	12.04	9.42	5320.00	183.71	6735.91	13724.81	0.24	-531.16	-11115.81	0.22					
				SLE Rare	1851.00				-124.31			1.60	22.25	552.89	129.09	
				SLE Freq.	1683.49				-113.02			1.46	20.23	502.86	117.41	0.0106
				SLE Q.P.	1627.82				-109.26			1.41	19.56	486.23	113.53	0.0102
8829	0.74	14.23	9.42			6735.91	15895.23	0.26	0.00	-11119.63	0.22					
				SLE Rare	4558.09				0.00			0.00	51.66	1161.56	328.08	
				SLE Freq.	4144.93				0.00			0.00	46.98	1056.27	298.34	0.0236
				SLE Q.P.	4007.36				0.00			0.00	45.42	1021.22	288.44	0.0228
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
8829	0.00	14.91	9.42			11931.77	16566.54	0.26	0.00	-11120.64	0.22					
				SLE Rare	4716.03				0.00			0.00	52.62	1149.62	341.81	
				SLE Freq.	4288.42				0.00			0.00	47.85	1045.39	310.82	0.0237
				SLE Q.P.	4146.02				0.00			0.00	46.26	1010.67	300.50	0.0230
Camp.	0.30	16.64	9.42	5320.00	178.82	15103.39	18263.84	0.28	-168.10	-11122.91	0.22					
				SLE Rare	7301.86				-113.76			1.41	78.57	1603.76	536.47	
				SLE Freq.	6639.57				-103.42			1.28	71.44	1458.30	487.81	0.0344
				SLE Q.P.	6418.93				-99.98			1.24	69.07	1409.84	471.60	0.0333
218	0.61	18.71	6.49			15103.39	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare	10220.71				-17.25			0.25	110.00	2004.98	555.58	
				SLE Freq.	9293.49				-15.68			0.23	100.02	1823.09	505.18	0.0360
				SLE Q.P.	8984.53				-15.16			0.22	96.70	1762.48	488.38	0.0349

Da [m]	A [m]	Dx [m]	V <sub>ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 225 8847 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14966.52	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8847 8845 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11730.09	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8845 8843 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7775.72	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8843 8835 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3920.28	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8835 8833 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3941.90	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8833 8831 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7797.33	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8831 8829 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11751.71	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 8829 218 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14988.12	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 389 Nodi 218 8827 8825 8823 8821 8819 8817 8815 209

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
218	0.13	18.71	6.49			15207.15	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	10296.50		-17.25			0.25	110.82	2019.85	559.70	
						SLE Freq.	9369.27		-15.68			0.23	100.84	1837.95	509.29	0.0363
						SLE Q.P.	9060.21		-15.16			0.22	97.51	1777.33	492.50	0.0351

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Camp.	0.43	16.64	9.42	5320.00	178.82	15207.15	18263.84	0.28	-168.10	-11122.91	0.22						
				SLE Rare		7368.14			-113.75			1.41	79.28	1618.32	541.34		
				SLE Freq.		6705.91			-103.42			1.28	72.16	1472.87	492.68	0.0348	
				SLE Q.P.		6485.20			-99.98			1.24	69.78	1424.39	476.47	0.0336	
8827	0.73	14.91	9.42			12026.05	16566.54	0.26	0.00	-11120.64	0.22						
				SLE Rare		4772.80			0.00			0.00	53.25	1163.46	345.93		
				SLE Freq.		4345.31			0.00			0.00	48.48	1059.25	314.94	0.0241	
				SLE Q.P.		4202.88			0.00			0.00	46.89	1024.53	304.62	0.0233	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
8827	0.00	14.23	9.42			6836.29	15895.24	0.26	0.00	-11119.63	0.22						
				SLE Rare		4630.63			0.00			0.00	52.49	1180.05	333.30		
				SLE Freq.		4217.02			0.00			0.00	47.80	1074.64	303.53	0.0240	
				SLE Q.P.		4079.34			0.00			0.00	46.24	1039.56	293.62	0.0232	
Camp.	0.37	12.04	9.42	5320.00	183.71	6836.29	13724.81	0.24	-467.17	-11115.81	0.22						
				SLE Rare		1911.91			-124.31			1.60	22.98	571.09	133.34		
				SLE Freq.		1744.04			-113.02			1.46	20.96	520.94	121.63	0.0110	
				SLE Q.P.		1688.29			-109.26			1.41	20.29	504.29	117.74	0.0106	
8825	0.74	9.86	9.42			2983.32	11540.97	0.22	-467.17	-11110.82	0.22						
				SLE Rare		0.00			-313.52			4.11	0.00	20.16	118.33		
				SLE Freq.		0.00			-279.05			3.66	0.00	17.94	105.32	0.0119	
				SLE Q.P.		0.00			-267.56			3.51	0.00	17.21	100.98	0.0114	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
8825	0.00	9.42	9.42			0.00	11109.65	0.22	-3424.52	-11109.65	0.22						
				SLE Rare		0.00			-527.95			6.95	0.00	34.29	199.17		
				SLE Freq.		0.00			-473.00			6.23	0.00	30.72	178.44	0.0201	
				SLE Q.P.		0.00			-454.69			5.99	0.00	29.53	171.53	0.0193	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5066.24	-11109.65	0.22						
				SLE Rare		0.00			-2214.09			29.17	0.00	143.79	835.25		
				SLE Freq.		0.00			-2007.36			26.44	0.00	130.36	757.26	0.0852	
				SLE Q.P.		0.00			-1938.45			25.54	0.00	125.89	731.26	0.0822	
8823	0.72	9.42	9.42			0.00	11109.65	0.22	-5066.24	-11109.65	0.22						
				SLE Rare		0.00			-3427.55			45.15	0.00	222.60	1293.02		
				SLE Freq.		0.00			-3111.97			40.99	0.00	202.10	1173.97	0.1320	
				SLE Q.P.		0.00			-3006.77			39.61	0.00	195.27	1134.28	0.1276	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
8823	0.00	9.42	9.42			0.00	11109.65	0.22	-6432.24	-11109.65	0.22						
				SLE Rare		0.00			-3577.94			47.13	0.00	232.36	1349.75		
				SLE Freq.		0.00			-3247.85			42.78	0.00	210.93	1225.23	0.1378	
				SLE Q.P.		0.00			-3137.82			41.34	0.00	203.78	1183.72	0.1331	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6777.79	-11109.65	0.22						
				SLE Rare		0.00			-4328.43			57.02	0.00	281.10	1632.87		
				SLE Freq.		0.00			-3931.57			51.79	0.00	255.33	1483.16	0.1688	
				SLE Q.P.		0.00			-3799.29			50.05	0.00	246.74	1433.25	0.1612	
8821	0.74	9.42	9.42			0.00	11109.65	0.22	-6777.79	-11109.65	0.22						
				SLE Rare		0.00			-4587.71			60.44	0.00	297.94	1730.68		
				SLE Freq.		0.00			-4169.26			54.92	0.00	270.76	1572.82	0.1856	
				SLE Q.P.		0.00			-4029.50			53.08	0.00	261.69	1520.10	0.1757	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
8821	0.00	9.42	9.42			0.00	11109.65	0.22	-6763.88	-11109.65	0.22						
				SLE Rare		0.00			-4578.22			60.31	0.00	297.32	1727.10		
				SLE Freq.		0.00			-4159.92			54.80	0.00	270.16	1569.30	0.1849	
				SLE Q.P.		0.00			-4020.22			52.96	0.00	261.09	1516.60	0.1750	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6763.88	-11109.65	0.22						
				SLE Rare		0.00			-4346.27			57.25	0.00	282.26	1639.60		
				SLE Freq.		0.00			-3951.18			52.05	0.00	256.60	1490.55	0.1701	

**Comune di Catania**  
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				SLE Q.P.	0.00			-3818.85			50.31	0.00	248.01	1440.63	0.1620
8819	0.74	9.42	9.42		0.00	11109.65	0.22	-6453.80	-11109.65	0.22					
				SLE Rare	0.00			-3624.05			47.74	0.00	235.36	1367.15	
				SLE Freq.	0.00			-3295.83			43.42	0.00	214.04	1243.33	0.1398
				SLE Q.P.	0.00			-3185.75			41.97	0.00	206.89	1201.80	0.1352
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8819	0.00	9.42	9.42		0.00	11109.65	0.22	-5097.89	-11109.65	0.22					
				SLE Rare	0.00			-3452.72			45.48	0.00	224.23	1302.51	
				SLE Freq.	0.00			-3139.60			41.36	0.00	203.90	1184.39	0.1332
				SLE Q.P.	0.00			-3034.50			39.97	0.00	197.07	1144.74	0.1288
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5097.89	-11109.65	0.22				
				SLE Rare	0.00			-2267.06			29.86	0.00	147.23	855.23	
				SLE Freq.	0.00			-2062.83			27.17	0.00	133.97	778.19	0.0875
				SLE Q.P.	0.00			-1993.99			26.27	0.00	129.50	752.22	0.0846
8817	0.72	9.42	9.42		0.00	11109.65	0.22	-3491.60	-11109.65	0.22					
				SLE Rare	0.00			-608.73			8.02	0.00	39.53	229.64	
				SLE Freq.	0.00			-556.31			7.33	0.00	36.13	209.86	0.0236
				SLE Q.P.	0.00			-538.05			7.09	0.00	34.94	202.98	0.0228
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8817	0.00	9.86	9.42		2863.11	11540.96	0.22	-544.01	-11110.82	0.22					
				SLE Rare	0.00			-372.82			4.89	0.00	23.98	140.71	
				SLE Freq.	0.00			-341.35			4.48	0.00	21.95	128.83	0.0145
				SLE Q.P.	0.00			-330.05			4.33	0.00	21.22	124.57	0.0140
Camp.	0.37	12.04	9.42	5320.00	183.71	6678.66	13724.80	0.24	-544.01	-11115.81	0.22				
				SLE Rare	1822.41			-124.31			1.60	21.90	544.35	127.10	
				SLE Freq.	1654.15			-113.02			1.46	19.88	494.09	115.36	0.0104
				SLE Q.P.	1598.06			-109.26			1.41	19.21	477.34	111.45	0.0101
8815	0.74	14.23	9.42		6678.66	15895.21	0.26	0.00	-11119.63	0.22					
				SLE Rare	4512.60			0.00			0.00	51.15	1149.97	324.81	
				SLE Freq.	4098.57			0.00			0.00	46.46	1044.46	295.00	0.0233
				SLE Q.P.	3960.56			0.00			0.00	44.89	1009.29	285.07	0.0226
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
8815	0.00	14.91	9.42		11866.45	16566.52	0.26	0.00	-11120.64	0.22					
				SLE Rare	4681.94			0.00			0.00	52.24	1141.31	339.34	
				SLE Freq.	4253.31			0.00			0.00	47.45	1036.83	308.27	0.0236
				SLE Q.P.	4110.44			0.00			0.00	45.86	1002.00	297.92	0.0228
Camp.	0.30	16.64	9.42	5320.00	178.82	15024.43	18263.83	0.28	-168.11	-11122.91	0.22				
				SLE Rare	7253.96			-113.76			1.41	78.05	1593.24	532.95	
				SLE Freq.	6590.55			-103.42			1.28	70.92	1447.53	484.21	0.0342
				SLE Q.P.	6369.42			-99.98			1.24	68.54	1398.96	467.96	0.0330
209	0.61	18.71	6.49		15024.43	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare	10159.00			-17.25			0.25	109.34	1992.87	552.22	
				SLE Freq.	9230.57			-15.68			0.23	99.34	1810.74	501.76	0.0358
				SLE Q.P.	8921.09			-15.16			0.22	96.01	1750.03	484.93	0.0346

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 218 8827 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	15031.26	7069.47	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8827 8825 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11794.85	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8825 8823 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7840.47	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'
<b>Trave 8823 8821 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3985.04	8004.72	37247.76	36621.00	Ø 10 2br. 12.5'

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Trave 8821 8819 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	3879.75		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 8819 8817 Sez. 2 Rett. 40x40 [cm]																
0.00	0.72	0.72	7735.19		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 8817 8815 Sez. 2 Rett. 40x40 [cm]																
0.00	0.74	0.74	11689.56		8004.72		37247.76		36621.00		ø 10 2br. 12.5'					
Trave 8815 209 Sez. 2 Rett. 40x40 [cm]																
0.00	0.61	0.61	14925.99		7069.47		37247.76		36621.00		ø 10 2br. 12.5'					
Travata: Travata 390 Nodi 309 10559 10561 10563 10565 10567 10569 10571 319																
Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
Trave Sez. 2 Rett. 40x40 [cm]																
309	0.13	18.71	6.49			15277.90	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		10331.52			-17.25			0.25	111.19	2026.72	561.60	
				SLE Freq.		9401.15			-15.68			0.23	101.18	1844.21	511.03	0.0365
				SLE Q.P.		9091.64			-15.16			0.22	97.85	1783.49	494.20	0.0353
Camp.	0.43	16.64	9.42	5320.00	178.82	15277.90	18263.83	0.28	-168.11	-11122.91	0.22					
				SLE Rare		7421.28			-113.76			1.41	79.85	1629.99	545.24	
				SLE Freq.		6755.64			-103.42			1.28	72.69	1483.79	496.34	0.0351
				SLE Q.P.		6534.60			-99.98			1.24	70.31	1435.24	480.10	0.0339
10559	0.73	14.91	9.42			12114.51	16566.52	0.26	0.00	-11120.64	0.22					
				SLE Rare		4844.06			0.00			0.00	54.04	1180.84	351.09	
				SLE Freq.		4412.90			0.00			0.00	49.23	1075.73	319.84	0.0244
				SLE Q.P.		4270.24			0.00			0.00	47.64	1040.96	309.50	0.0236
Trave Sez. 2 Rett. 40x40 [cm]																
10559	0.00	14.23	9.42			6962.29	15895.21	0.26	0.00	-11119.63	0.22					
				SLE Rare		4705.29			0.00			0.00	53.33	1199.07	338.67	
				SLE Freq.		4288.11			0.00			0.00	48.60	1092.76	308.65	0.0244
				SLE Q.P.		4150.35			0.00			0.00	47.04	1057.66	298.73	0.0236
Camp.	0.37	12.04	9.42	5320.00	183.71	6962.29	13724.80	0.24	-283.59	-11115.81	0.22					
				SLE Rare		2008.74			-124.31			1.60	24.14	600.01	140.09	
				SLE Freq.		1836.97			-113.02			1.46	22.08	548.70	128.11	0.0116
				SLE Q.P.		1781.29			-109.26			1.41	21.41	532.07	124.23	0.0112
10561	0.74	9.86	9.42			3138.00	11540.96	0.22	-283.59	-11110.82	0.22					
				SLE Rare		0.00			-196.13			2.57	0.00	12.61	74.02	
				SLE Freq.		0.00			-164.46			2.16	0.00	10.58	62.07	0.0070
				SLE Q.P.		0.00			-152.72			2.00	0.00	9.82	57.64	0.0065
Trave Sez. 2 Rett. 40x40 [cm]																
10561	0.00	9.42	9.42			0.00	11109.65	0.22	-3212.55	-11109.65	0.22					
				SLE Rare		0.00			-410.99			5.41	0.00	26.69	155.04	
				SLE Freq.		0.00			-358.64			4.72	0.00	23.29	135.29	0.0152
				SLE Q.P.		0.00			-339.92			4.48	0.00	22.08	128.23	0.0144
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4829.65	-11109.65	0.22					
				SLE Rare		0.00			-2077.33			27.37	0.00	134.91	783.66	
				SLE Freq.		0.00			-1871.84			24.66	0.00	121.56	706.14	0.0794
				SLE Q.P.		0.00			-1802.38			23.74	0.00	117.05	679.94	0.0765
10563	0.72	9.42	9.42			0.00	11109.65	0.22	-4829.65	-11109.65	0.22					
				SLE Rare		0.00			-3270.99			43.09	0.00	212.43	1233.96	
				SLE Freq.		0.00			-2955.31			38.93	0.00	191.93	1114.87	0.1254
				SLE Q.P.		0.00			-2849.41			37.54	0.00	185.05	1074.92	0.1209
Trave Sez. 2 Rett. 40x40 [cm]																
10563	0.00	9.42	9.42			0.00	11109.65	0.22	-6175.45	-11109.65	0.22					
				SLE Rare		0.00			-3427.19			45.15	0.00	222.57	1292.88	
				SLE Freq.		0.00			-3096.73			40.79	0.00	201.11	1168.22	0.1314
				SLE Q.P.		0.00			-2985.85			39.33	0.00	193.91	1126.39	0.1267



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Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6495.34	-11109.65	0.22						
				SLE Rare		0.00			-4157.50			54.77	0.00	270.00	1568.39		
				SLE Freq.		0.00			-3758.89			49.52	0.00	244.11	1418.01	0.1595	
				SLE Q.P.		0.00			-3625.60			47.76	0.00	235.46	1367.73	0.1538	
10565	0.74	9.42	9.42			0.00	11109.65	0.22	-6495.34	-11109.65	0.22						
				SLE Rare		0.00			-4396.58			57.92	0.00	285.53	1658.58		
				SLE Freq.		0.00			-3974.45			52.36	0.00	258.11	1499.33	0.1718	
				SLE Q.P.		0.00			-3833.62			50.50	0.00	248.97	1446.20	0.1627	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
10565	0.00	9.42	9.42			0.00	11109.65	0.22	-6498.84	-11109.65	0.22						
				SLE Rare		0.00			-4399.04			57.95	0.00	285.69	1659.51		
				SLE Freq.		0.00			-3976.91			52.39	0.00	258.27	1500.26	0.1720	
				SLE Q.P.		0.00			-3836.04			50.53	0.00	249.12	1447.12	0.1628	
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6498.84	-11109.65	0.22						
				SLE Rare		0.00			-4146.91			54.63	0.00	269.31	1564.39		
				SLE Freq.		0.00			-3746.16			49.35	0.00	243.29	1413.21	0.1590	
				SLE Q.P.		0.00			-3612.58			47.59	0.00	234.61	1362.82	0.1533	
10567	0.74	9.42	9.42			0.00	11109.65	0.22	-6163.10	-11109.65	0.22						
				SLE Rare		0.00			-3403.56			44.84	0.00	221.04	1283.97		
				SLE Freq.		0.00			-3069.11			40.43	0.00	199.32	1157.80	0.1302	
				SLE Q.P.		0.00			-2957.63			38.96	0.00	192.08	1115.74	0.1255	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
10567	0.00	9.42	9.42			0.00	11109.65	0.22	-4807.61	-11109.65	0.22						
				SLE Rare		0.00			-3252.94			42.85	0.00	211.26	1227.15		
				SLE Freq.		0.00			-2933.30			38.64	0.00	190.50	1106.57	0.1245	
				SLE Q.P.		0.00			-2826.75			37.24	0.00	183.58	1066.37	0.1199	
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4807.61	-11109.65	0.22						
				SLE Rare		0.00			-2046.48			26.96	0.00	132.90	772.02		
				SLE Freq.		0.00			-1835.24			24.18	0.00	119.19	692.33	0.0779	
				SLE Q.P.		0.00			-1764.82			23.25	0.00	114.61	665.77	0.0749	
10569	0.72	9.42	9.42			0.00	11109.65	0.22	-3175.30	-11109.65	0.22						
				SLE Rare		0.00			-367.34			4.84	0.00	23.86	138.58		
				SLE Freq.		0.00			-307.43			4.05	0.00	19.97	115.98	0.0130	
				SLE Q.P.		0.00			-287.46			3.79	0.00	18.67	108.44	0.0122	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
10569	0.00	9.86	9.42			3212.95	11540.97	0.22	-237.55	-11110.82	0.22						
				SLE Rare		0.00			-158.82			2.08	0.00	10.21	59.94		
				SLE Freq.		0.00			-119.82			1.57	0.00	7.71	45.22	0.0051	
				SLE Q.P.		0.00			-106.82			1.40	0.00	6.87	40.32	0.0045	
Camp.	0.37	12.04	9.42	5320.00	183.71	7055.70	13724.81	0.24	-237.55	-11115.81	0.22						
				SLE Rare		2066.69			-124.31			1.60	24.84	617.32	144.13		
				SLE Freq.		1896.10			-113.02			1.46	22.79	566.36	132.24	0.0119	
				SLE Q.P.		1842.07			-109.26			1.41	22.14	550.23	128.47	0.0116	
10571	0.74	14.23	9.42			7055.70	15895.24	0.26	0.00	-11119.63	0.22						
				SLE Rare		4778.03			0.00			0.00	54.16	1217.61	343.91		
				SLE Freq.		4362.22			0.00			0.00	49.44	1111.65	313.98	0.0248	
				SLE Q.P.		4226.44			0.00			0.00	47.91	1077.04	304.21	0.0241	
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																	
10571	0.00	14.91	9.42			12214.93	16566.54	0.26	0.00	-11120.64	0.22						
				SLE Rare		4907.14			0.00			0.00	54.75	1196.21	355.66		
				SLE Freq.		4477.52			0.00			0.00	49.96	1091.48	324.53	0.0248	
				SLE Q.P.		4336.76			0.00			0.00	48.38	1057.17	314.32	0.0240	
Camp.	0.30	16.64	9.42	5320.00	178.82	15389.70	18263.85	0.28	-168.10	-11122.91	0.22						
				SLE Rare		7496.45			-113.75			1.41	80.66	1646.50	550.76		
				SLE Freq.		6832.50			-103.42			1.28	73.52	1500.67	501.98	0.0354	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	6613.61			-99.98			1.24	71.16	1452.59	485.90	0.0343
319	0.61	18.71	6.49		15389.70	20249.27	0.32	-25.49	-8214.46	0.21					
				SLE Rare	10418.77			-17.25			0.25	112.13	2043.83	566.34	
				SLE Freq.	9490.25			-15.68			0.23	102.14	1861.68	515.87	0.0368
				SLE Q.P.	9183.15			-15.16			0.22	98.83	1801.44	499.18	0.0356

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 309 10559 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14953.96	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10559 10561 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11717.53	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10561 10563 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7763.16	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10563 10565 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3907.72	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10565 10567 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3956.28	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10567 10569 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7811.71	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10569 10571 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11766.09	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10571 319 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	15002.50	7069.46	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 391 Nodi 319 10573 10575 10577 10579 10581 10583 10585 325

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
319	0.13	18.71	6.49			14448.89	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	9781.22		-17.25			0.25	105.27	1918.76	531.69	
						SLE Freq.	8859.69		-15.68			0.23	95.35	1737.99	481.59	0.0344
						SLE Q.P.	8551.43		-15.16			0.22	92.03	1677.52	464.84	0.0332
Camp.	0.43	16.64	9.42	5320.00	178.82	14448.89	18263.84	0.28	-168.10	-11122.91	0.22					
						SLE Rare	6925.05		-113.76			1.41	74.51	1521.00	508.78	
						SLE Freq.	6267.75		-103.42			1.28	67.44	1376.63	460.49	0.0325
						SLE Q.P.	6047.69		-99.98			1.24	65.07	1328.30	444.32	0.0314
10573	0.73	14.91	9.42			11344.63	16566.54	0.26	0.00	-11120.64	0.22					
						SLE Rare	4401.91		0.00			0.00	49.11	1073.05	319.04	
						SLE Freq.	3978.57		0.00			0.00	44.39	969.85	288.36	0.0220
						SLE Q.P.	3836.64		0.00			0.00	42.80	935.26	278.08	0.0212
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
10573	0.00	14.23	9.42			6266.30	15895.23	0.26	0.00	-11119.63	0.22					
						SLE Rare	4243.34		0.00			0.00	48.10	1081.35	305.43	
						SLE Freq.	3834.98		0.00			0.00	43.47	977.29	276.03	0.0218
						SLE Q.P.	3697.97		0.00			0.00	41.92	942.37	266.17	0.0211
Camp.	0.37	12.04	9.42	5320.00	183.71	6266.30	13724.81	0.24	-778.43	-11115.81	0.22					
						SLE Rare	1612.84		-124.31			1.60	19.38	481.76	112.48	
						SLE Freq.	1449.27		-113.02			1.46	17.42	432.90	101.07	0.0091
						SLE Q.P.	1394.02		-109.26			1.41	16.75	416.39	97.22	0.0088
10575	0.74	9.86	9.42			2537.32	11540.97	0.22	-778.43	-11110.82	0.22					
						SLE Rare	0.00		-524.85			6.89	0.00	33.75	198.09	
						SLE Freq.	0.00		-485.51			6.37	0.00	31.22	183.25	0.0206
						SLE Q.P.	0.00		-473.88			6.22	0.00	30.47	178.86	0.0201
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
10575	0.00	9.42	9.42			0.00	11109.65	0.22	-3602.38	-11109.65	0.22					
						SLE Rare	0.00		-742.21			9.78	0.00	48.20	279.99	

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Freq.	0.00			-682.48			8.99	0.00	44.32	257.46	0.0290
				SLE Q.P.	0.00			-663.89			8.75	0.00	43.11	250.45	0.0282
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5125.83	-11109.65	0.22				
				SLE Rare	0.00			-2341.02			30.84	0.00	152.03	883.13	
				SLE Freq.	0.00			-2132.16			28.09	0.00	138.47	804.34	0.0905
				SLE Q.P.	0.00			-2063.08			27.18	0.00	133.98	778.28	0.0875
10577	0.72	9.42	9.42			0.00	11109.65	0.22	-5125.83	-11109.65	0.22				
				SLE Rare	0.00			-3467.84			45.68	0.00	225.21	1308.22	
				SLE Freq.	0.00			-3152.09			41.52	0.00	204.71	1189.10	0.1337
				SLE Q.P.	0.00			-3046.83			40.14	0.00	197.87	1149.40	0.1293
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
10577	0.00	9.42	9.42			0.00	11109.65	0.22	-6356.22	-11109.65	0.22				
				SLE Rare	0.00			-3617.13			47.65	0.00	234.91	1364.54	
				SLE Freq.	0.00			-3286.44			43.29	0.00	213.43	1239.79	0.1394
				SLE Q.P.	0.00			-3176.21			41.84	0.00	206.27	1198.20	0.1348
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6588.60	-11109.65	0.22				
				SLE Rare	0.00			-4280.96			56.39	0.00	278.02	1614.96	
				SLE Freq.	0.00			-3883.84			51.16	0.00	252.23	1465.15	0.1654
				SLE Q.P.	0.00			-3751.46			49.42	0.00	243.63	1415.21	0.1592
10579	0.74	9.42	9.42			0.00	11109.65	0.22	-6588.60	-11109.65	0.22				
				SLE Rare	0.00			-4453.58			58.67	0.00	289.23	1680.08	
				SLE Freq.	0.00			-4034.66			53.15	0.00	262.02	1522.05	0.1760
				SLE Q.P.	0.00			-3895.01			51.31	0.00	252.95	1469.36	0.1662
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
10579	0.00	9.42	9.42			0.00	11109.65	0.22	-6567.74	-11109.65	0.22				
				SLE Rare	0.00			-4444.74			58.55	0.00	288.65	1676.74	
				SLE Freq.	0.00			-4025.61			53.03	0.00	261.44	1518.63	0.1754
				SLE Q.P.	0.00			-3885.89			51.19	0.00	252.36	1465.92	0.1655
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6567.74	-11109.65	0.22				
				SLE Rare	0.00			-4126.13			54.35	0.00	267.96	1556.55	
				SLE Freq.	0.00			-3730.12			49.14	0.00	242.25	1407.16	0.1583
				SLE Q.P.	0.00			-3597.96			47.40	0.00	233.66	1357.30	0.1527
10581	0.74	9.42	9.42			0.00	11109.65	0.22	-6136.73	-11109.65	0.22				
				SLE Rare	0.00			-3316.30			43.69	0.00	215.37	1251.05	
				SLE Freq.	0.00			-2988.04			39.36	0.00	194.05	1127.22	0.1268
				SLE Q.P.	0.00			-2878.29			37.92	0.00	186.93	1085.82	0.1221
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
10581	0.00	9.42	9.42			0.00	11109.65	0.22	-4659.73	-11109.65	0.22				
				SLE Rare	0.00			-3154.72			41.56	0.00	204.88	1190.09	
				SLE Freq.	0.00			-2840.91			37.42	0.00	184.50	1071.71	0.1205
				SLE Q.P.	0.00			-2735.99			36.04	0.00	177.68	1032.13	0.1161
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4659.73	-11109.65	0.22				
				SLE Rare	0.00			-1883.05			24.81	0.00	122.29	710.37	
				SLE Freq.	0.00			-1679.04			22.12	0.00	109.04	633.41	0.0712
				SLE Q.P.	0.00			-1610.58			21.22	0.00	104.60	607.58	0.0683
10583	0.72	9.42	9.42			0.00	11109.65	0.22	-2935.97	-11109.65	0.22				
				SLE Rare	0.00			-138.70			1.83	0.00	9.01	52.32	
				SLE Freq.	0.00			-87.43			1.15	0.00	5.68	32.98	0.0037
				SLE Q.P.	0.00			-69.73			0.92	0.00	4.53	26.30	0.0030
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
10583	0.00	9.86	9.42			3677.96	11540.95	0.22	0.00	-11110.82	0.22				
				SLE Rare	139.73			0.00			0.00	1.81	50.52	9.22	
				SLE Freq.	122.97			0.00			0.00	1.59	44.46	8.11	0.0009
				SLE Q.P.	117.06			0.00			0.00	1.52	42.32	7.72	0.0008
Camp.	0.37	12.04	9.42	5320.00	183.71	7619.42	13724.79	0.24	-183.71	-11115.81	0.22				

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	2372.25				-124.31			1.60	28.51	708.59	165.44	
				SLE Freq.	2185.55				-113.02			1.46	26.27	652.82	152.42	0.0137
				SLE Q.P.	2129.28				-109.26			1.41	25.59	636.02	148.50	0.0134
10585	0.74	14.23	9.42			7619.42	15895.21	0.26	0.00	-11119.63	0.22					
				SLE Rare	5152.02				0.00			0.00	58.40	1312.92	370.83	
				SLE Freq.	4716.83				0.00			0.00	53.46	1202.02	339.51	0.0269
				SLE Q.P.	4578.53				0.00			0.00	51.90	1166.77	329.55	0.0261
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
10585	0.00	14.91	9.42			12875.38	16566.52	0.26	0.00	-11120.64	0.22					
				SLE Rare	5274.05				0.00			0.00	58.84	1285.65	382.26	
				SLE Freq.	4825.88				0.00			0.00	53.84	1176.40	349.77	0.0267
				SLE Q.P.	4682.86				0.00			0.00	52.25	1141.54	339.41	0.0259
Camp.	0.30	16.64	9.42		5320.00	178.82	16111.42	18263.83	0.28	-168.11	-11122.91	0.22				
				SLE Rare	7919.38				-113.76			1.41	85.21	1739.39	581.84	
				SLE Freq.	7234.21				-103.42			1.28	77.84	1588.90	531.50	0.0375
				SLE Q.P.	7012.84				-99.98			1.24	75.46	1540.28	515.23	0.0364
325	0.61	18.71	6.49			16111.42	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare	10897.73				-17.25			0.25	117.29	2137.79	592.38	
				SLE Freq.	9945.31				-15.68			0.23	107.04	1950.95	540.61	0.0386
				SLE Q.P.	9635.51				-15.16			0.22	103.70	1890.18	523.77	0.0374

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 319 10573 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	14682.24	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10573 10575 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11445.82	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10575 10577 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7491.45	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10577 10579 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3636.02	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10579 10581 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4234.25	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10581 10583 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	8089.69	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10583 10585 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12044.06	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10585 325 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	15280.49	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 392 Nodi 325 10584 10582 10580 10578 10576 10574 10572 318

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
325	0.12	18.71	6.49			15084.51	20249.27	0.32	-25.49	-8214.47	0.21					
						SLE Rare	10204.60		-17.25			0.25	109.83	2001.82	554.70	
						SLE Freq.	9275.81		-15.68			0.23	99.83	1819.62	504.21	0.0360
						SLE Q.P.	8966.21		-15.16			0.22	96.50	1758.89	487.39	0.0348
Camp.	0.43	16.64	9.42		5320.00	178.82	15084.51	18263.83	0.28	-168.11	-11122.91	0.22				
						SLE Rare	7289.95		-113.76			1.41	78.44	1601.14	535.59	
						SLE Freq.	6626.30		-103.42			1.28	71.30	1455.38	486.83	0.0344
						SLE Q.P.	6405.09		-99.98			1.24	68.92	1406.80	470.58	0.0332
10584	0.73	14.91	9.42			11916.79	16566.52	0.26	0.00	-11120.64	0.22					
						SLE Rare	4708.31		0.00			0.00	52.53	1147.74	341.25	
						SLE Freq.	4279.56		0.00			0.00	47.75	1043.23	310.18	0.0237
						SLE Q.P.	4136.65		0.00			0.00	46.15	1008.39	299.82	0.0229
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

10584	0.00	14.23	9.42			6725.69	15895.21	0.26	0.00	-11119.63	0.22								
				SLE Rare		4548.75			0.00			0.00	51.56	1159.18	327.41				
				SLE Freq.		4134.52			0.00			0.00	46.86	1053.62	297.59	0.0235			
				SLE Q.P.		3996.44			0.00			0.00	45.30	1018.43	287.65	0.0228			
Camp.	0.37	12.04	9.42	5320.00	183.71	6725.69	13724.80	0.24	-528.04	-11115.81	0.22								
				SLE Rare		1846.81			-124.31			1.60	22.20	551.64	128.80				
				SLE Freq.		1678.49			-113.02			1.46	20.17	501.37	117.06	0.0106			
				SLE Q.P.		1622.38			-109.26			1.41	19.50	484.61	113.15	0.0102			
10582	0.74	9.86	9.42			2894.43	11540.96	0.22	-528.04	-11110.82	0.22								
				SLE Rare		0.00			-358.96			4.71	0.00	23.08	135.48				
				SLE Freq.		0.00			-326.90			4.29	0.00	21.02	123.38	0.0139			
				SLE Q.P.		0.00			-315.87			4.14	0.00	20.31	119.22	0.0134			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
10582	0.00	9.42	9.42			0.00	11109.65	0.22	-3481.57	-11109.65	0.22								
				SLE Rare		0.00			-586.48			7.73	0.00	38.09	221.24				
				SLE Freq.		0.00			-533.76			7.03	0.00	34.66	201.36	0.0226			
				SLE Q.P.		0.00			-515.82			6.80	0.00	33.50	194.59	0.0219			
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5103.50	-11109.65	0.22								
				SLE Rare		0.00			-2256.80			29.73	0.00	146.56	851.36				
				SLE Freq.		0.00			-2051.94			27.03	0.00	133.26	774.08	0.0871			
				SLE Q.P.		0.00			-1983.31			26.13	0.00	128.80	748.19	0.0842			
10580	0.72	9.42	9.42			0.00	11109.65	0.22	-5103.50	-11109.65	0.22								
				SLE Rare		0.00			-3454.44			45.51	0.00	224.34	1303.16				
				SLE Freq.		0.00			-3140.38			41.37	0.00	203.95	1184.68	0.1332			
				SLE Q.P.		0.00			-3035.37			39.99	0.00	197.13	1145.07	0.1288			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
10580	0.00	9.42	9.42			0.00	11109.65	0.22	-6465.26	-11109.65	0.22								
				SLE Rare		0.00			-3617.19			47.65	0.00	234.91	1364.56				
				SLE Freq.		0.00			-3288.34			43.32	0.00	213.55	1240.50	0.1395			
				SLE Q.P.		0.00			-3178.40			41.87	0.00	206.41	1199.03	0.1349			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6790.86	-11109.65	0.22								
				SLE Rare		0.00			-4351.87			57.33	0.00	282.62	1641.71				
				SLE Freq.		0.00			-3955.57			52.11	0.00	256.89	1492.21	0.1705			
				SLE Q.P.		0.00			-3823.27			50.36	0.00	248.29	1442.30	0.1622			
10578	0.74	9.42	9.42			0.00	11109.65	0.22	-6790.86	-11109.65	0.22								
				SLE Rare		0.00			-4595.50			60.54	0.00	298.45	1733.62				
				SLE Freq.		0.00			-4176.21			55.01	0.00	271.22	1575.44	0.1861			
				SLE Q.P.		0.00			-4036.42			53.17	0.00	262.14	1522.71	0.1762			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
10578	0.00	9.42	9.42			0.00	11109.65	0.22	-6792.90	-11109.65	0.22								
				SLE Rare		0.00			-4596.90			60.56	0.00	298.54	1734.15				
				SLE Freq.		0.00			-4177.52			55.03	0.00	271.30	1575.94	0.1862			
				SLE Q.P.		0.00			-4037.70			53.19	0.00	262.22	1523.19	0.1763			
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6792.90	-11109.65	0.22								
				SLE Rare		0.00			-4349.30			57.29	0.00	282.46	1640.74				
				SLE Freq.		0.00			-3951.88			52.06	0.00	256.65	1490.82	0.1702			
				SLE Q.P.		0.00			-3819.41			50.31	0.00	248.04	1440.84	0.1621			
10576	0.74	9.42	9.42			0.00	11109.65	0.22	-6462.87	-11109.65	0.22								
				SLE Rare		0.00			-3610.49			47.56	0.00	234.48	1362.03				
				SLE Freq.		0.00			-3279.69			43.20	0.00	212.99	1237.24	0.1392			
				SLE Q.P.		0.00			-3169.42			41.75	0.00	205.83	1195.64	0.1345			
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																			
10576	0.00	9.42	9.42			0.00	11109.65	0.22	-5100.34	-11109.65	0.22								
				SLE Rare		0.00			-3450.77			45.46	0.00	224.10	1301.78				
				SLE Freq.		0.00			-3134.61			41.29	0.00	203.57	1182.51	0.1330			

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-3029.22			39.90	0.00	196.73	1142.75	0.1285
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5100.34	-11109.65	0.22				
				SLE Rare	0.00			-2248.77			29.62	0.00	146.04	848.33	
				SLE Freq.	0.00			-2041.31			26.89	0.00	132.57	770.07	0.0866
				SLE Q.P.	0.00			-1972.16			25.98	0.00	128.08	743.98	0.0837
10574	0.72	9.42	9.42			0.00	11109.65	0.22	-3473.51	-11109.65	0.22				
				SLE Rare	0.00			-574.08			7.56	0.00	37.28	216.57	
				SLE Freq.	0.00			-518.27			6.83	0.00	33.66	195.51	0.0220
				SLE Q.P.	0.00			-499.66			6.58	0.00	32.45	188.49	0.0212
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
10574	0.00	9.86	9.42			2911.53	11540.97	0.22	-518.72	-11110.82	0.22				
				SLE Rare	0.00			-349.69			4.59	0.00	22.49	131.98	
				SLE Freq.	0.00			-314.49			4.13	0.00	20.22	118.70	0.0134
				SLE Q.P.	0.00			-302.76			3.97	0.00	19.47	114.27	0.0129
Camp.	0.37	12.04	9.42	5320.00	183.71	6747.98	13724.81	0.24	-518.72	-11115.81	0.22				
				SLE Rare	1861.96			-124.31			1.60	22.38	556.17	129.86	
				SLE Freq.	1695.81			-113.02			1.46	20.38	506.54	118.27	0.0107
				SLE Q.P.	1640.57			-109.26			1.41	19.72	490.04	114.42	0.0103
10572	0.74	14.23	9.42			6747.98	15895.23	0.26	0.00	-11119.63	0.22				
				SLE Rare	4568.38			0.00			0.00	51.78	1164.18	328.82	
				SLE Freq.	4156.83			0.00			0.00	47.12	1059.31	299.20	0.0237
				SLE Q.P.	4019.77			0.00			0.00	45.56	1024.38	289.33	0.0229
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
10572	0.00	14.91	9.42			11939.07	16566.54	0.26	0.00	-11120.64	0.22				
				SLE Rare	4723.80			0.00			0.00	52.70	1151.52	342.38	
				SLE Freq.	4297.83			0.00			0.00	47.95	1047.68	311.50	0.0238
				SLE Q.P.	4155.93			0.00			0.00	46.37	1013.09	301.22	0.0230
Camp.	0.30	16.64	9.42	5320.00	178.82	15109.96	18263.84	0.28	-168.10	-11122.91	0.22				
				SLE Rare	7309.09			-113.76			1.41	78.65	1605.35	537.00	
				SLE Freq.	6648.64			-103.42			1.28	71.54	1460.29	488.47	0.0345
				SLE Q.P.	6428.56			-99.98			1.24	69.17	1411.95	472.31	0.0334
318	0.61	18.71	6.49			15109.96	20249.27	0.32	-25.49	-8214.47	0.21				
				SLE Rare	10227.39			-17.25			0.25	110.07	2006.29	555.94	
				SLE Freq.	9302.21			-15.68			0.23	100.11	1824.80	505.65	0.0361
				SLE Q.P.	8993.88			-15.16			0.22	96.80	1764.31	488.89	0.0349

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 325 10584 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	14970.24	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10584 10582 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11733.81	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10582 10580 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7779.44	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10580 10578 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3924.00	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10578 10576 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3938.60	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10576 10574 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7794.04	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10574 10572 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11748.41	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10572 318 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14984.82	7069.47	37247.76	36621.00	ø 10 2br. 12.5'



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Travata: Travata 393 Nodi 318 10570 10568 10566 10564 10562 10560 10558 309

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
318	0.13	18.71	6.49			16172.44	20249.27	0.32	-25.49	-8214.47	0.21					
					SLE Rare	10946.34			-17.25			0.25	117.81	2147.32	595.02	
					SLE Freq.	9995.47			-15.68			0.23	107.58	1960.79	543.33	0.0388
					SLE Q.P.	9686.97			-15.16			0.22	104.26	1900.28	526.56	0.0376
Camp.	0.43	16.64	9.42	5320.00	178.82	16172.44	18263.84	0.28	-168.10	-11122.91	0.22					
					SLE Rare	7960.46			-113.75			1.41	85.66	1748.41	584.85	
					SLE Freq.	7276.73			-103.42			1.28	78.30	1598.24	534.62	0.0378
					SLE Q.P.	7056.54			-99.98			1.24	75.93	1549.88	518.44	0.0366
10570	0.73	14.91	9.42			12929.36	16566.54	0.26	0.00	-11120.64	0.22					
					SLE Rare	5307.61			0.00			0.00	59.22	1293.83	384.69	
					SLE Freq.	4860.77			0.00			0.00	54.23	1184.91	352.30	0.0269
					SLE Q.P.	4718.80			0.00			0.00	52.65	1150.30	342.01	0.0261
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
10570	0.00	14.23	9.42			7669.71	15895.24	0.26	0.00	-11119.63	0.22					
					SLE Rare	5192.03			0.00			0.00	58.85	1323.11	373.71	
					SLE Freq.	4758.07			0.00			0.00	53.93	1212.52	342.47	0.0271
					SLE Q.P.	4620.82			0.00			0.00	52.38	1177.55	332.60	0.0263
Camp.	0.37	12.04	9.42	5320.00	183.71	7669.71	13724.81	0.24	-183.71	-11115.81	0.22					
					SLE Rare	2403.03			-124.31			1.60	28.88	717.79	167.59	
					SLE Freq.	2217.43			-113.02			1.46	26.65	662.35	154.65	0.0140
					SLE Q.P.	2162.05			-109.26			1.41	25.98	645.81	150.78	0.0136
10568	0.74	9.86	9.42			3716.79	11540.97	0.22	0.00	-11110.82	0.22					
					SLE Rare	162.38			0.00			0.00	2.10	58.70	10.71	
					SLE Freq.	147.02			0.00			0.00	1.90	53.15	9.70	0.0010
					SLE Q.P.	140.32			0.00			0.00	1.82	50.73	9.26	0.0010
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
10568	0.00	9.42	9.42			0.00	11109.65	0.22	-2919.79	-11109.65	0.22					
					SLE Rare	0.00			-116.43			1.53	0.00	7.56	43.92	
					SLE Freq.	0.00			-60.87			0.80	0.00	3.95	22.96	0.0026
					SLE Q.P.	0.00			-42.35			0.56	0.00	2.75	15.98	0.0018
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-4652.84	-11109.65	0.22					
					SLE Rare	0.00			-1868.65			24.62	0.00	121.36	704.93	
					SLE Freq.	0.00			-1661.39			21.89	0.00	107.90	626.75	0.0705
					SLE Q.P.	0.00			-1592.30			20.98	0.00	103.41	600.68	0.0676
10566	0.72	9.42	9.42			0.00	11109.65	0.22	-4652.84	-11109.65	0.22					
					SLE Rare	0.00			-3148.19			41.47	0.00	204.45	1187.63	
					SLE Freq.	0.00			-2832.17			37.31	0.00	183.93	1068.41	0.1202
					SLE Q.P.	0.00			-2726.82			35.92	0.00	177.09	1028.67	0.1157
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
10566	0.00	9.42	9.42			0.00	11109.65	0.22	-6134.53	-11109.65	0.22					
					SLE Rare	0.00			-3305.51			43.54	0.00	214.67	1246.98	
					SLE Freq.	0.00			-2975.10			39.19	0.00	193.21	1122.33	0.1262
					SLE Q.P.	0.00			-2864.96			37.74	0.00	186.06	1080.78	0.1216
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6575.23	-11109.65	0.22					
					SLE Rare	0.00			-4123.38			54.32	0.00	267.78	1555.51	
					SLE Freq.	0.00			-3726.27			49.09	0.00	242.00	1405.71	0.1581
					SLE Q.P.	0.00			-3593.90			47.34	0.00	233.40	1355.77	0.1525
10564	0.74	9.42	9.42			0.00	11109.65	0.22	-6575.23	-11109.65	0.22					
					SLE Rare	0.00			-4450.02			58.62	0.00	289.00	1678.74	
					SLE Freq.	0.00			-4030.97			53.10	0.00	261.78	1520.65	0.1758
					SLE Q.P.	0.00			-3891.22			51.26	0.00	252.71	1467.94	0.1659

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Trave Sez. 2 Rett. 40x40 [cm]																
10564	0.00	9.42	9.42			0.00	11109.65	0.22	-6592.30	-11109.65	0.22					
				SLE Rare		0.00			-4454.90			58.69	0.00	289.31	1680.58	
				SLE Freq.		0.00			-4036.09			53.17	0.00	262.12	1522.59	0.1761
				SLE Q.P.		0.00			-3896.46			51.33	0.00	253.05	1469.91	0.1663
Camp.	0.37	9.42	9.42	5320.00	181.48	0.00	11109.65	0.22	-6592.30	-11109.65	0.22					
				SLE Rare		0.00			-4290.32			56.52	0.00	278.63	1618.49	
				SLE Freq.		0.00			-3894.59			51.30	0.00	252.93	1469.21	0.1661
				SLE Q.P.		0.00			-3762.39			49.56	0.00	244.34	1419.34	0.1596
10562	0.74	9.42	9.42			0.00	11109.65	0.22	-6367.74	-11109.65	0.22					
				SLE Rare		0.00			-3635.58			47.89	0.00	236.11	1371.50	
				SLE Freq.		0.00			-3306.49			43.56	0.00	214.73	1247.35	0.1403
				SLE Q.P.		0.00			-3196.59			42.11	0.00	207.60	1205.89	0.1356
Trave Sez. 2 Rett. 40x40 [cm]																
10562	0.00	9.42	9.42			0.00	11109.65	0.22	-5143.87	-11109.65	0.22					
				SLE Rare		0.00			-3482.17			45.87	0.00	226.14	1313.62	
				SLE Freq.		0.00			-3167.60			41.73	0.00	205.71	1194.95	0.1344
				SLE Q.P.		0.00			-3062.73			40.35	0.00	198.90	1155.39	0.1300
Camp.	0.36	9.42	9.42	5320.00	174.63	0.00	11109.65	0.22	-5143.87	-11109.65	0.22					
				SLE Rare		0.00			-2365.02			31.16	0.00	153.59	892.19	
				SLE Freq.		0.00			-2156.78			28.41	0.00	140.07	813.63	0.0915
				SLE Q.P.		0.00			-2088.24			27.51	0.00	135.62	787.77	0.0886
10560	0.72	9.42	9.42			0.00	11109.65	0.22	-3632.30	-11109.65	0.22					
				SLE Rare		0.00			-775.20			10.21	0.00	50.34	292.44	
				SLE Freq.		0.00			-716.22			9.43	0.00	46.51	270.19	0.0304
				SLE Q.P.		0.00			-698.32			9.20	0.00	45.35	263.44	0.0296
Trave Sez. 2 Rett. 40x40 [cm]																
10560	0.00	9.86	9.42			2497.66	11540.96	0.22	-813.48	-11110.82	0.22					
				SLE Rare		0.00			-552.56			7.25	0.00	35.53	208.55	
				SLE Freq.		0.00			-514.12			6.75	0.00	33.06	194.04	0.0218
				SLE Q.P.		0.00			-503.21			6.60	0.00	32.36	189.92	0.0214
Camp.	0.37	12.04	9.42	5320.00	183.71	6216.84	13724.80	0.24	-813.48	-11115.81	0.22					
				SLE Rare		1581.12			-124.31			1.60	19.00	472.28	110.27	
				SLE Freq.		1412.25			-113.02			1.46	16.97	421.84	98.49	0.0089
				SLE Q.P.		1355.96			-109.26			1.41	16.30	405.03	94.57	0.0085
10558	0.74	14.23	9.42			6216.84	15895.21	0.26	0.00	-11119.63	0.22					
				SLE Rare		4203.54			0.00			0.00	47.65	1071.21	302.56	
				SLE Freq.		3788.82			0.00			0.00	42.95	965.52	272.71	0.0216
				SLE Q.P.		3650.58			0.00			0.00	41.38	930.30	262.76	0.0208
Trave Sez. 2 Rett. 40x40 [cm]																
10558	0.00	14.91	9.42			11293.56	16566.52	0.26	0.00	-11120.64	0.22					
				SLE Rare		4368.81			0.00			0.00	48.74	1064.98	316.65	
				SLE Freq.		3939.40			0.00			0.00	43.95	960.31	285.52	0.0218
				SLE Q.P.		3796.26			0.00			0.00	42.35	925.41	275.15	0.0210
Camp.	0.30	16.64	9.42	5320.00	178.82	14391.77	18263.83	0.28	-168.11	-11122.91	0.22					
				SLE Rare		6885.35			-113.76			1.41	74.09	1512.28	505.87	
				SLE Freq.		6221.10			-103.42			1.28	66.94	1366.39	457.06	0.0323
				SLE Q.P.		5999.68			-99.98			1.24	64.56	1317.75	440.80	0.0311
309	0.61	18.71	6.49			14391.77	20249.27	0.32	-25.49	-8214.47	0.21					
				SLE Rare		9734.92			-17.25			0.25	104.77	1909.68	529.17	
				SLE Freq.		8805.57			-15.68			0.23	94.77	1727.37	478.65	0.0342
				SLE Q.P.		8495.79			-15.16			0.22	91.44	1666.60	461.81	0.0330

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 318 10570 Sez. 2 Rett. 40x40 [cm]</b>							
0.13	0.73	0.61	15312.67	7069.47	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10570 10568 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12076.25	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10568 10566 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	8121.87	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10566 10564 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	4266.44	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10564 10562 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	3608.41	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10562 10560 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7463.85	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10560 10558 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	11418.22	8004.72	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 10558 309 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.61	0.61	14654.65	7069.47	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 5 Nodi 241 7022

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
241	0.13	6.03	6.03			0.00	7803.06	0.15	-2753.83	-7803.06	0.15					
				SLE Rare		0.00			-1689.03			24.07	0.00	144.44	915.97	
				SLE Freq.		0.00			-1674.66			23.86	0.00	143.21	908.17	0.0985
				SLE Q.P.		0.00			-1677.35			23.90	0.00	143.44	909.63	0.0986
Camp.	2.13	6.03	6.03	520.00	587.03	1881.80	7803.06	0.15	-587.03	-7803.06	0.15					
				SLE Rare		583.48			-451.56			6.43	8.31	316.42	244.88	
				SLE Freq.		515.75			-451.56			6.43	7.35	279.69	244.88	0.0266
				SLE Q.P.		493.20			-451.56			6.43	7.03	267.47	244.88	0.0266
7022	4.13	6.03	6.03			6617.23	7803.06	0.15	0.00	-7803.06	0.15					
				SLE Rare		4459.39			0.00			0.00	63.54	2418.34	381.35	
				SLE Freq.		4268.80			0.00			0.00	60.83	2314.98	365.05	0.0396
				SLE Q.P.		4222.08			0.00			0.00	60.16	2289.65	361.06	0.0392

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 241 7022 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1510.77	7037.02	38935.73	63800.94	142.96	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.72	3.20	3174.77	7037.02	38935.73	38280.56	142.96	5004.46	2832.32	ø 10 2br. 12.5'
3.72	4.13	0.40	3382.77	7037.02	38935.73	63800.94	142.96	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 558 Nodi 3552 3683 4120

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 7 Rett. 30x80 [cm]</b>																
3552	0.13	8.04	8.04			952.74	22578.91	0.08	-949.50	-22578.91	0.08					
				SLE Rare		340.11			0.00			0.00	1.36	61.54	14.54	
				SLE Freq.		257.20			0.00			0.00	1.03	46.54	11.00	0.0010
				SLE Q.P.		229.56			0.00			0.00	0.92	41.54	9.82	0.0009
Camp.	0.99	8.04	8.04	780.00	168.19	940.59	22578.91	0.08	-949.50	-22578.91	0.08					
				SLE Rare		82.00			-127.79			0.51	0.33	14.84	23.12	
				SLE Freq.		21.96			-127.79			0.51	0.09	5.47	23.12	0.0021
				SLE Q.P.		1.94			-127.79			0.51	0.01	5.47	23.12	0.0021
3683	1.86	8.04	8.04			817.74	22578.91	0.08	-920.39	-22578.91	0.08					
				SLE Rare		273.80			0.00			0.00	1.09	49.54	11.71	
				SLE Freq.		236.63			0.00			0.00	0.94	42.81	10.12	0.0009

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	224.23			0.00			0.00	0.89	40.57	9.59	0.0009
<b>Trave Sez. 7 Rett. 30x80 [cm]</b>															
3683	0.00	8.04	8.04			0.00	22578.91	0.08	-2756.79	-22578.91	0.08				
				SLE Rare	0.00				-1150.74			4.59	0.00	49.21	208.21
				SLE Freq.	0.00				-1100.42			4.39	0.00	47.06	199.10
				SLE Q.P.	0.00				-1083.13			4.32	0.00	46.32	195.98
Camp.	2.95	8.04	8.04	780.00	1772.17	4662.47	22578.91	0.08	-1860.82	-22578.91	0.08				
				SLE Rare	2185.05				-1361.76			5.43	8.72	395.35	246.39
				SLE Freq.	2097.09				-1361.76			5.43	8.37	379.44	246.39
				SLE Q.P.	2068.36				-1361.76			5.43	8.25	374.24	246.39
4120	5.90	8.04	10.05			316.36	22577.11	0.08	-14862.22	-28043.51	0.09				
				SLE Rare	0.00				-8293.23			30.58	0.00	340.37	1209.57
				SLE Freq.	0.00				-8101.26			29.87	0.00	332.49	1181.57
				SLE Q.P.	0.00				-8049.75			29.68	0.00	330.37	1174.06

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 3552 3683 Sez. 7 Rett. 30x80 [cm]</b>										
0.13	1.86	1.73	799.57	9231.02	91905.48	33235.49	337.40	11601.62	6485.85	ø 10 2br. 12.5'
<b>Trave 3683 4120 Sez. 7 Rett. 30x80 [cm]</b>										
0.00	0.80	0.80	1710.92	9231.02	91905.48	33235.49	465.16	11601.62	6485.85	ø 10 2br. 12.5'
0.80	5.10	4.30	12368.77	9231.02	63383.09	51930.45	465.16	11601.62	4053.66	ø 10 2br. 20.0'
5.10	5.90	0.80	12339.12	9943.82	91905.48	33235.49	465.16	11601.62	6485.85	ø 10 2br. 12.5'

Travata: Travata 560 Nodi 11545 11601 11603 11605 11607 11609

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11545	0.12	12.57	12.57			12134.27	14241.09	0.24	-23.94	-14241.09	0.24					
				SLE Rare	8186.13				-16.21			0.19	93.85	2355.31	539.33	
				SLE Freq.	7724.88				-15.33			0.18	88.56	2222.60	508.95	0.0517
				SLE Q.P.	7609.88				-15.11			0.17	87.24	2189.52	501.37	0.0509
Camp.	0.43	12.57	12.57	4996.24	167.94	12134.27	14241.09	0.24	-157.87	-14241.09	0.24					
				SLE Rare	4914.21				-106.93			1.23	56.34	1413.92	323.77	
				SLE Freq.	4637.86				-101.09			1.16	53.17	1334.41	305.56	0.0310
				SLE Q.P.	4569.07				-99.63			1.14	52.38	1314.61	301.03	0.0306
11601	0.73	12.57	12.57			8576.79	14241.09	0.24	0.00	-14241.09	0.24					
				SLE Rare	1955.35				0.00			0.00	22.42	562.59	128.83	
				SLE Freq.	1846.77				0.00			0.00	21.17	531.35	121.67	0.0124
				SLE Q.P.	1819.91				0.00			0.00	20.86	523.63	119.90	0.0122
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11601	0.00	12.57	12.57			2306.07	14241.09	0.24	-2100.37	-14241.09	0.24					
				SLE Rare	1557.60				0.00			0.00	17.86	448.15	102.62	
				SLE Freq.	1471.65				0.00			0.00	16.87	423.42	96.96	0.0098
				SLE Q.P.	1450.44				0.00			0.00	16.63	417.32	95.56	0.0097
Camp.	0.37	12.57	12.57	4999.34	172.63	2306.06	14241.09	0.24	-5474.20	-14241.09	0.24					
				SLE Rare	0.00				-1300.25			14.91	0.00	85.67	374.11	
				SLE Freq.	0.00				-1225.05			14.04	0.00	80.71	352.47	0.0358
				SLE Q.P.	0.00				-1206.86			13.84	0.00	79.51	347.24	0.0353
11603	0.74	12.57	12.57			0.00	14241.09	0.24	-5474.20	-14241.09	0.24					
				SLE Rare	0.00				-3690.38			42.31	0.00	243.14	1061.80	
				SLE Freq.	0.00				-3479.61			39.89	0.00	229.25	1001.16	0.1017
				SLE Q.P.	0.00				-3427.34			39.29	0.00	225.81	986.12	0.1001
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>																
11603	0.00	12.57	12.57			0.00	14241.09	0.24	-8389.37	-14241.09	0.24					
				SLE Rare	0.00				-4020.45			46.09	0.00	264.88	1156.76	
				SLE Freq.	0.00				-3790.97			43.46	0.00	249.76	1090.74	0.1108

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

				SLE Q.P.	0.00			-3734.08			42.81	0.00	246.02	1074.37	0.1091
Camp.	0.36	12.57	12.57	4994.58	163.95	0.00	14241.09	0.24	-9884.61	-14241.09	0.24				
				SLE Rare	0.00			-5565.13			63.80	0.00	366.65	1601.20	
				SLE Freq.	0.00			-5248.90			60.18	0.00	345.82	1510.22	0.1805
				SLE Q.P.	0.00			-5170.14			59.27	0.00	340.63	1487.55	0.1767
11605	0.72	12.57	12.57			0.00	14241.09	0.24	-9884.61	-14241.09	0.24				
				SLE Rare	0.00			-6665.61			76.42	0.00	439.16	1917.83	
				SLE Freq.	0.00			-6286.93			72.08	0.00	414.21	1808.88	0.2311
				SLE Q.P.	0.00			-6192.36			70.99	0.00	407.98	1781.67	0.2265
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11605	0.00	12.57	12.57			0.00	14241.09	0.24	-10594.36	-14241.09	0.24				
				SLE Rare	0.00			-6808.68			78.06	0.00	448.58	1959.00	
				SLE Freq.	0.00			-6421.93			73.62	0.00	423.10	1847.72	0.2377
				SLE Q.P.	0.00			-6325.40			72.52	0.00	416.74	1819.95	0.2330
Camp.	0.37	12.57	12.57	4999.63	170.55	0.00	14241.09	0.24	-10604.38	-14241.09	0.24				
				SLE Rare	0.00			-7141.50			81.87	0.00	470.51	2054.76	
				SLE Freq.	0.00			-6736.66			77.23	0.00	443.84	1938.27	0.2530
				SLE Q.P.	0.00			-6635.41			76.07	0.00	437.17	1909.14	0.2481
11607	0.74	12.57	12.57			0.00	14241.09	0.24	-10604.38	-14241.09	0.24				
				SLE Rare	0.00			-7012.24			80.39	0.00	461.99	2017.57	
				SLE Freq.	0.00			-6614.58			75.83	0.00	435.79	1903.15	0.2470
				SLE Q.P.	0.00			-6515.05			74.69	0.00	429.24	1874.51	0.2422
<b>Trave Sez. 2 Rett. 40x40 [cm]</b>															
11607	0.00	12.57	12.57			0.00	14241.09	0.24	-10215.19	-14241.09	0.24				
				SLE Rare	0.00			-6889.21			78.98	0.00	453.89	1982.17	
				SLE Freq.	0.00			-6498.58			74.50	0.00	428.15	1869.77	0.2414
				SLE Q.P.	0.00			-6400.84			73.38	0.00	421.71	1841.65	0.2366
Camp.	0.34	12.57	12.57	4996.78	170.45	0.00	14241.09	0.24	-10215.19	-14241.09	0.24				
				SLE Rare	0.00			-6042.62			69.27	0.00	398.11	1738.58	
				SLE Freq.	0.00			-5700.66			65.35	0.00	375.58	1640.20	0.2025
				SLE Q.P.	0.00			-5615.10			64.37	0.00	369.95	1615.58	0.1984
11609	0.69	12.57	12.57			0.00	14241.09	0.24	-9149.69	-14241.09	0.24				
				SLE Rare	0.00			-4794.85			54.97	0.00	315.90	1379.58	
				SLE Freq.	0.00			-4523.50			51.86	0.00	298.03	1301.50	0.1452
				SLE Q.P.	0.00			-4455.61			51.08	0.00	293.55	1281.97	0.1419

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	Staffe
<b>Trave 11545 11601 Sez. 2 Rett. 40x40 [cm]</b>							
0.12	0.73	0.61	16704.63	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11601 11603 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	12325.00	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11603 11605 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.72	0.72	7220.24	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11605 11607 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.74	0.74	2253.87	8810.34	37247.76	36621.00	ø 10 2br. 12.5'
<b>Trave 11607 11609 Sez. 2 Rett. 40x40 [cm]</b>							
0.00	0.69	0.69	6229.71	8810.34	37247.76	36621.00	ø 10 2br. 12.5'

Travata: Travata 57 Nodi 2788 103

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
2788	0.13	6.03	6.03			3084.74	7803.06	0.15	-513.14	-7803.06	0.15					
						SLE Rare	942.10		0.00			0.00	13.42	510.90	80.56	
						SLE Freq.	894.54		0.00			0.00	12.75	485.11	76.50	0.0083
						SLE Q.P.	877.22		0.00			0.00	12.50	475.72	75.02	0.0081

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Camp.	1.77	6.03	6.03	520.00	409.58	522.93	7803.06	0.15	-1146.62	-7803.06	0.15						
				SLE Rare		0.00			-582.93			8.31	0.00	49.85	316.12		
				SLE Freq.		0.00			-567.54			8.09	0.00	48.53	307.78	0.0334	
				SLE Q.P.		0.00			-562.51			8.02	0.00	48.10	305.05	0.0331	
103	3.42	4.12	5.68			91.19	5628.58	0.13	-2350.34	-7381.73	0.14						
				SLE Rare		0.00			-1006.64			15.10	0.00	61.54	543.67		
				SLE Freq.		0.00			-924.89			13.87	0.00	56.54	499.51	0.0558	
				SLE Q.P.		0.00			-896.39			13.44	0.00	54.80	484.12	0.0541	

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 2788 103 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	2307.00	7037.02	38935.73	63800.94	133.54	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.03	2.50	2147.00	7037.02	38935.73	38280.56	133.54	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	1147.00	6895.68	38935.73	63800.94	133.54	5004.46	2299.93	ø 10 2br. 7.5'

Travata: Travata 6 Nodi 248 7431

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
248	0.13	6.03	6.03			40.98	7803.06	0.15	-2823.28	-7803.06	0.15					
				SLE Rare		0.00			-1765.55			25.16	0.00	150.98	957.46	
				SLE Freq.		0.00			-1723.10			24.55	0.00	147.35	934.44	0.1013
				SLE Q.P.		0.00			-1708.95			24.35	0.00	146.14	926.77	0.1005
Camp.	2.13	6.03	6.03	520.00	587.03	1860.96	7803.06	0.15	-587.03	-7803.06	0.15					
				SLE Rare		558.78			-451.56			6.43	7.96	303.03	244.88	
				SLE Freq.		497.40			-451.56			6.43	7.09	269.74	244.88	0.0266
				SLE Q.P.		476.96			-451.56			6.43	6.80	258.66	244.88	0.0266
7431	4.13	6.03	6.03			6618.10	7803.06	0.15	0.00	-7803.06	0.15					
				SLE Rare		4475.93			0.00			0.00	63.78	2427.31	382.76	
				SLE Freq.		4282.52			0.00			0.00	61.02	2322.42	366.22	0.0397
				SLE Q.P.		4225.86			0.00			0.00	60.21	2291.70	361.38	0.0392

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 248 7431 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1524.37	7037.02	38935.73	63800.94	149.81	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.72	3.20	3188.37	7037.02	38935.73	38280.56	149.81	5004.46	2832.32	ø 10 2br. 12.5'
3.72	4.13	0.40	3396.37	7037.02	38935.73	63800.94	149.81	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 61 Nodi 2808 108

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
2808	0.13	6.03	6.03			1969.20	7803.06	0.15	-1296.96	-7803.06	0.15					
				SLE Rare		0.00			-248.25			3.54	0.00	21.23	134.62	
				SLE Freq.		0.00			-193.61			2.76	0.00	16.56	104.99	0.0114
				SLE Q.P.		0.00			-175.40			2.50	0.00	15.00	95.12	0.0103
Camp.	1.77	6.03	6.03	520.00	409.58	237.03	7803.06	0.15	-881.87	-7803.06	0.15					
				SLE Rare		0.00			-547.93			7.81	0.00	46.86	297.14	
				SLE Freq.		0.00			-532.66			7.59	0.00	45.55	288.86	0.0313
				SLE Q.P.		0.00			-527.63			7.52	0.00	45.12	286.13	0.0310
108	3.42	6.03	6.03			1158.55	7803.06	0.15	-1266.83	-7803.06	0.15					
				SLE Rare		263.64			0.00			0.00	3.76	142.97	22.55	
				SLE Freq.		242.09			0.00			0.00	3.45	131.28	20.70	0.0022
				SLE Q.P.		234.90			0.00			0.00	3.35	127.39	20.09	0.0022



**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**

**Parcheggio interrato - Tabulato di calcolo**

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 2808 108 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1640.61	7037.02	38935.73	63800.94	453.83	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.03	2.50	1480.61	7037.02	38935.73	38280.56	453.83	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	1404.09	7037.02	38935.73	63800.94	453.83	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 66 Nodi 5866 208

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
5866	0.13	6.03	6.03			5650.66	7803.06	0.15	0.00	-7803.06	0.15					
				SLE Rare		3851.34			0.00			0.00	54.88	2088.59	329.35	
				SLE Freq.		3682.88			0.00			0.00	52.48	1997.24	314.95	0.0342
				SLE Q.P.		3626.15			0.00			0.00	51.67	1966.47	310.09	0.0336
Camp.	1.77	6.03	6.03	520.00	409.58	1481.46	7803.06	0.15	-798.57	-7803.06	0.15					
				SLE Rare		182.63			-315.06			4.49	2.60	99.04	170.86	
				SLE Freq.		163.66			-315.06			4.49	2.33	88.75	170.86	0.0185
				SLE Q.P.		157.34			-315.06			4.49	2.24	85.32	170.86	0.0185
208	3.42	6.03	6.03			0.00	7803.06	0.15	-3638.38	-7803.06	0.15					
				SLE Rare		0.00			-2401.44			34.22	0.00	205.36	1302.31	
				SLE Freq.		0.00			-2269.20			32.33	0.00	194.05	1230.60	0.1335
				SLE Q.P.		0.00			-2224.47			31.70	0.00	190.23	1206.34	0.1308

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 5866 208 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	3672.86	7037.02	38935.73	63800.94	277.48	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.03	2.50	3464.86	7037.02	38935.73	38280.56	277.48	5004.46	2832.32	ø 10 2br. 12.5'
3.03	3.42	0.40	2164.86	7037.02	38935.73	63800.94	277.48	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 71 Nodi 8924 308

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 1 Rett. 40x40 [cm]</b>																
8924	0.13	6.03	6.03			2067.68	7803.06	0.15	0.00	-7803.06	0.15					
				SLE Rare		1394.50			0.00			0.00	19.87	756.24	119.25	
				SLE Freq.		1348.14			0.00			0.00	19.21	731.10	115.29	0.0125
				SLE Q.P.		1331.88			0.00			0.00	18.98	722.28	113.90	0.0124
Camp.	1.77	6.03	6.03	520.00	407.28	545.33	7803.06	0.15	-407.28	-7803.06	0.15					
				SLE Rare		126.01			-313.29			4.46	1.80	68.33	169.90	
				SLE Freq.		126.41			-313.29			4.46	1.80	68.55	169.90	0.0184
				SLE Q.P.		126.43			-313.29			4.46	1.80	68.56	169.90	0.0184
308	3.41	6.03	6.03			578.67	7803.06	0.15	-273.76	-7803.06	0.15					
				SLE Rare		35.67			-63.18			0.90	0.51	19.35	34.26	
				SLE Freq.		57.62			-23.22			0.33	0.82	31.25	12.59	0.0014
				SLE Q.P.		64.93			-11.66			0.17	0.93	35.21	6.33	0.0007

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 8924 308 Sez. 1 Rett. 40x40 [cm]</b>										
0.13	0.52	0.40	1550.52	7037.02	38935.73	63800.94	532.66	5004.46	2832.32	ø 10 2br. 7.5'
0.52	3.01	2.49	1342.52	7037.02	38935.73	38280.56	532.66	5004.46	2832.32	ø 10 2br. 12.5'
3.01	3.41	0.40	578.68	7037.02	38935.73	63800.94	532.66	5004.46	2832.32	ø 10 2br. 7.5'

Travata: Travata 8 Nodi 341 9596

Nodo	x [m]	A <sub>fe</sub> [cm <sup>2</sup> ]	A <sub>fi</sub> [cm <sup>2</sup> ]	q <sub>T</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm <sup>2</sup> ]	σ <sub>bi</sub> [kg/cm <sup>2</sup> ]	σ <sub>fe</sub> [kg/cm <sup>2</sup> ]	σ <sub>fi</sub> [kg/cm <sup>2</sup> ]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
341	0.13	10.05	8.04			15722.78	16275.79	0.14	0.00	-13229.71	0.13					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

				SLE Rare	10859.01			0.00			0.00	80.92	2740.28	694.95	
				SLE Freq.	10825.76			0.00			0.00	80.67	2731.89	692.82	0.0623
				SLE Q.P.	10814.67			0.00			0.00	80.59	2729.09	692.11	0.0623
Camp.	2.13	8.04	8.04	650.00	740.46	6804.99	13228.33	0.13	-740.46	-13228.33	0.13				
				SLE Rare	2714.81			-569.59			4.61	21.97	849.49	178.23	
				SLE Freq.	2855.69			-569.59			4.61	23.11	893.58	183.84	0.0193
				SLE Q.P.	2902.66			-569.59			4.61	23.49	908.27	186.87	0.0196
9596	4.14	8.04	8.04			0.00	13228.33	0.13	-5165.11	-13228.33	0.13				
				SLE Rare	0.00			-3405.74			27.56	0.00	219.25	1065.70	
				SLE Freq.	0.00			-3090.72			25.01	0.00	198.97	967.12	0.1014
				SLE Q.P.	0.00			-2985.71			24.16	0.00	192.21	934.26	0.0980

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 341 9596 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	6460.01	8701.28	50188.84	61680.39	114.40	6941.10	4694.74	Ø 10 2br. 10.0'
0.63	3.64	3.02	6135.01	8701.28	50188.84	41120.26	114.40	6941.10	4173.10	Ø 10 2br. 15.0'
3.64	4.14	0.50	4172.48	8701.28	50188.84	61680.39	114.40	6941.10	4173.10	Ø 10 2br. 10.0'

Travata: Travata 9 Nodi 348 9810

Nodo	x [m]	A <sub>fe</sub> [cm²]	A <sub>fi</sub> [cm²]	q <sub>r</sub> [kg/m]	M <sub>rif</sub> [kgm]	M <sub>de</sub> [kgm]	M <sub>re</sub> [kgm]	x/d	M <sub>di</sub> [kgm]	M <sub>ri</sub> [kgm]	x/d	σ <sub>be</sub> [kg/cm²]	σ <sub>bi</sub> [kg/cm²]	σ <sub>fe</sub> [kg/cm²]	σ <sub>fi</sub> [kg/cm²]	w mm
<b>Trave Sez. 5 Rett. 40x50 [cm]</b>																
348	0.13	8.04	8.04			9937.26	13228.33	0.13	0.00	-13228.33	0.13					
				SLE Rare		6910.20			0.00			0.00	55.91	2162.28	444.86	
				SLE Freq.		6847.57			0.00			0.00	55.40	2142.68	440.83	0.0462
				SLE Q.P.		6826.69			0.00			0.00	55.23	2136.15	439.49	0.0461
Camp.	2.15	8.04	8.04	650.00	752.90	3698.08	13228.33	0.13	-1057.05	-13228.33	0.13					
				SLE Rare		1246.73			-579.15			4.69	10.09	390.11	181.22	
				SLE Freq.		1394.40			-579.15			4.69	11.28	436.32	181.22	0.0190
				SLE Q.P.		1443.62			-579.15			4.69	11.68	451.73	181.22	0.0190
9810	4.18	8.04	8.04			436.80	13228.33	0.13	-4866.20	-13228.33	0.13					
				SLE Rare		0.00			-2356.97			19.07	0.00	151.74	737.52	
				SLE Freq.		0.00			-1999.00			16.17	0.00	128.69	625.51	0.0656
				SLE Q.P.		0.00			-1879.67			15.21	0.00	121.01	588.17	0.0617

Da [m]	A [m]	Dx [m]	V <sub>Ed</sub> [kg]	V <sub>Rd,c</sub> [kg]	V <sub>Rcd</sub> [kg]	V <sub>Rd</sub> [kg]	T <sub>Ed</sub> [kgm]	T <sub>Rcd</sub> [kgm]	T <sub>Rsd</sub> [kgm]	Staffe
<b>Trave 348 9810 Sez. 5 Rett. 40x50 [cm]</b>										
0.13	0.63	0.50	4622.67	8701.28	50188.84	61680.39	303.73	6941.10	4173.10	Ø 10 2br. 10.0'
0.63	3.68	3.05	4297.67	8701.28	50188.84	41120.26	303.73	6941.10	4173.10	Ø 10 2br. 15.0'
3.68	4.18	0.50	2395.15	8701.28	50188.84	61680.39	303.73	6941.10	4173.10	Ø 10 2br. 10.0'

#### Verifiche pilastri

Modalità di verifica

I pilastri vengono verificati (a discrezione dell'utente) secondo una delle seguenti modalità:

Presso-tenso flessione deviata.

Presso-tenso flessione retta. In tale caso viene svolta prima la verifica a presso-tenso flessione considerando come azioni agenti lo sforzo normale ed il momento  $M_x$  agente sulla sezione poi, disgiuntamente, considerando come azioni agenti lo sforzo normale e l'altro momento  $M_y$ . A discrezione dell'operatore tali momenti (a favore della sicurezza) possono essere incrementati di un fattore di amplificazione anch'esso a discrezione dell'utente.

Le verifiche vengono effettuate nella sezione di sommità e in quella di base in tutte le combinazioni di carico.

Nelle stampe si riportano (per le due sezioni di verifica succitate) le sollecitazioni relative alla combinazione di carico critica. Le sollecitazioni di verifica alle estremità sono valutate ad una ascissa di spunto definita dall'utente.

Sezioni Impiegate:

Sez. Num.	Inf o	Dimensio ni	Criteri o	Calcestruzz o	γ <sub>M</sub>	F.C.	f <sub>ck</sub> [kg/cm²]	f <sub>cd</sub> [kg/cm²]	σ <sub>RARE</sub> [kg/cm²]	σ <sub>FREQ</sub> [kg/cm²]	σ <sub>QP</sub> [kg/cm²]	Acciai o	γ <sub>M</sub>	F.C.	f <sub>yk</sub> [kg/cm²]	f <sub>yd</sub> [kg/cm²]	σ <sub>YRARE</sub> [kg/cm²]	σ <sub>YFREQ</sub> [kg/cm²]	σ <sub>YQP</sub> [kg/cm²]	Copr. [cm]	Verific a	cot g θ
1	Rett	B 40 [cm]	Verpil	C32/40	1.5	1.0	320.000	181.300	192.000	320.000	144.000	B 450	1.1	1.0	4500.00	3913.00	3600.00	4500.00	4500.00	5.00	Deviata	2.5

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

		H 100 [cm]			0	0						C	5	0	0	0	0	0	0				
2	Rett	B 100 [cm] H 40 [cm]	Verpil	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	5.00	Deviata	2.5	
5	Rett	B 30 [cm] H 30 [cm]	Verpil	C32/40	1.5 0	1.0 0	320.000	181.300	192.000	320.000	144.000	B 450 C	1.1 5	1.0 0	4500.00 0	3913.00 0	3600.00 0	4500.00 0	4500.00 0	5.00	Deviata	2.5	

Verifiche Pilastri:

**N.B. Nella formula (7.4.28) del punto 7.4.6.2.2. TU2008 nel calcolo di  $A_{st}$  è stata inclusa l'area totale delle staffe in entrambe le direzioni. La formula (7.4.28) del punto 7.4.6.2.2. TU2008 in "CDB" viene applicata alle sole regioni critiche terminali. Fattore di sovrarresistenza  $\gamma_{R,d}$  (Nuovi) = 1.10**

Pilastro: **1/2752** / L 1.60[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:**  $\varnothing$  10 2br.x4br./15.0 x 160.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
1	1	-56045.91	-7566.93	-70.49	0.09
2752	1	-53640.91	-7769.93	-271.31	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.12	1.73	488.10	86297.23	108.55	61956.98	$\varnothing$ 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	$\sigma$ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
1	Ft. 16	-36665.68	-5589.88	-41.62	-27.71
	$\sigma_{s,c}15$	-38854.57	-5598.85	-45.77	-220.69
	$\sigma_{cls,Max}15$	-38854.57	-5598.85	-45.77	-15.76
	$\sigma_{cls,Med}15$	-38854.57	-5598.85	-45.77	-8.51
2752	Ft. 16	-34815.68	-5359.30	-181.56	-20.95
	$\sigma_{s,c}15$	-37004.57	-5511.83	-190.04	-217.78
	$\sigma_{cls,Max}15$	-37004.57	-5511.83	-190.04	-15.71
	$\sigma_{cls,Med}15$	-37004.57	-5511.83	-190.04	-8.11
<b>Combinazioni Frequenti</b>					
1	Ft. 19	-35595.24	-5598.70	-38.58	-24.14
	$\sigma_{s,c}18$	-36313.12	-5602.10	-39.91	-212.21
	$\sigma_{cls,Max}18$	-36313.12	-5602.10	-39.91	-15.19
	$\sigma_{cls,Med}18$	-36313.12	-5602.10	-39.91	-7.95
2752	Ft. 19	-33745.24	-5267.49	-177.67	-19.06
	$\sigma_{s,c}18$	-34463.12	-5316.92	-180.47	-205.94
	$\sigma_{cls,Max}18$	-34463.12	-5316.92	-180.47	-14.88
	$\sigma_{cls,Med}18$	-34463.12	-5316.92	-180.47	-7.55
<b>Combinazioni Quasi Permanenti</b>					
1	Ft. 21	-35524.73	-5601.14	-38.24	-23.88
	$\sigma_{s,c}21$	-35524.73	-5601.14	-38.24	-209.55
	$\sigma_{cls,Max}21$	-35524.73	-5601.14	-38.24	-15.01
	$\sigma_{cls,Med}21$	-35524.73	-5601.14	-38.24	-7.78
2752	Ft. 21	-33674.73	-5259.02	-177.45	-18.97
	$\sigma_{s,c}21$	-33674.73	-5259.02	-177.45	-202.31
	$\sigma_{cls,Max}21$	-33674.73	-5259.02	-177.45	-14.62
	$\sigma_{cls,Med}21$	-33674.73	-5259.02	-177.45	-7.38

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **2752/101** / L 2.25[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 25.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2752	1	-129173.42	-8269.65	288.16	0.17
101	1	-125923.42	-2549.46	-249.38	0.15

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2288.07	86297.23	233.31	61956.98	ø 10 2br.x4br./15.0
1.13	1.38	2288.07	64722.92	233.31	46467.73	ø 10 2br.x4br./20.0
1.38	2.38	2288.07	86297.23	233.31	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2752	Ft. 16	-83675.04	-5559.23	147.88	-179.28
	σ <sub>s,c</sub> 15	-89006.65	-5776.21	179.93	-392.64
	σ <sub>cls,Max</sub> 15	-89006.65	-5776.21	179.93	-27.41
	σ <sub>cls,Med</sub> 15	-89006.65	-5776.21	179.93	-19.50
101	Ft. 16	-81175.04	-1620.45	-144.85	-235.59
	σ <sub>s,c</sub> 15	-86506.65	-1696.73	-159.80	-317.06
	σ <sub>cls,Max</sub> 15	-86506.65	-1696.73	-159.80	-21.62
	σ <sub>cls,Med</sub> 15	-86506.65	-1696.73	-159.80	-18.95
<b>Combinazioni Frequenti</b>					
2752	Ft. 19	-81046.41	-5423.17	134.92	-173.28
	σ <sub>s,c</sub> 18	-82794.25	-5493.30	145.53	-366.51
	σ <sub>cls,Max</sub> 18	-82794.25	-5493.30	145.53	-25.58
	σ <sub>cls,Med</sub> 20	-82804.91	-5423.75	160.72	-18.14
101	Ft. 19	-78546.41	-1536.76	-133.40	-228.69
	σ <sub>s,c</sub> 20	-80304.91	-1573.19	-147.45	-294.27
	σ <sub>cls,Max</sub> 20	-80304.91	-1573.19	-147.45	-20.07
	σ <sub>cls,Med</sub> 20	-80304.91	-1573.19	-147.45	-17.59
<b>Combinazioni Quasi Permanenti</b>					
2752	Ft. 21	-80870.26	-5409.98	134.46	-172.93
	σ <sub>s,c</sub> 21	-80870.26	-5409.98	134.46	-358.47
	σ <sub>cls,Max</sub> 21	-80870.26	-5409.98	134.46	-25.01
	σ <sub>cls,Med</sub> 22	-80879.38	-5351.22	147.46	-17.72
101	Ft. 22	-78379.38	-1535.25	-140.02	-227.95
	σ <sub>s,c</sub> 22	-78379.38	-1535.25	-140.02	-287.08
	σ <sub>cls,Max</sub> 22	-78379.38	-1535.25	-140.02	-19.57
	σ <sub>cls,Med</sub> 22	-78379.38	-1535.25	-140.02	-17.17

Pilastro: **101/201** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
101	1	-94710.27	-361.09	-89.03	0.11
201	1	-90225.27	321.23	182.62	0.11

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	267.39	86297.23	79.38	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	267.39	64722.92	79.38	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	267.39	86297.23	79.38	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
101	Ft. 16	-61983.15	-293.87	-50.43	-197.24
	σ <sub>s,c</sub> 15	-65391.04	-224.43	-57.51	-220.34
	σ <sub>cls,Max</sub> 15	-65391.04	-224.43	-57.51	-14.80
	σ <sub>cls,Med</sub> 15	-65391.04	-224.43	-57.51	-14.32
201	Ft. 16	-58533.15	349.72	134.74	-182.31
	σ <sub>s,c</sub> 15	-61941.04	259.04	126.19	-211.76
	σ <sub>cls,Max</sub> 15	-61941.04	259.04	126.19	-14.31
	σ <sub>cls,Med</sub> 15	-61941.04	259.04	126.19	-13.57
<b>Combinazioni Frequenti</b>					
101	Ft. 19	-59996.95	-258.06	-46.87	-191.41
	σ <sub>s,c</sub> 20	-61109.92	-240.27	-51.59	-206.35
	σ <sub>cls,Max</sub> 20	-61109.92	-240.27	-51.59	-13.86
	σ <sub>cls,Med</sub> 20	-61109.92	-240.27	-51.59	-13.39
201	Ft. 19	-56546.95	342.32	128.60	-176.10
	σ <sub>s,c</sub> 18	-57653.59	310.79	125.44	-198.50
	σ <sub>cls,Max</sub> 18	-57653.59	310.79	125.44	-13.43
	σ <sub>cls,Med</sub> 20	-57659.92	291.24	122.05	-12.63
<b>Combinazioni Quasi Permanenti</b>					
101	Ft. 22	-59826.49	-251.65	-48.62	-190.90
	σ <sub>s,c</sub> 22	-59826.49	-251.65	-48.62	-202.22
	σ <sub>cls,Max</sub> 22	-59826.49	-251.65	-48.62	-13.58
	σ <sub>cls,Med</sub> 22	-59826.49	-251.65	-48.62	-13.10
201	Ft. 21	-56371.04	334.53	126.74	-175.70
	σ <sub>s,c</sub> 21	-56371.04	334.53	126.74	-194.71
	σ <sub>cls,Max</sub> 21	-56371.04	334.53	126.74	-13.18
	σ <sub>cls,Med</sub> 22	-56376.49	318.28	123.78	-12.35

Pilastro: **201/301** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
201	1	-59007.14	2491.64	239.10	0.08
301	2	-52295.00	6297.54	-1921.78	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1126.29	86297.23	632.92	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	1126.29	64722.92	632.92	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	1126.29	86297.23	632.92	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
201	Ft. 16	-39334.52	1669.10	176.89	-96.31

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-40819.28	1722.31	161.75	-167.43
	σ <sub>cls,Max</sub> 15	-40819.28	1722.31	161.75	-11.65
	σ <sub>cls,Med</sub> 15	-40819.28	1722.31	161.75	-8.94
301	Ft. 16	-35884.52	4249.57	-1292.34	-6.57
	σ <sub>s,c</sub> 16	-35884.52	4249.57	-1292.34	-228.94
	σ <sub>cls,Max</sub> 16	-35884.52	4249.57	-1292.34	-17.51
	σ <sub>cls,Med</sub> 15	-37369.28	3954.20	-1224.19	-8.22
<b>Combinazioni Frequenti</b>					
201	Ft. 19	-37989.57	1615.62	166.09	-93.11
	σ <sub>s,c</sub> 18	-38455.18	1632.13	160.49	-158.15
	σ <sub>cls,Max</sub> 18	-38455.18	1632.13	160.49	-11.02
	σ <sub>cls,Med</sub> 20	-38458.46	1616.79	159.30	-8.42
301	Ft. 19	-34539.57	3988.71	-1213.48	-9.18
	σ <sub>s,c</sub> 19	-34539.57	3988.71	-1213.48	-217.60
	σ <sub>cls,Max</sub> 19	-34539.57	3988.71	-1213.48	-16.61
	σ <sub>cls,Med</sub> 20	-35008.46	3873.79	-1189.16	-7.73
<b>Combinazioni Quasi Permanenti</b>					
201	Ft. 21	-37813.70	1608.23	162.81	-92.75
	σ <sub>s,c</sub> 21	-37813.70	1608.23	162.81	-155.72
	σ <sub>cls,Max</sub> 21	-37813.70	1608.23	162.81	-10.85
	σ <sub>cls,Med</sub> 22	-37816.55	1595.58	161.80	-8.28
301	Ft. 21	-34363.70	3914.36	-1192.46	-10.58
	σ <sub>s,c</sub> 22	-34366.55	3910.95	-1194.12	-215.09
	σ <sub>cls,Max</sub> 22	-34366.55	3910.95	-1194.12	-16.40
	σ <sub>cls,Med</sub> 22	-34366.55	3910.95	-1194.12	-7.62

Pilastro: **301/11526** / L 4.05[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 205.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
301	2	-24263.93	8496.06	-2899.40	0.10
11526	2	-18673.93	1268.83	-14413.90	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1680.75	86297.23	2677.79	61956.98	ø 10 2br.x4br./15.0
1.13	3.18	1680.75	64722.92	2677.79	46467.73	ø 10 2br.x4br./20.0
3.18	4.18	1680.75	86297.23	2677.79	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
301	Ft. 16	-16888.81	5735.44	-1951.51	253.85
	σ <sub>s,c</sub> 16	-16888.81	5735.44	-1951.51	-271.17
	σ <sub>cls,Max</sub> 16	-16888.81	5735.44	-1951.51	-23.58
	σ <sub>cls,Med</sub> 16	-16888.81	5735.44	-1951.51	-7.91
11526	Ft. 16	-12588.81	856.41	-9721.04	1627.37
	σ <sub>s,c</sub> 16	-12588.81	856.41	-9721.04	-404.23
	σ <sub>cls,Max</sub> 16	-12588.81	856.41	-9721.04	-62.55
	σ <sub>cls,Med</sub> 16	-12588.81	856.41	-9721.04	-29.96



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
301	Ft. 19	-16172.88	5419.98	-1834.60	234.65
	$\sigma_{s,c}19$	-16172.88	5419.98	-1834.60	-255.42
	$\sigma_{cls,Max}19$	-16172.88	5419.98	-1834.60	-22.16
	$\sigma_{cls,Med}19$	-16172.88	5419.98	-1834.60	-7.44
11526	Ft. 19	-11872.88	808.69	-9170.69	1535.36
	$\sigma_{s,c}19$	-11872.88	808.69	-9170.69	-381.36
	$\sigma_{cls,Max}19$	-11872.88	808.69	-9170.69	-59.01
	$\sigma_{cls,Med}19$	-11872.88	808.69	-9170.69	-28.26
<b>Combinazioni Quasi Permanenti</b>					
301	Ft. 22	-15994.69	5343.21	-1805.52	229.99
	$\sigma_{s,c}22$	-15994.69	5343.21	-1805.52	-251.55
	$\sigma_{cls,Max}22$	-15994.69	5343.21	-1805.52	-21.81
	$\sigma_{cls,Med}22$	-15994.69	5343.21	-1805.52	-7.32
11526	Ft. 22	-11694.69	795.86	-9035.00	1512.67
	$\sigma_{s,c}22$	-11694.69	795.86	-9035.00	-375.67
	$\sigma_{cls,Max}22$	-11694.69	795.86	-9035.00	-58.14
	$\sigma_{cls,Med}22$	-11694.69	795.86	-9035.00	-27.84

Pilastro: **3/103** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20$  Af=37.70 [cm<sup>2</sup>] <  $1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H$  >

**Staffe:**  $\varnothing 10$  2br.x4br./15.0 x 100.0/ $\varnothing 10$  2br.x4br./20.0 x 210.0/ $\varnothing 10$  2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
3	1	-205194.16	5428.93	932.88	0.25
103	1	-199539.16	-5044.41	-166.07	0.24

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	5395.94	86297.23	486.28	61956.98	$\varnothing 10$ 2br.x4br./15.0
1.13	3.23	5395.94	64722.92	486.28	46467.73	$\varnothing 10$ 2br.x4br./20.0
3.23	4.23	5395.94	86297.23	486.28	61956.98	$\varnothing 10$ 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
3	Ft. 17	-131284.55	3631.70	616.89	-352.31
	$\sigma_{s,c}15$	-144771.75	3615.93	624.88	-554.68
	$\sigma_{cls,Max}15$	-144771.75	3615.93	624.88	-38.33
	$\sigma_{cls,Med}15$	-144771.75	3615.93	624.88	-31.71
103	Ft. 17	-126934.55	-3540.42	-102.42	-355.88
	$\sigma_{s,c}15$	-140421.75	-3603.97	-91.60	-523.22
	$\sigma_{cls,Max}15$	-140421.75	-3603.97	-91.60	-35.63
	$\sigma_{cls,Med}15$	-140421.75	-3603.97	-91.60	-30.76
<b>Combinazioni Frequenti</b>					
3	Ft. 20	-129029.48	3653.12	577.89	-345.79
	$\sigma_{s,c}18$	-138417.27	3471.40	579.51	-529.99
	$\sigma_{cls,Max}18$	-138417.27	3471.40	579.51	-36.61
	$\sigma_{cls,Med}18$	-138417.27	3471.40	579.51	-30.32
103	Ft. 20	-124679.48	-3440.84	-90.41	-350.48
	$\sigma_{s,c}18$	-134067.25	-3413.97	-78.04	-498.81
	$\sigma_{cls,Max}18$	-134067.25	-3413.97	-78.04	-33.95
	$\sigma_{cls,Med}18$	-134067.25	-3413.97	-78.04	-29.37
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
3	Ft. 22	-128277.80	3660.26	564.89	-343.62
	σ <sub>s,c</sub> 21	-136300.23	3419.84	564.40	-521.71
	σ <sub>cls,Max</sub> 21	-136300.23	3419.84	564.40	-36.03
	σ <sub>cls,Med</sub> 21	-136300.23	3419.84	564.40	-29.85
103	Ft. 22	-123927.81	-3407.65	-86.41	-348.68
	σ <sub>s,c</sub> 21	-131950.23	-3349.83	-73.60	-490.66
	σ <sub>cls,Max</sub> 21	-131950.23	-3349.83	-73.60	-33.39
	σ <sub>cls,Med</sub> 21	-131950.23	-3349.83	-73.60	-28.90

Pilastro: **103/203** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
103	1	-168908.78	12914.13	-282.57	0.23
203	1	-164423.78	-676.76	-80.44	0.19

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3977.05	86297.23	136.73	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	3977.05	64722.92	136.73	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	3977.05	86297.23	136.73	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
103	Ft. 17	-104902.09	8799.50	-236.48	-193.20
	σ <sub>s,c</sub> 15	-118607.50	8847.07	-203.64	-540.88
	σ <sub>cls,Max</sub> 15	-118607.50	8847.07	-203.64	-37.86
	σ <sub>cls,Med</sub> 15	-118607.50	8847.07	-203.64	-25.98
203	Ft. 17	-101452.09	-720.75	29.90	-320.58
	σ <sub>s,c</sub> 15	-115157.50	-586.55	-55.65	-389.72
	σ <sub>cls,Max</sub> 15	-115157.50	-586.55	-55.65	-26.15
	σ <sub>cls,Med</sub> 15	-115157.50	-586.55	-55.65	-25.22

**Combinazioni Frequenti**

103	Ft. 20	-103734.69	8404.00	-219.80	-196.37
	σ <sub>s,c</sub> 18	-113309.78	8424.19	-195.17	-516.29
	σ <sub>cls,Max</sub> 18	-113309.78	8424.19	-195.17	-36.14
	σ <sub>cls,Med</sub> 18	-113309.78	8424.19	-195.17	-24.82
203	Ft. 20	-100284.69	-645.37	7.80	-318.68
	σ <sub>s,c</sub> 18	-109859.78	-549.28	-61.11	-371.88
	σ <sub>cls,Max</sub> 18	-109859.78	-549.28	-61.11	-24.96
	σ <sub>cls,Med</sub> 18	-109859.78	-549.28	-61.11	-24.06

**Combinazioni Quasi Permanenti**

103	Ft. 22	-103345.55	8272.17	-214.24	-197.42
	σ <sub>s,c</sub> 21	-111544.40	8282.35	-192.62	-508.08
	σ <sub>cls,Max</sub> 21	-111544.40	8282.35	-192.62	-35.56
	σ <sub>cls,Med</sub> 21	-111544.40	8282.35	-192.62	-24.43
203	Ft. 22	-99895.55	-620.24	0.44	-318.05
	σ <sub>s,c</sub> 21	-108094.40	-535.95	-62.70	-365.91
	σ <sub>cls,Max</sub> 21	-108094.40	-535.95	-62.70	-24.56

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-108094.40	-535.95	-62.70	-23.68

Pilastro: **203/303** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
203	1	-136432.98	25764.36	-169.67	0.25
303	1	-131947.98	-62250.62	21.56	0.50

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	25511.59	86297.23	588.19	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	25511.59	64722.92	588.19	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	25511.59	86297.23	588.19	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
203	Ft. 17	-81123.62	17298.68	-88.46	31.99
	σ <sub>s,c</sub> 15	-95171.22	17679.37	-150.95	-607.44
	σ <sub>cls,Max</sub> 15	-95171.22	17679.37	-150.95	-43.82
	σ <sub>cls,Med</sub> 15	-95171.22	17679.37	-150.95	-21.66
303	Ft. 17	-77673.62	-40965.40	-138.12	1428.40
	σ <sub>s,c</sub> 15	-91721.22	-42706.96	80.21	-1213.34
	σ <sub>cls,Max</sub> 15	-91721.22	-42706.96	80.21	-94.40
	σ <sub>cls,Med</sub> 15	-91721.22	-42706.96	80.21	-46.97
<b>Combinazioni Frequenti</b>					
203	Ft. 20	-80966.55	16693.48	-112.26	19.27
	σ <sub>s,c</sub> 18	-90836.41	16854.90	-169.18	-580.27
	σ <sub>cls,Max</sub> 18	-90836.41	16854.90	-169.18	-41.89
	σ <sub>cls,Med</sub> 18	-90836.41	16854.90	-169.18	-20.66
303	Ft. 20	-77516.55	-40312.05	-64.32	1377.26
	σ <sub>s,c</sub> 18	-87386.41	-41183.44	130.69	-1172.52
	σ <sub>cls,Max</sub> 18	-87386.41	-41183.44	130.69	-91.43
	σ <sub>cls,Med</sub> 18	-87386.41	-41183.44	130.69	-45.33
<b>Combinazioni Quasi Permanenti</b>					
203	Ft. 22	-80914.18	16491.74	-120.19	15.22
	σ <sub>s,c</sub> 21	-89391.63	16579.57	-175.25	-571.20
	σ <sub>cls,Max</sub> 21	-89391.63	16579.57	-175.25	-41.24
	σ <sub>cls,Med</sub> 21	-89391.63	16579.57	-175.25	-20.33
303	Ft. 22	-77464.18	-40094.28	-39.72	1360.29
	σ <sub>s,c</sub> 21	-85941.63	-40673.18	147.79	-1158.87
	σ <sub>cls,Max</sub> 21	-85941.63	-40673.18	147.79	-90.43
	σ <sub>cls,Med</sub> 21	-85941.63	-40673.18	147.79	-44.78

Pilastro: **4/104** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
4	1	-198690.97	7956.59	1004.22	0.25

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
104	1	-193035.97	-5413.84	-507.52	0.24

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6597.25	86297.23	543.60	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	6597.25	64722.92	543.60	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	6597.25	86297.23	543.60	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
4	Ft. 17	-126944.55	5377.00	669.00	-307.84
	σ <sub>s,c</sub> 15	-140099.03	5352.00	681.32	-569.52
	σ <sub>cls,Max</sub> 15	-140099.03	5352.00	681.32	-39.70
	σ <sub>cls,Med</sub> 15	-140099.03	5352.00	681.32	-30.69
104	Ft. 17	-122594.55	-3776.19	-330.56	-330.50
	σ <sub>s,c</sub> 15	-135749.03	-3842.04	-341.96	-519.73
	σ <sub>cls,Max</sub> 15	-135749.03	-3842.04	-341.96	-35.72
	σ <sub>cls,Med</sub> 15	-135749.03	-3842.04	-341.96	-29.73
<b>Combinazioni Frequenti</b>					
4	Ft. 20	-124681.88	5336.99	620.25	-302.62
	σ <sub>s,c</sub> 18	-133873.91	5149.55	631.60	-544.17
	σ <sub>cls,Max</sub> 18	-133873.91	5149.55	631.60	-37.91
	σ <sub>cls,Med</sub> 18	-133873.91	5149.55	631.60	-29.32
104	Ft. 20	-120331.88	-3672.57	-307.24	-325.51
	σ <sub>s,c</sub> 18	-129523.88	-3647.22	-318.59	-495.35
	σ <sub>cls,Max</sub> 18	-129523.88	-3647.22	-318.59	-34.03
	σ <sub>cls,Med</sub> 18	-129523.88	-3647.22	-318.59	-28.37
<b>Combinazioni Quasi Permanenti</b>					
4	Ft. 22	-123927.66	5323.66	603.99	-300.87
	σ <sub>s,c</sub> 21	-131799.38	5079.70	615.07	-535.69
	σ <sub>cls,Max</sub> 21	-131799.38	5079.70	615.07	-37.32
	σ <sub>cls,Med</sub> 21	-131799.38	5079.70	615.07	-28.87
104	Ft. 22	-119577.66	-3638.03	-299.47	-323.84
	σ <sub>s,c</sub> 21	-127449.38	-3581.85	-310.89	-487.22
	σ <sub>cls,Max</sub> 21	-127449.38	-3581.85	-310.89	-33.47
	σ <sub>cls,Med</sub> 21	-127449.38	-3581.85	-310.89	-27.92

Pilastro: **104/204** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
104	1	-163753.84	13268.65	-24.85	0.23
204	1	-159268.84	-783.90	-336.96	0.19

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4113.79	86297.23	132.88	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	4113.79	64722.92	132.88	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	4113.79	86297.23	132.88	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
104	Ft. 17	-101554.31	9045.18	-14.40	-185.25
	σ <sub>s,c</sub> 15	-114890.45	9090.00	-11.12	-526.51
	σ <sub>cls,Max</sub> 15	-114890.45	9090.00	-11.12	-36.73
	σ <sub>cls,Med</sub> 15	-114890.45	9090.00	-11.12	-25.16
204	Ft. 17	-98104.31	-806.36	-244.95	-301.34
	σ <sub>s,c</sub> 15	-111440.45	-668.18	-233.42	-384.50
	σ <sub>cls,Max</sub> 15	-111440.45	-668.18	-233.42	-26.02
	σ <sub>cls,Med</sub> 15	-111440.45	-668.18	-233.42	-24.41
<b>Combinazioni Frequenti</b>					
104	Ft. 20	-100327.93	8639.43	-16.99	-187.77
	σ <sub>s,c</sub> 18	-109678.24	8659.47	-13.16	-502.41
	σ <sub>cls,Max</sub> 18	-109678.24	8659.47	-13.16	-35.05
	σ <sub>cls,Med</sub> 18	-109678.24	8659.47	-13.16	-24.02
204	Ft. 20	-96877.93	-738.93	-238.59	-298.62
	σ <sub>s,c</sub> 18	-106228.24	-640.79	-224.30	-366.63
	σ <sub>cls,Max</sub> 18	-106228.24	-640.79	-224.30	-24.81
	σ <sub>cls,Med</sub> 18	-106228.24	-640.79	-224.30	-23.27
<b>Combinazioni Quasi Permanenti</b>					
104	Ft. 22	-99919.14	8504.18	-17.85	-188.62
	σ <sub>s,c</sub> 21	-107940.93	8515.11	-13.95	-494.37
	σ <sub>cls,Max</sub> 21	-107940.93	8515.11	-13.95	-34.49
	σ <sub>cls,Med</sub> 21	-107940.93	8515.11	-13.95	-23.64
204	Ft. 22	-96469.14	-716.46	-236.46	-297.71
	σ <sub>s,c</sub> 21	-104490.93	-630.81	-221.17	-360.66
	σ <sub>cls,Max</sub> 21	-104490.93	-630.81	-221.17	-24.41
	σ <sub>cls,Med</sub> 21	-104490.93	-630.81	-221.17	-22.89

Pilastro: **204/304** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
204	1	-132132.05	26592.94	-137.48	0.25
304	3	-107227.00	-61632.93	188.85	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	26301.84	86297.23	394.94	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	26301.84	64722.92	394.94	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	26301.84	86297.23	394.94	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
204	Ft. 17	-78448.80	17826.46	-114.80	60.56
	σ <sub>s,c</sub> 15	-92062.16	18222.61	-95.04	-605.91
	σ <sub>cls,Max</sub> 15	-92062.16	18222.61	-95.04	-43.78
	σ <sub>cls,Med</sub> 15	-92062.16	18222.61	-95.04	-21.73
304	Ft. 17	-74998.80	-42310.09	122.21	1592.87
	σ <sub>s,c</sub> 15	-88612.16	-43987.08	21.34	-1242.69
	σ <sub>cls,Max</sub> 15	-88612.16	-43987.08	21.34	-97.28

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-88612.16	-43987.08	21.34	-48.58
<b>Combinazioni Frequenti</b>					
204	Ft. 20	-78189.70	17189.99	-132.65	45.55
	σ <sub>s,c</sub> 18	-87785.55	17363.69	-106.34	-578.07
	σ <sub>cls,Max</sub> 18	-87785.55	17363.69	-106.34	-41.79
	σ <sub>cls,Med</sub> 18	-87785.55	17363.69	-106.34	-20.71
304	Ft. 20	-74739.70	-41568.46	163.82	1543.31
	σ <sub>s,c</sub> 18	-84335.55	-42397.26	50.50	-1198.86
	σ <sub>cls,Max</sub> 18	-84335.55	-42397.26	50.50	-94.03
	σ <sub>cls,Med</sub> 18	-84335.55	-42397.26	50.50	-46.86
<b>Combinazioni Quasi Permanenti</b>					
204	Ft. 22	-78103.35	16977.84	-138.60	40.77
	σ <sub>s,c</sub> 21	-86359.85	17077.13	-110.06	-568.78
	σ <sub>cls,Max</sub> 21	-86359.85	17077.13	-110.06	-41.12
	σ <sub>cls,Med</sub> 21	-86359.85	17077.13	-110.06	-20.37
304	Ft. 22	-74653.35	-41321.25	177.69	1526.83
	σ <sub>s,c</sub> 21	-82909.85	-41865.45	60.19	-1184.19
	σ <sub>cls,Max</sub> 22	-74653.35	-41321.25	177.69	-92.98
	σ <sub>cls,Med</sub> 21	-82909.85	-41865.45	60.19	-46.28

Pilastro: **5/105** / L 4.10[m] / Sezione **1 B 40** [cm]H **100** [cm]

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
5	1	-200486.84	9341.96	1226.13	0.26
105	1	-194831.84	-6206.06	-671.36	0.24

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7184.53	86297.23	520.02	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	7184.53	64722.92	520.02	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	7184.53	86297.23	520.02	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
5	Ft. 17	-127543.62	5843.88	821.64	-297.32
	σ <sub>s,c</sub> 15	-141367.73	6284.39	830.04	-593.67
	σ <sub>cls,Max</sub> 15	-141367.73	6284.39	830.04	-41.64
	σ <sub>cls,Med</sub> 15	-141367.73	6284.39	830.04	-30.96
105	Ft. 17	-123193.62	-4112.18	-449.64	-323.19
	σ <sub>s,c</sub> 15	-137017.73	-4370.73	-453.39	-536.09
	σ <sub>cls,Max</sub> 15	-137017.73	-4370.73	-453.39	-37.03
	σ <sub>cls,Med</sub> 15	-137017.73	-4370.73	-453.39	-30.01
<b>Combinazioni Frequenti</b>					
5	Ft. 20	-125279.05	5784.07	764.62	-292.67
	σ <sub>s,c</sub> 18	-135111.11	6060.80	771.06	-567.58
	σ <sub>cls,Max</sub> 18	-135111.11	6060.80	771.06	-39.79
	σ <sub>cls,Med</sub> 18	-135111.11	6060.80	771.06	-29.59
105	Ft. 20	-120929.05	-4004.50	-422.15	-318.38



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-130761.11	-4170.19	-424.14	-511.32
	σ <sub>cls,Max</sub> 18	-130761.11	-4170.19	-424.14	-35.31
	σ <sub>cls,Med</sub> 18	-130761.11	-4170.19	-424.14	-28.64
<b>Combinazioni Quasi Permanenti</b>					
5	Ft. 22	-124524.20	5764.14	745.61	-291.12
	σ <sub>s,c</sub> 21	-133025.53	5983.98	751.39	-558.84
	σ <sub>cls,Max</sub> 21	-133025.53	5983.98	751.39	-39.18
	σ <sub>cls,Med</sub> 21	-133025.53	5983.98	751.39	-29.14
105	Ft. 22	-120174.20	-3968.61	-412.99	-316.78
	σ <sub>s,c</sub> 21	-128675.54	-4102.91	-414.38	-503.06
	σ <sub>cls,Max</sub> 21	-128675.54	-4102.91	-414.38	-34.74
	σ <sub>cls,Med</sub> 21	-128675.54	-4102.91	-414.38	-28.18

Pilastro: **105/205** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
105	1	-165555.42	12987.47	8.42	0.23
205	1	-161070.42	-1351.36	-393.03	0.19

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4170.42	86297.23	133.64	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	4170.42	64722.92	133.64	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	4170.42	86297.23	133.64	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
105	Ft. 17	-102250.45	8822.25	-2.56	-191.56
	σ <sub>s,c</sub> 15	-116164.18	8910.88	8.04	-527.67
	σ <sub>cls,Max</sub> 15	-116164.18	8910.88	8.04	-36.77
	σ <sub>cls,Med</sub> 15	-116164.18	8910.88	8.04	-25.44
205	Ft. 17	-98800.45	-1174.82	-239.85	-297.76
	σ <sub>s,c</sub> 15	-112714.18	-1053.44	-267.40	-396.06
	σ <sub>cls,Max</sub> 15	-112714.18	-1053.44	-267.40	-26.90
	σ <sub>cls,Med</sub> 15	-112714.18	-1053.44	-267.40	-24.69
<b>Combinazioni Frequenti</b>					
105	Ft. 20	-101026.79	8411.31	-8.10	-194.08
	σ <sub>s,c</sub> 18	-110924.20	8476.29	2.69	-503.18
	σ <sub>cls,Max</sub> 18	-110924.20	8476.29	2.69	-35.05
	σ <sub>cls,Med</sub> 18	-110924.20	8476.29	2.69	-24.30
205	Ft. 20	-97576.79	-1082.33	-226.99	-295.67
	σ <sub>s,c</sub> 18	-107474.20	-1000.20	-252.51	-377.50
	σ <sub>cls,Max</sub> 18	-107474.20	-1000.20	-252.51	-25.63
	σ <sub>cls,Med</sub> 18	-107474.20	-1000.20	-252.51	-23.54
<b>Combinazioni Quasi Permanenti</b>					
105	Ft. 22	-100618.90	8274.33	-9.94	-194.93
	σ <sub>s,c</sub> 21	-109177.15	8330.63	0.88	-495.00
	σ <sub>cls,Max</sub> 21	-109177.15	8330.63	0.88	-34.48

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-109177.15	8330.63	0.88	-23.91
205	Ft. 22	-97168.90	-1051.50	-222.71	-294.97
	σ <sub>s,c</sub> 21	-105727.15	-981.74	-247.59	-371.30
	σ <sub>cls,Max</sub> 21	-105727.15	-981.74	-247.59	-25.21
	σ <sub>cls,Med</sub> 21	-105727.15	-981.74	-247.59	-23.16

Pilastro: **205/305** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
205	1	-133815.16	26141.15	-3.69	0.25
305	1	-129330.13	-63748.16	-422.31	0.52

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	26054.87	86297.23	484.01	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	26054.87	64722.92	484.01	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	26054.87	86297.23	484.01	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
205	Ft. 17	-79217.19	17250.48	13.31	37.53
	σ <sub>s,c</sub> 15	-93259.50	17924.24	-1.11	-600.92
	σ <sub>cls,Max</sub> 15	-93259.50	17924.24	-1.11	-43.27
	σ <sub>cls,Med</sub> 15	-93259.50	17924.24	-1.11	-21.63
305	Ft. 17	-75767.19	-41142.17	-335.14	1497.27
	σ <sub>s,c</sub> 15	-89809.50	-43731.59	-289.06	-1252.13
	σ <sub>cls,Max</sub> 15	-89809.50	-43731.59	-289.06	-98.20
	σ <sub>cls,Med</sub> 15	-89809.50	-43731.59	-289.06	-48.24
<b>Combinazioni Frequenti</b>					
205	Ft. 20	-78962.52	16632.85	-0.86	23.19
	σ <sub>s,c</sub> 18	-88956.03	17085.08	-13.49	-573.39
	σ <sub>cls,Max</sub> 18	-88956.03	17085.08	-13.49	-41.30
	σ <sub>cls,Med</sub> 18	-88956.03	17085.08	-13.49	-20.63
305	Ft. 20	-75512.52	-40417.69	-290.11	1443.98
	σ <sub>s,c</sub> 18	-85506.03	-42168.82	-248.25	-1205.02
	σ <sub>cls,Max</sub> 18	-85506.03	-42168.82	-248.25	-94.59
	σ <sub>cls,Med</sub> 18	-85506.03	-42168.82	-248.25	-46.55
<b>Combinazioni Quasi Permanenti</b>					
205	Ft. 22	-78877.63	16426.97	-5.58	18.92
	σ <sub>s,c</sub> 21	-87520.94	16804.99	-17.73	-564.21
	σ <sub>cls,Max</sub> 21	-87520.94	16804.99	-17.73	-40.64
	σ <sub>cls,Med</sub> 21	-87520.94	16804.99	-17.73	-20.29
305	Ft. 22	-75427.63	-40176.20	-275.09	1426.28
	σ <sub>s,c</sub> 21	-84070.94	-41646.05	-234.45	-1189.24
	σ <sub>cls,Max</sub> 21	-84070.94	-41646.05	-234.45	-93.39
	σ <sub>cls,Med</sub> 21	-84070.94	-41646.05	-234.45	-45.99

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **7/107** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
7	1	-210035.19	5961.96	1251.52	0.26
107	1	-204380.19	-5188.80	-813.79	0.25

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6710.36	86297.23	479.29	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	6710.36	64722.92	479.29	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	6710.36	86297.23	479.29	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
7	Ft. 17	-133980.41	3540.97	856.21	-355.04
	σ <sub>s,c</sub> 15	-148106.39	3961.08	846.61	-578.33
	σ <sub>cls,Max</sub> 15	-148106.39	3961.08	846.61	-40.23
	σ <sub>cls,Med</sub> 15	-148106.39	3961.08	846.61	-32.44
107	Ft. 17	-129630.39	-3432.73	-562.51	-351.86
	σ <sub>s,c</sub> 15	-143756.39	-3681.38	-559.06	-550.32
	σ <sub>cls,Max</sub> 15	-143756.39	-3681.38	-559.06	-37.98
	σ <sub>cls,Med</sub> 15	-143756.39	-3681.38	-559.06	-31.49
<b>Combinazioni Frequenti</b>					
7	Ft. 20	-131647.36	3524.53	793.08	-349.65
	σ <sub>s,c</sub> 18	-141613.06	3808.76	785.17	-552.55
	σ <sub>cls,Max</sub> 18	-141613.06	3808.76	785.17	-38.41
	σ <sub>cls,Med</sub> 18	-141613.06	3808.76	785.17	-31.02
107	Ft. 20	-127297.38	-3338.09	-528.86	-346.81
	σ <sub>s,c</sub> 18	-137263.08	-3506.90	-525.22	-525.05
	σ <sub>cls,Max</sub> 18	-137263.08	-3506.90	-525.22	-36.23
	σ <sub>cls,Med</sub> 18	-137263.08	-3506.90	-525.22	-30.07
<b>Combinazioni Quasi Permanenti</b>					
7	Ft. 22	-130869.72	3519.05	772.03	-347.85
	σ <sub>s,c</sub> 21	-139447.44	3755.41	764.69	-543.91
	σ <sub>cls,Max</sub> 21	-139447.44	3755.41	764.69	-37.80
	σ <sub>cls,Med</sub> 21	-139447.44	3755.41	764.69	-30.54
107	Ft. 22	-126519.70	-3306.55	-517.64	-345.13
	σ <sub>s,c</sub> 21	-135097.44	-3448.14	-513.92	-516.62
	σ <sub>cls,Max</sub> 21	-135097.44	-3448.14	-513.92	-35.64
	σ <sub>cls,Med</sub> 21	-135097.44	-3448.14	-513.92	-29.59

Pilastro: **107/207** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
107	1	-173761.88	13142.01	354.54	0.24
207	1	-169276.88	-2186.35	-787.90	0.20

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4446.81	86297.23	344.79	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	4446.81	64722.92	344.79	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	4446.81	86297.23	344.79	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
107	Ft. 17	-107697.20	8924.68	270.23	-199.26
	σ <sub>s,c</sub> 15	-121947.53	9025.72	255.37	-556.42
	σ <sub>cls,Max</sub> 15	-121947.53	9025.72	255.37	-38.99
	σ <sub>cls,Med</sub> 15	-121947.53	9025.72	255.37	-26.71
207	Ft. 17	-104247.20	-1722.22	-558.12	-296.58
	σ <sub>s,c</sub> 15	-118497.53	-1612.42	-541.58	-432.93
	σ <sub>cls,Max</sub> 15	-118497.53	-1612.42	-541.58	-29.77
	σ <sub>cls,Med</sub> 15	-118497.53	-1612.42	-541.58	-25.96
<b>Combinazioni Frequenti</b>					
107	Ft. 20	-106468.72	8503.90	248.52	-202.80
	σ <sub>s,c</sub> 18	-116522.58	8576.77	237.82	-530.69
	σ <sub>cls,Max</sub> 18	-116522.58	8576.77	237.82	-37.17
	σ <sub>cls,Med</sub> 18	-116522.58	8576.77	237.82	-25.52
207	Ft. 20	-103018.72	-1574.67	-523.48	-296.06
	σ <sub>s,c</sub> 18	-113072.58	-1498.52	-511.13	-412.27
	σ <sub>cls,Max</sub> 18	-113072.58	-1498.52	-511.13	-28.33
	σ <sub>cls,Med</sub> 18	-113072.58	-1498.52	-511.13	-24.77
<b>Combinazioni Quasi Permanenti</b>					
107	Ft. 22	-106059.23	8363.64	241.29	-203.98
	σ <sub>s,c</sub> 21	-114712.45	8426.42	232.07	-522.10
	σ <sub>cls,Max</sub> 21	-114712.45	8426.42	232.07	-36.57
	σ <sub>cls,Med</sub> 21	-114712.45	8426.42	232.07	-25.13
207	Ft. 22	-102609.23	-1525.49	-511.94	-295.89
	σ <sub>s,c</sub> 21	-111262.45	-1459.99	-501.13	-405.38
	σ <sub>cls,Max</sub> 21	-111262.45	-1459.99	-501.13	-27.86
	σ <sub>cls,Med</sub> 21	-111262.45	-1459.99	-501.13	-24.37

Pilastro: **207/307** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
207	1	-141040.05	24301.53	84.75	0.25
307	1	-136555.05	-59031.20	-336.63	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	24154.42	86297.23	496.79	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	24154.42	64722.92	496.79	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	24154.42	86297.23	496.79	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
207	Ft. 17	-83912.56	16039.07	87.69	-7.89

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-98333.57	16701.99	77.48	-598.74
	σ <sub>cls,Max</sub> 15	-98333.57	16701.99	77.48	-42.97
	σ <sub>cls,Med</sub> 15	-98333.57	16701.99	77.48	-21.54
307	Ft. 17	-80462.56	-37977.70	-260.96	1150.65
	σ <sub>s,c</sub> 15	-94883.57	-40558.13	-258.59	-1166.40
	σ <sub>cls,Max</sub> 15	-94883.57	-40558.13	-258.59	-90.15
	σ <sub>cls,Med</sub> 15	-94883.57	-40558.13	-258.59	-44.36
<b>Combinazioni Frequenti</b>					
207	Ft. 20	-83709.47	15487.17	74.92	-18.14
	σ <sub>s,c</sub> 18	-93885.60	15945.73	65.55	-571.37
	σ <sub>cls,Max</sub> 18	-93885.60	15945.73	65.55	-41.00
	σ <sub>cls,Med</sub> 18	-93885.60	15945.73	65.55	-20.56
307	Ft. 20	-80259.47	-37377.05	-227.21	1108.80
	σ <sub>s,c</sub> 18	-90435.60	-39162.97	-224.83	-1124.35
	σ <sub>cls,Max</sub> 18	-90435.60	-39162.97	-224.83	-86.99
	σ <sub>cls,Med</sub> 18	-90435.60	-39162.97	-224.83	-42.87
<b>Combinazioni Quasi Permanenti</b>					
207	Ft. 22	-83641.78	15303.20	70.66	-21.42
	σ <sub>s,c</sub> 21	-92400.70	15693.17	61.46	-562.23
	σ <sub>cls,Max</sub> 21	-92400.70	15693.17	61.46	-40.34
	σ <sub>cls,Med</sub> 21	-92400.70	15693.17	61.46	-20.24
307	Ft. 22	-80191.78	-37176.84	-215.96	1094.92
	σ <sub>s,c</sub> 21	-88950.70	-38696.68	-213.44	-1110.29
	σ <sub>cls,Max</sub> 21	-88950.70	-38696.68	-213.44	-85.93
	σ <sub>cls,Med</sub> 21	-88950.70	-38696.68	-213.44	-42.37

Pilastro: **8/108** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
8	1	-151707.09	709.11	1936.88	0.19
108	1	-146052.09	-2944.67	1488.17	0.18

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4395.76	86297.23	383.77	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	4395.76	64722.92	383.77	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	4395.76	86297.23	383.77	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
8	Ft. 17	-98749.59	113.15	1427.16	-277.19
	σ <sub>s,c</sub> 15	-107792.35	312.47	1453.60	-405.51
	σ <sub>cls,Max</sub> 15	-107792.35	312.47	1453.60	-28.75
	σ <sub>cls,Med</sub> 15	-107792.35	312.47	1453.60	-23.61
108	Ft. 17	-94399.59	-1943.57	959.88	-247.82
	σ <sub>s,c</sub> 15	-103442.35	-2109.53	1001.42	-406.23
	σ <sub>cls,Max</sub> 15	-103442.35	-2109.53	1001.42	-28.60
	σ <sub>cls,Med</sub> 15	-103442.35	-2109.53	1001.42	-22.66

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
8	Ft. 20	-97004.30	129.19	1389.27	-272.40
	$\sigma_{s,c}18$	-103346.41	275.06	1404.23	-388.72
	$\sigma_{cls,Max}18$	-103346.41	275.06	1404.23	-27.57
	$\sigma_{cls,Med}18$	-103346.41	275.06	1404.23	-22.64
108	Ft. 20	-92654.30	-1880.84	903.77	-244.90
	$\sigma_{s,c}18$	-98996.41	-1997.91	935.56	-387.70
	$\sigma_{cls,Max}18$	-98996.41	-1997.91	935.56	-27.27
	$\sigma_{cls,Med}18$	-98996.41	-1997.91	935.56	-21.68
<b>Combinazioni Quasi Permanenti</b>					
8	Ft. 22	-96422.53	134.54	1376.64	-270.80
	$\sigma_{s,c}21$	-101870.65	259.87	1388.97	-383.14
	$\sigma_{cls,Max}21$	-101870.65	259.87	1388.97	-27.17
	$\sigma_{cls,Med}21$	-101870.65	259.87	1388.97	-22.31
108	Ft. 22	-92072.53	-1859.93	885.07	-243.93
	$\sigma_{s,c}21$	-97520.65	-1960.17	912.97	-381.51
	$\sigma_{cls,Max}21$	-97520.65	-1960.17	912.97	-26.82
	$\sigma_{cls,Med}21$	-97520.65	-1960.17	912.97	-21.36

Pilastro: **108/208** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20 \text{ Af}=37.70 \text{ [cm}^2\text{]} < 1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H >$

**Staffe:**  $\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0/\varnothing 10 \text{ 2br.x4br./20.0} \times 120.0/\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0$

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
108	1	-123213.10	9508.06	-5140.20	0.20
208	1	-118728.10	-2728.02	3747.45	0.17

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	3617.08	86297.23	2576.13	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$
1.13	2.32	3617.08	64722.92	2576.13	46467.73	$\varnothing 10 \text{ 2br.x4br./20.0}$
2.32	3.32	3617.08	86297.23	2576.13	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
108	Ft. 17	-77916.91	6581.29	-3530.11	-35.38
	$\sigma_{s,c}15$	-87121.22	6578.47	-3620.69	-509.05
	$\sigma_{cls,Max}15$	-87121.22	6578.47	-3620.69	-39.24
	$\sigma_{cls,Med}15$	-87121.22	6578.47	-3620.69	-19.11
208	Ft. 17	-74466.91	-2141.58	2660.22	-125.01
	$\sigma_{s,c}15$	-83671.22	-1982.50	2654.00	-391.76
	$\sigma_{cls,Max}15$	-83671.22	-1982.50	2654.00	-29.50
	$\sigma_{cls,Med}15$	-83671.22	-1982.50	2654.00	-18.33
<b>Combinazioni Frequenti</b>					
108	Ft. 20	-76993.01	6261.30	-3376.44	-42.83
	$\sigma_{s,c}18$	-83449.74	6259.64	-3440.22	-486.02
	$\sigma_{cls,Max}18$	-83449.74	6259.64	-3440.22	-37.44
	$\sigma_{cls,Med}18$	-83449.74	6259.64	-3440.22	-18.30
208	Ft. 20	-73543.01	-1977.42	2521.15	-129.08
	$\sigma_{s,c}18$	-79999.74	-1864.78	2516.14	-373.39
	$\sigma_{cls,Max}18$	-79999.74	-1864.78	2516.14	-28.10
	$\sigma_{cls,Med}18$	-79999.74	-1864.78	2516.14	-17.52
<b>Combinazioni Quasi Permanenti</b>					



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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
108	Ft. 22	-76685.04	6154.64	-3325.21	-45.28
	σ <sub>s,c</sub> 21	-82231.26	6153.23	-3379.67	-478.35
	σ <sub>cls,Max</sub> 21	-82231.26	6153.23	-3379.67	-36.84
	σ <sub>cls,Med</sub> 21	-82231.26	6153.23	-3379.67	-18.03
208	Ft. 22	-73235.04	-1922.70	2474.80	-130.44
	σ <sub>s,c</sub> 21	-78781.26	-1825.72	2469.85	-367.27
	σ <sub>cls,Max</sub> 21	-78781.26	-1825.72	2469.85	-27.63
	σ <sub>cls,Med</sub> 21	-78781.26	-1825.72	2469.85	-17.26

Pilastro: **208/308** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
208	1	-98858.44	15332.07	-5298.15	0.20
308	1	-94373.45	-39099.13	7004.54	0.38

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	15783.13	86297.23	3565.98	61956.98	ø 10 2br.x4br./15.0
1.13	2.33	15779.36	64722.92	3565.98	46467.73	ø 10 2br.x4br./20.0
2.33	3.33	15774.84	86297.23	3565.98	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
208	Ft. 17	-59944.38	10107.93	-3341.40	108.17
	σ <sub>s,c</sub> 15	-69391.53	10557.76	-3641.54	-529.45
	σ <sub>cls,Max</sub> 15	-69391.53	10557.76	-3641.54	-41.72
	σ <sub>cls,Med</sub> 15	-69391.53	10557.76	-3641.54	-16.95
308	Ft. 15	-65941.53	-26874.83	4760.48	975.04
	σ <sub>s,c</sub> 15	-65941.53	-26874.83	4760.48	-1026.64
	σ <sub>cls,Max</sub> 15	-65941.53	-26874.83	4760.48	-85.87
	σ <sub>cls,Med</sub> 15	-65941.53	-26874.83	4760.48	-31.54
<b>Combinazioni Frequenti</b>					
208	Ft. 20	-59750.65	9766.46	-3236.33	94.48
	σ <sub>s,c</sub> 18	-66380.41	10082.71	-3451.68	-504.80
	σ <sub>cls,Max</sub> 18	-66380.41	10082.71	-3451.68	-39.75
	σ <sub>cls,Med</sub> 18	-66380.41	10082.71	-3451.68	-16.18
308	Ft. 18	-62930.41	-25966.84	4525.11	951.07
	σ <sub>s,c</sub> 18	-62930.41	-25966.84	4525.11	-988.47
	σ <sub>cls,Max</sub> 18	-62930.41	-25966.84	4525.11	-82.70
	σ <sub>cls,Med</sub> 18	-62930.41	-25966.84	4525.11	-30.43
<b>Combinazioni Quasi Permanenti</b>					
208	Ft. 22	-59686.07	9652.64	-3201.31	90.04
	σ <sub>s,c</sub> 21	-65381.03	9923.89	-3387.46	-496.55
	σ <sub>cls,Max</sub> 21	-65381.03	9923.89	-3387.46	-39.09
	σ <sub>cls,Med</sub> 21	-65381.03	9923.89	-3387.46	-15.93
308	Ft. 21	-61931.03	-25664.06	4444.62	942.84
	σ <sub>s,c</sub> 21	-61931.03	-25664.06	4444.62	-975.62
	σ <sub>cls,Max</sub> 21	-61931.03	-25664.06	4444.62	-81.63

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-61931.03	-25664.06	4444.62	-30.06

Pilastro: **9/2751** / L 1.50[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 150.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
9	1	-56952.68	-7976.43	79.80	0.09
2751	1	-54677.68	-8208.12	235.15	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.63	512.36	86297.23	88.77	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
9	Ft. 16	-37232.60	-5916.79	45.54	-24.10
	σ <sub>s,c</sub> 15	-39495.04	-5900.86	51.22	-227.91
	σ <sub>cls,Max</sub> 15	-39495.04	-5900.86	51.22	-16.30
	σ <sub>cls,Med</sub> 15	-39495.04	-5900.86	51.22	-8.65
2751	Ft. 16	-35482.60	-5689.74	157.61	-18.50
	σ <sub>s,c</sub> 15	-37745.04	-5832.13	164.13	-224.63
	σ <sub>cls,Max</sub> 15	-37745.04	-5832.13	164.13	-16.20
	σ <sub>cls,Med</sub> 15	-37745.04	-5832.13	164.13	-8.27
<b>Combinazioni Frequenti</b>					
9	Ft. 19	-36156.21	-5928.77	41.91	-20.48
	σ <sub>s,c</sub> 18	-36899.24	-5923.69	43.74	-219.52
	σ <sub>cls,Max</sub> 18	-36899.24	-5923.69	43.74	-15.74
	σ <sub>cls,Med</sub> 18	-36899.24	-5923.69	43.74	-8.08
2751	Ft. 19	-34406.21	-5602.64	154.95	-16.47
	σ <sub>s,c</sub> 18	-35149.24	-5648.74	157.11	-212.88
	σ <sub>cls,Max</sub> 18	-35149.24	-5648.74	157.11	-15.37
	σ <sub>cls,Med</sub> 18	-35149.24	-5648.74	157.11	-7.70
<b>Combinazioni Quasi Permanenti</b>					
9	Ft. 21	-36089.54	-5930.14	41.55	-20.25
	σ <sub>s,c</sub> 21	-36089.54	-5930.14	41.55	-216.89
	σ <sub>cls,Max</sub> 21	-36089.54	-5930.14	41.55	-15.56
	σ <sub>cls,Med</sub> 21	-36089.54	-5930.14	41.55	-7.90
2751	Ft. 21	-34339.54	-5594.44	154.85	-16.39
	σ <sub>s,c</sub> 21	-34339.54	-5594.44	154.85	-209.26
	σ <sub>cls,Max</sub> 21	-34339.54	-5594.44	154.85	-15.12
	σ <sub>cls,Med</sub> 21	-34339.54	-5594.44	154.85	-7.52

Pilastro: **2751/109** / L 2.35[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 35.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2751	1	-127916.02	-8756.68	-486.15	0.17
109	1	-124536.02	-2593.19	289.12	0.15

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2370.57	86297.23	310.60	61956.98	ø 10 2br.x4br./15.0
1.13	1.48	2370.57	64722.92	310.60	46467.73	ø 10 2br.x4br./20.0
1.48	2.48	2370.57	86297.23	310.60	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2751	Ft. 16	-82807.24	-5928.24	-289.51	-165.89
	σ <sub>s,c</sub> 15	-88175.63	-6137.15	-327.54	-400.51
	σ <sub>cls,Max</sub> 15	-88175.63	-6137.15	-327.54	-28.16
	σ <sub>cls,Med</sub> 15	-88175.63	-6137.15	-327.54	-19.31
109	Ft. 16	-80207.24	-1660.30	173.14	-230.86
	σ <sub>s,c</sub> 15	-85575.63	-1734.58	189.54	-315.56
	σ <sub>cls,Max</sub> 15	-85575.63	-1734.58	189.54	-21.56
	σ <sub>cls,Med</sub> 15	-85575.63	-1734.58	189.54	-18.74
<b>Combinazioni Frequenti</b>					
2751	Ft. 19	-80235.09	-5800.08	-272.02	-160.09
	σ <sub>s,c</sub> 18	-81997.59	-5867.70	-284.53	-374.43
	σ <sub>cls,Max</sub> 18	-81997.59	-5867.70	-284.53	-26.33
	σ <sub>cls,Med</sub> 20	-82010.02	-5785.49	-294.62	-17.96
109	Ft. 19	-77635.09	-1577.60	160.43	-224.16
	σ <sub>s,c</sub> 20	-79410.02	-1611.63	173.61	-292.79
	σ <sub>cls,Max</sub> 20	-79410.02	-1611.63	173.61	-20.00
	σ <sub>cls,Med</sub> 20	-79410.02	-1611.63	173.61	-17.39
<b>Combinazioni Quasi Permanenti</b>					
2751	Ft. 21	-80073.16	-5787.97	-271.02	-159.79
	σ <sub>s,c</sub> 21	-80073.16	-5787.97	-271.02	-366.38
	σ <sub>cls,Max</sub> 21	-80073.16	-5787.97	-271.02	-25.76
	σ <sub>cls,Med</sub> 22	-80083.52	-5719.45	-279.24	-17.54
109	Ft. 22	-77483.52	-1575.07	165.54	-223.54
	σ <sub>s,c</sub> 22	-77483.52	-1575.07	165.54	-285.60
	σ <sub>cls,Max</sub> 22	-77483.52	-1575.07	165.54	-19.51
	σ <sub>cls,Med</sub> 22	-77483.52	-1575.07	165.54	-16.97

Pilastro: **109/209** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
109	1	-93329.19	-419.92	96.38	0.11
209	1	-88844.19	308.31	-159.74	0.10

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	281.87	86297.23	74.32	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	281.87	64722.92	74.32	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	281.87	86297.23	74.32	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
109	Ft. 16	-61021.41	-345.81	54.08	-193.11

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-64465.78	-274.25	62.54	-218.28
	σ <sub>cls,Max</sub> 15	-64465.78	-274.25	62.54	-14.67
	σ <sub>cls,Med</sub> 15	-64465.78	-274.25	62.54	-14.12
209	Ft. 16	-57571.41	341.46	-117.39	-179.83
	σ <sub>s,c</sub> 15	-61015.78	250.21	-108.75	-208.02
	σ <sub>cls,Max</sub> 15	-61015.78	250.21	-108.75	-14.04
	σ <sub>cls,Med</sub> 15	-61015.78	250.21	-108.75	-13.36
<b>Combinazioni Frequenti</b>					
109	Ft. 19	-59092.27	-311.58	49.76	-187.47
	σ <sub>s,c</sub> 20	-60220.99	-290.72	55.25	-204.37
	σ <sub>cls,Max</sub> 20	-60220.99	-290.72	55.25	-13.74
	σ <sub>cls,Med</sub> 20	-60220.99	-290.72	55.25	-13.19
209	Ft. 19	-55642.28	336.44	-111.50	-173.76
	σ <sub>s,c</sub> 18	-56763.48	304.80	-108.32	-194.93
	σ <sub>cls,Max</sub> 18	-56763.48	304.80	-108.32	-13.17
	σ <sub>cls,Med</sub> 20	-56771.00	284.38	-106.05	-12.43
<b>Combinazioni Quasi Permanenti</b>					
109	Ft. 22	-58936.95	-303.80	51.67	-187.03
	σ <sub>s,c</sub> 22	-58936.95	-303.80	51.67	-200.25
	σ <sub>cls,Max</sub> 22	-58936.95	-303.80	51.67	-13.46
	σ <sub>cls,Med</sub> 22	-58936.95	-303.80	51.67	-12.91
209	Ft. 21	-55480.70	329.10	-109.69	-173.41
	σ <sub>s,c</sub> 21	-55480.70	329.10	-109.69	-191.16
	σ <sub>cls,Max</sub> 21	-55480.70	329.10	-109.69	-12.93
	σ <sub>cls,Med</sub> 22	-55486.96	312.10	-107.79	-12.15

Pilastro: **209/309** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
209	1	-57636.71	2461.95	-235.13	0.07
309	2	-50869.82	6252.92	1922.77	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1121.74	86297.23	632.17	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	1121.74	64722.92	632.17	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	1121.74	86297.23	632.17	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
209	Ft. 16	-38381.82	1646.98	-174.21	-93.62
	σ <sub>s,c</sub> 15	-39903.08	1699.66	-158.81	-163.96
	σ <sub>cls,Max</sub> 15	-39903.08	1699.66	-158.81	-11.41
	σ <sub>cls,Med</sub> 15	-39903.08	1699.66	-158.81	-8.74
309	Ft. 16	-34931.82	4221.38	1293.56	-3.62
	σ <sub>s,c</sub> 16	-34931.82	4221.38	1293.56	-225.54
	σ <sub>cls,Max</sub> 16	-34931.82	4221.38	1293.56	-17.28
	σ <sub>cls,Med</sub> 15	-36453.08	3927.55	1225.46	-8.04

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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
209	Ft. 19	-37094.55	1595.10	-163.67	-90.58
	$\sigma_{s,c}18$	-37574.73	1611.48	-158.00	-154.84
	$\sigma_{cls,Max}18$	-37574.73	1611.48	-158.00	-10.79
	$\sigma_{cls,Med}20$	-37578.64	1596.03	-156.86	-8.23
309	Ft. 19	-33644.55	3963.55	1214.84	-6.42
	$\sigma_{s,c}19$	-33644.55	3963.55	1214.84	-214.40
	$\sigma_{cls,Max}19$	-33644.55	3963.55	1214.84	-16.40
	$\sigma_{cls,Med}20$	-34128.64	3848.71	1190.14	-7.56
<b>Combinazioni Quasi Permanenti</b>					
209	Ft. 21	-36933.13	1588.00	-160.43	-90.27
	$\sigma_{s,c}21$	-36933.13	1588.00	-160.43	-152.42
	$\sigma_{cls,Max}21$	-36933.13	1588.00	-160.43	-10.63
	$\sigma_{cls,Med}22$	-36936.40	1575.13	-159.50	-8.09
309	Ft. 21	-33483.13	3889.94	1193.86	-7.88
	$\sigma_{s,c}21$	-33483.13	3889.94	1193.86	-211.93
	$\sigma_{cls,Max}21$	-33483.13	3889.94	1193.86	-16.19
	$\sigma_{cls,Med}22$	-33486.40	3886.11	1195.12	-7.45

Pilastro: **309/11527** / L 4.05[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:**  $\varnothing$  10 2br.x4br./15.0 x 100.0/ $\varnothing$  10 2br.x4br./20.0 x 205.0/ $\varnothing$  10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
309	2	-22845.02	8436.50	2886.80	0.10
11527	2	-17255.02	1267.51	14331.44	0.52

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	1667.21	86297.23	2661.54	61956.98	$\varnothing$ 10 2br.x4br./15.0
1.13	3.18	1667.21	64722.92	2661.54	46467.73	$\varnothing$ 10 2br.x4br./20.0
3.18	4.18	1667.21	86297.23	2661.54	61956.98	$\varnothing$ 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
309	Ft. 16	-15942.36	5694.55	1942.17	269.01
	$\sigma_{s,c}16$	-15942.36	5694.55	1942.17	-270.59
	$\sigma_{cls,Max}16$	-15942.36	5694.55	1942.17	-23.70
	$\sigma_{cls,Med}16$	-15942.36	5694.55	1942.17	-7.92
11527	Ft. 16	-11642.36	856.23	9665.09	1642.51
	$\sigma_{s,c}16$	-11642.36	856.23	9665.09	-397.37
	$\sigma_{cls,Max}16$	-11642.36	856.23	9665.09	-62.24
	$\sigma_{cls,Med}16$	-11642.36	856.23	9665.09	-29.79
<b>Combinazioni Frequenti</b>					
309	Ft. 19	-15284.85	5381.35	1825.22	248.50
	$\sigma_{s,c}19$	-15284.85	5381.35	1825.22	-254.80
	$\sigma_{cls,Max}19$	-15284.85	5381.35	1825.22	-22.26
	$\sigma_{cls,Med}19$	-15284.85	5381.35	1825.22	-7.45
11527	Ft. 19	-10984.85	808.93	9117.73	1549.49
	$\sigma_{s,c}19$	-10984.85	808.93	9117.73	-374.92
	$\sigma_{cls,Max}19$	-10984.85	808.93	9117.73	-58.71
	$\sigma_{cls,Med}19$	-10984.85	808.93	9117.73	-28.11
<b>Combinazioni Quasi Permanenti</b>					

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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
309	Ft. 22	-15121.31	5305.24	1796.42	243.56
	σ <sub>s,c</sub> 22	-15121.31	5305.24	1796.42	-250.94
	σ <sub>cls,Max</sub> 22	-15121.31	5305.24	1796.42	-21.90
	σ <sub>cls,Med</sub> 22	-15121.31	5305.24	1796.42	-7.33
11527	Ft. 22	-10821.31	796.14	8982.83	1526.55
	σ <sub>s,c</sub> 22	-10821.31	796.14	8982.83	-369.33
	σ <sub>cls,Max</sub> 22	-10821.31	796.14	8982.83	-57.84
	σ <sub>cls,Med</sub> 22	-10821.31	796.14	8982.83	-27.69

Pilastro: **10/2768** / L 2.58[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 57.5/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
10	1	-95103.69	-2673.70	-11509.43	0.16
2768	1	-91431.19	-524.81	-6019.57	0.12

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	781.06	61956.98	1943.31	86297.23	ø 10 4br.x2br./15.0
1.13	1.70	781.06	46467.73	1943.31	64722.92	ø 10 4br.x2br./20.0
1.70	2.70	781.06	61956.98	1943.31	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
10	Ft. 16	-61951.40	-1703.45	-8050.78	-17.11
	σ <sub>s,c</sub> 15	-65789.57	-1825.97	-8258.40	-409.56
	σ <sub>cls,Max</sub> 15	-65789.57	-1825.97	-8258.40	-30.86
	σ <sub>cls,Med</sub> 15	-65789.57	-1825.97	-8258.40	-14.53
2768	Ft. 16	-59126.40	-394.33	-4212.34	-112.82
	σ <sub>s,c</sub> 15	-62964.59	-391.92	-4300.99	-289.69
	σ <sub>cls,Max</sub> 15	-62964.59	-391.92	-4300.99	-20.52
	σ <sub>cls,Med</sub> 15	-62964.59	-391.92	-4300.99	-13.79
<b>Combinazioni Frequenti</b>					
10	Ft. 19	-60102.13	-1641.76	-7956.04	-14.45
	σ <sub>s,c</sub> 18	-61361.88	-1681.88	-8024.37	-386.72
	σ <sub>cls,Max</sub> 18	-61361.88	-1681.88	-8024.37	-29.14
	σ <sub>cls,Med</sub> 18	-61361.88	-1681.88	-8024.37	-13.60
2768	Ft. 19	-57277.13	-397.35	-4148.45	-107.69
	σ <sub>s,c</sub> 18	-58536.88	-396.62	-4176.82	-273.26
	σ <sub>cls,Max</sub> 18	-58536.88	-396.62	-4176.82	-19.41
	σ <sub>cls,Med</sub> 18	-58536.88	-396.62	-4176.82	-12.82
<b>Combinazioni Quasi Permanenti</b>					
10	Ft. 21	-59984.23	-1637.45	-7950.76	-14.28
	σ <sub>s,c</sub> 21	-59984.23	-1637.45	-7950.76	-379.62
	σ <sub>cls,Max</sub> 21	-59984.23	-1637.45	-7950.76	-28.60
	σ <sub>cls,Med</sub> 21	-59984.23	-1637.45	-7950.76	-13.31
2768	Ft. 21	-57159.23	-397.80	-4141.34	-107.40
	σ <sub>s,c</sub> 21	-57159.23	-397.80	-4141.34	-268.19
	σ <sub>cls,Max</sub> 21	-57159.23	-397.80	-4141.34	-19.07



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-57159.23	-397.80	-4141.34	-12.52

Pilastro: **2768/110** / L 1.28[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 127.5

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2768	1	-126768.68	1772.09	-3583.22	0.16
110	1	-124786.18	812.47	-1053.33	0.15

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.40	668.72	61956.98	1658.94	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2768	Ft. 16	-81933.72	1061.78	-2529.80	-194.04
	σ <sub>s,c</sub> 15	-87289.59	1177.40	-2554.81	-366.04
	σ <sub>cls,Max</sub> 15	-87289.59	1177.40	-2554.81	-26.20
	σ <sub>cls,Med</sub> 15	-87289.59	1177.40	-2554.81	-19.12
110	Ft. 16	-80408.72	535.98	-684.78	-235.93
	σ <sub>s,c</sub> 15	-85764.59	569.22	-688.16	-311.15
	σ <sub>cls,Max</sub> 15	-85764.59	569.22	-688.16	-21.52
	σ <sub>cls,Med</sub> 15	-85764.59	569.22	-688.16	-18.79
<b>Combinazioni Frequenti</b>					
2768	Ft. 19	-79365.85	1006.43	-2483.41	-188.12
	σ <sub>s,c</sub> 20	-81119.88	1070.73	-2440.73	-340.51
	σ <sub>cls,Max</sub> 20	-81119.88	1070.73	-2440.73	-24.36
	σ <sub>cls,Med</sub> 18	-81124.16	1044.39	-2490.44	-17.77
110	Ft. 19	-77840.85	524.93	-635.76	-228.65
	σ <sub>s,c</sub> 20	-79594.88	530.63	-648.05	-288.99
	σ <sub>cls,Max</sub> 18	-79599.16	536.01	-635.24	-19.99
	σ <sub>cls,Med</sub> 18	-79599.16	536.01	-635.24	-17.43
<b>Combinazioni Quasi Permanenti</b>					
2768	Ft. 22	-79200.31	1024.51	-2435.49	-187.78
	σ <sub>s,c</sub> 22	-79200.31	1024.51	-2435.49	-332.64
	σ <sub>cls,Max</sub> 22	-79200.31	1024.51	-2435.49	-23.78
	σ <sub>cls,Med</sub> 21	-79203.94	1002.95	-2475.54	-17.35
110	Ft. 22	-77675.31	520.48	-637.11	-228.22
	σ <sub>s,c</sub> 22	-77675.31	520.48	-637.11	-282.18
	σ <sub>cls,Max</sub> 21	-77678.94	524.94	-625.86	-19.52
	σ <sub>cls,Med</sub> 21	-77678.94	524.94	-625.86	-17.01

Pilastro: **110/210** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
110	1	-93543.24	453.46	1117.53	0.11
210	1	-89058.24	162.25	540.37	0.10

Verifiche a Taglio

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	87.60	61956.98	191.35	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	87.60	46467.73	191.35	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	87.60	61956.98	191.35	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
110	Ft. 16	-61185.00	296.48	642.66	-181.08
	σ <sub>s,c</sub> 15	-64622.48	314.40	777.65	-235.04
	σ <sub>cls,Max</sub> 15	-64622.48	314.40	777.65	-16.17
	σ <sub>cls,Med</sub> 15	-64622.48	314.40	777.65	-14.15
210	Ft. 16	-57735.00	126.61	479.24	-177.82
	σ <sub>s,c</sub> 15	-61172.48	115.03	403.36	-211.24
	σ <sub>cls,Max</sub> 15	-61172.48	115.03	403.36	-14.29
	σ <sub>cls,Med</sub> 15	-61172.48	115.03	403.36	-13.40
<b>Combinazioni Frequenti</b>					
110	Ft. 19	-59256.82	288.24	647.30	-174.93
	σ <sub>s,c</sub> 18	-60375.67	294.13	694.01	-219.07
	σ <sub>cls,Max</sub> 18	-60375.67	294.13	694.01	-15.06
	σ <sub>cls,Med</sub> 18	-60375.67	294.13	694.01	-13.22
210	Ft. 19	-55806.82	122.25	465.43	-171.85
	σ <sub>s,c</sub> 18	-56925.67	118.10	438.79	-197.96
	σ <sub>cls,Max</sub> 18	-56925.67	118.10	438.79	-13.41
	σ <sub>cls,Med</sub> 18	-56925.67	118.10	438.79	-12.47
<b>Combinazioni Quasi Permanenti</b>					
110	Ft. 21	-59094.95	287.77	657.57	-174.25
	σ <sub>s,c</sub> 21	-59094.95	287.77	657.57	-214.07
	σ <sub>cls,Max</sub> 21	-59094.95	287.77	657.57	-14.72
	σ <sub>cls,Med</sub> 21	-59094.95	287.77	657.57	-12.94
210	Ft. 21	-55644.95	120.55	457.34	-171.51
	σ <sub>s,c</sub> 21	-55644.95	120.55	457.34	-194.14
	σ <sub>cls,Max</sub> 21	-55644.95	120.55	457.34	-13.16
	σ <sub>cls,Med</sub> 21	-55644.95	120.55	457.34	-12.19

Pilastro: **210/310** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
210	1	-57792.81	231.35	2804.86	0.08
310	2	-51031.43	-1957.22	6206.98	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	641.14	61956.98	1014.81	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	641.14	46467.73	1014.81	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	641.14	61956.98	1014.81	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
210	Ft. 16	-38497.20	172.64	1868.83	-90.42
	σ <sub>s,c</sub> 15	-40014.79	157.08	1934.80	-168.11

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Max</sub> 15	-40014.79	157.08	1934.80	-11.73
	σ <sub>cls,Med</sub> 15	-40014.79	157.08	1934.80	-8.76
310	Ft. 16	-35047.20	-1316.17	4185.06	-3.88
	σ <sub>s,c</sub> 16	-35047.20	-1316.17	4185.06	-226.04
	σ <sub>cls,Max</sub> 16	-35047.20	-1316.17	4185.06	-17.33
	σ <sub>cls,Med</sub> 15	-36564.79	-1250.06	3889.96	-8.06
<b>Combinazioni Frequenti</b>					
210	Ft. 19	-37208.93	162.24	1809.59	-87.49
	σ <sub>s,c</sub> 18	-37687.81	156.52	1830.30	-158.74
	σ <sub>cls,Max</sub> 18	-37687.81	156.52	1830.30	-11.09
	σ <sub>cls,Med</sub> 18	-37687.81	156.52	1830.30	-8.25
310	Ft. 19	-33758.93	-1236.32	3924.53	-6.76
	σ <sub>s,c</sub> 19	-33758.93	-1236.32	3924.53	-214.82
	σ <sub>cls,Max</sub> 19	-33758.93	-1236.32	3924.53	-16.44
	σ <sub>cls,Med</sub> 18	-34237.81	-1210.77	3813.79	-7.59
<b>Combinazioni Quasi Permanenti</b>					
210	Ft. 21	-37047.05	159.02	1801.88	-87.19
	σ <sub>s,c</sub> 21	-37047.05	159.02	1801.88	-156.25
	σ <sub>cls,Max</sub> 21	-37047.05	159.02	1801.88	-10.92
	σ <sub>cls,Med</sub> 21	-37047.05	159.02	1801.88	-8.11
310	Ft. 22	-33595.17	-1216.45	3848.93	-8.21
	σ <sub>s,c</sub> 22	-33595.17	-1216.45	3848.93	-212.34
	σ <sub>cls,Max</sub> 22	-33595.17	-1216.45	3848.93	-16.24
	σ <sub>cls,Med</sub> 21	-33597.05	-1215.24	3850.28	-7.47

Pilastro: **310/11540** / L 4.05[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 205.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
310	2	-22925.90	-2955.41	8526.16	0.11
11540	2	-17335.90	-14449.27	1228.93	0.52

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2672.99	61956.98	1697.03	86297.23	ø 10 4br.x2br./15.0
1.13	3.18	2672.99	46467.73	1697.03	64722.92	ø 10 4br.x2br./20.0
3.18	4.18	2672.99	61956.98	1697.03	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
310	Ft. 16	-15997.75	-1991.35	5756.69	277.96
	σ <sub>s,c</sub> 16	-15997.75	-1991.35	5756.69	-275.41
	σ <sub>cls,Max</sub> 16	-15997.75	-1991.35	5756.69	-24.19
	σ <sub>cls,Med</sub> 16	-15997.75	-1991.35	5756.69	-8.08
11540	Ft. 16	-11697.75	-9746.57	828.53	1656.11
	σ <sub>s,c</sub> 16	-11697.75	-9746.57	828.53	-399.08
	σ <sub>cls,Max</sub> 16	-11697.75	-9746.57	828.53	-62.65
	σ <sub>cls,Med</sub> 16	-11697.75	-9746.57	828.53	-30.04
<b>Combinazioni Frequenti</b>					

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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
310	Ft. 19	-15338.05	-1874.18	5441.45	257.26
	σ <sub>s,c</sub> 19	-15338.05	-1874.18	5441.45	-259.54
	σ <sub>cls,Max</sub> 19	-15338.05	-1874.18	5441.45	-22.74
	σ <sub>cls,Med</sub> 19	-15338.05	-1874.18	5441.45	-7.60
11540	Ft. 19	-11038.05	-9196.53	781.11	1562.61
	σ <sub>s,c</sub> 19	-11038.05	-9196.53	781.11	-376.54
	σ <sub>cls,Max</sub> 19	-11038.05	-9196.53	781.11	-59.11
	σ <sub>cls,Med</sub> 19	-11038.05	-9196.53	781.11	-28.35
<b>Combinazioni Quasi Permanenti</b>					
310	Ft. 21	-15173.19	-1843.49	5365.23	252.08
	σ <sub>s,c</sub> 21	-15173.19	-1843.49	5365.23	-255.57
	σ <sub>cls,Max</sub> 21	-15173.19	-1843.49	5365.23	-22.37
	σ <sub>cls,Med</sub> 21	-15173.19	-1843.49	5365.23	-7.48
11540	Ft. 21	-10873.19	-9059.37	769.24	1539.30
	σ <sub>s,c</sub> 21	-10873.19	-9059.37	769.24	-370.91
	σ <sub>cls,Max</sub> 21	-10873.19	-9059.37	769.24	-58.23
	σ <sub>cls,Med</sub> 21	-10873.19	-9059.37	769.24	-27.93

Pilastro: **11/111** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
11	1	-155415.00	-801.25	6929.96	0.20
111	1	-149760.00	-139.99	-67.03	0.17

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	168.66	61956.98	1608.51	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	168.66	46467.73	1608.51	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	168.66	61956.98	1608.51	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
11	Ft. 16	-102217.15	-597.89	5048.04	-234.25
	σ <sub>s,c</sub> 15	-106965.41	-597.05	5153.69	-454.73
	σ <sub>cls,Max</sub> 15	-106965.41	-597.05	5153.69	-31.91
	σ <sub>cls,Med</sub> 15	-106965.41	-597.05	5153.69	-23.43
111	Ft. 16	-97867.15	-60.05	-123.10	-317.62
	σ <sub>s,c</sub> 15	-102615.41	-74.19	-52.64	-340.37
	σ <sub>cls,Max</sub> 15	-102615.41	-74.19	-52.64	-22.79
	σ <sub>cls,Med</sub> 15	-102615.41	-74.19	-52.64	-22.48
<b>Combinazioni Frequenti</b>					
11	Ft. 19	-98662.66	-599.10	5082.16	-221.97
	σ <sub>s,c</sub> 18	-100177.43	-598.86	5119.77	-431.93
	σ <sub>cls,Max</sub> 18	-100177.43	-598.86	5119.77	-30.39
	σ <sub>cls,Med</sub> 18	-100177.43	-598.86	5119.77	-21.94
111	Ft. 19	-94312.66	-45.95	-111.10	-306.59
	σ <sub>s,c</sub> 20	-95817.50	-62.39	-86.80	-318.22
	σ <sub>cls,Max</sub> 20	-95817.50	-62.39	-86.80	-21.30

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 18	-95827.43	-50.34	-86.39	-20.99
<b>Combinazioni Quasi Permanenti</b>					
11	Ft. 21	-98254.72	-599.30	5096.50	-220.39
	σ <sub>s,c</sub> 21	-98254.72	-599.30	5096.50	-425.25
	σ <sub>cls,Max</sub> 21	-98254.72	-599.30	5096.50	-29.94
	σ <sub>cls,Med</sub> 21	-98254.72	-599.30	5096.50	-21.52
111	Ft. 22	-93895.93	-53.93	-104.42	-305.07
	σ <sub>s,c</sub> 22	-93895.93	-53.93	-104.42	-311.92
	σ <sub>cls,Max</sub> 22	-93895.93	-53.93	-104.42	-20.87
	σ <sub>cls,Med</sub> 21	-93904.72	-44.01	-103.76	-20.57

Pilastro: **111/211** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
111	1	-118437.56	-120.74	-2405.46	0.14
211	1	-113952.56	-179.36	-2136.17	0.14

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	19.54	61956.98	104.87	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	19.54	46467.73	104.87	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	19.54	61956.98	104.87	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
111	Ft. 16	-78592.18	-73.51	-1560.42	-230.35
	σ <sub>s,c</sub> 15	-81417.33	-77.54	-1634.47	-296.70
	σ <sub>cls,Max</sub> 15	-81417.33	-77.54	-1634.47	-20.16
	σ <sub>cls,Med</sub> 15	-81417.33	-77.54	-1634.47	-17.83
211	Ft. 16	-75142.18	-115.48	-1601.96	-217.00
	σ <sub>s,c</sub> 15	-77967.33	-113.65	-1473.51	-283.88
	σ <sub>cls,Max</sub> 15	-77967.33	-113.65	-1473.51	-19.32
	σ <sub>cls,Med</sub> 15	-77967.33	-113.65	-1473.51	-17.08
<b>Combinazioni Frequenti</b>					
111	Ft. 19	-75678.07	-68.02	-1501.05	-221.93
	σ <sub>s,c</sub> 20	-76545.26	-71.78	-1522.58	-278.68
	σ <sub>cls,Max</sub> 20	-76545.26	-71.78	-1522.58	-18.93
	σ <sub>cls,Med</sub> 18	-76551.78	-69.22	-1524.54	-16.77
211	Ft. 19	-72228.08	-104.50	-1518.33	-209.15
	σ <sub>s,c</sub> 18	-73101.78	-103.49	-1471.15	-267.53
	σ <sub>cls,Max</sub> 18	-73101.78	-103.49	-1471.15	-18.21
	σ <sub>cls,Med</sub> 18	-73101.78	-103.49	-1471.15	-16.01
<b>Combinazioni Quasi Permanenti</b>					
111	Ft. 22	-75264.23	-69.31	-1492.36	-220.67
	σ <sub>s,c</sub> 22	-75264.23	-69.31	-1492.36	-273.90
	σ <sub>cls,Max</sub> 22	-75264.23	-69.31	-1492.36	-18.60
	σ <sub>cls,Med</sub> 21	-75269.99	-67.16	-1493.88	-16.49
211	Ft. 21	-71820.00	-102.10	-1492.17	-208.31

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 21	-71820.00	-102.10	-1492.17	-263.62
	σ <sub>cls,Max</sub> 21	-71820.00	-102.10	-1492.17	-17.96
	σ <sub>cls,Med</sub> 21	-71820.00	-102.10	-1492.17	-15.73

Pilastro: **211/311** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
211	1	-82601.05	-262.76	-4657.11	0.11
311	1	-78116.05	-1078.26	-4655.72	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	250.04	61956.98	108.66	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	250.04	46467.73	108.66	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	250.04	61956.98	108.66	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
211	Ft. 16	-55848.71	-177.09	-3164.70	-126.09
	σ <sub>s,c</sub> 15	-56750.01	-175.89	-3179.82	-244.06
	σ <sub>cls,Max</sub> 15	-56750.01	-175.89	-3179.82	-17.04
	σ <sub>cls,Med</sub> 15	-56750.01	-175.89	-3179.82	-12.43
311	Ft. 16	-52398.71	-757.55	-3377.52	-92.81
	σ <sub>s,c</sub> 16	-52398.71	-757.55	-3377.52	-251.50
	σ <sub>cls,Max</sub> 16	-52398.71	-757.55	-3377.52	-18.23
	σ <sub>cls,Med</sub> 15	-53300.01	-724.92	-3141.79	-11.67
<b>Combinazioni Frequenti</b>					
211	Ft. 19	-53575.94	-166.90	-3028.04	-121.19
	σ <sub>s,c</sub> 18	-53808.36	-166.13	-3028.54	-231.61
	σ <sub>cls,Max</sub> 18	-53808.36	-166.13	-3028.54	-16.17
	σ <sub>cls,Med</sub> 18	-53808.36	-166.13	-3028.54	-11.79
311	Ft. 19	-50125.94	-712.11	-3166.99	-90.23
	σ <sub>s,c</sub> 19	-50125.94	-712.11	-3166.99	-239.15
	σ <sub>cls,Max</sub> 19	-50125.94	-712.11	-3166.99	-17.32
	σ <sub>cls,Med</sub> 18	-50358.36	-699.30	-3078.44	-11.03
<b>Combinazioni Quasi Permanenti</b>					
211	Ft. 21	-53167.87	-164.70	-3000.81	-120.36
	σ <sub>s,c</sub> 21	-53167.87	-164.70	-3000.81	-229.01
	σ <sub>cls,Max</sub> 21	-53167.87	-164.70	-3000.81	-15.99
	σ <sub>cls,Med</sub> 21	-53167.87	-164.70	-3000.81	-11.65
311	Ft. 22	-49714.51	-701.36	-3109.04	-90.17
	σ <sub>s,c</sub> 22	-49714.51	-701.36	-3109.04	-236.50
	σ <sub>cls,Max</sub> 22	-49714.51	-701.36	-3109.04	-17.12
	σ <sub>cls,Med</sub> 21	-49717.87	-700.46	-3107.17	-10.89

Pilastro: **311/11541** / L 4.05[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 205.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
311	2	-48007.27	-2222.93	-7717.95	0.10
11541	2	-42417.27	4804.64	4080.63	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1634.32	61956.98	2743.86	86297.23	Ø 10 4br.x2br./15.0
1.13	3.18	1634.32	46467.73	2743.86	64722.92	Ø 10 4br.x2br./20.0
3.18	4.18	1634.32	61956.98	2743.86	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
311	Ft. 16	-32909.46	-1498.81	-5213.24	33.52
	σ <sub>s,c</sub> 16	-32909.46	-1498.81	-5213.24	-245.91
	σ <sub>cls,Max</sub> 16	-32909.46	-1498.81	-5213.24	-19.18
	σ <sub>cls,Med</sub> 16	-32909.46	-1498.81	-5213.24	-7.92
11541	Ft. 16	-28609.46	3240.85	2754.81	118.41
	σ <sub>s,c</sub> 16	-28609.46	3240.85	2754.81	-267.38
	σ <sub>cls,Max</sub> 16	-28609.46	3240.85	2754.81	-23.21
	σ <sub>cls,Med</sub> 16	-28609.46	3240.85	2754.81	-9.43
<b>Combinazioni Frequenti</b>					
311	Ft. 19	-31289.73	-1412.87	-4934.90	30.79
	σ <sub>s,c</sub> 19	-31289.73	-1412.87	-4934.90	-232.89
	σ <sub>cls,Max</sub> 19	-31289.73	-1412.87	-4934.90	-18.15
	σ <sub>cls,Med</sub> 19	-31289.73	-1412.87	-4934.90	-7.51
11541	Ft. 19	-26989.73	3056.69	2601.40	111.71
	σ <sub>s,c</sub> 19	-26989.73	3056.69	2601.40	-252.27
	σ <sub>cls,Max</sub> 19	-26989.73	3056.69	2601.40	-21.90
	σ <sub>cls,Med</sub> 19	-26989.73	3056.69	2601.40	-8.89
<b>Combinazioni Quasi Permanenti</b>					
311	Ft. 22	-30883.28	-1391.37	-4869.86	30.22
	σ <sub>s,c</sub> 21	-30884.69	-1391.11	-4870.32	-229.72
	σ <sub>cls,Max</sub> 22	-30883.28	-1391.37	-4869.86	-17.90
	σ <sub>cls,Med</sub> 21	-30884.69	-1391.11	-4870.32	-7.41
11541	Ft. 21	-26584.69	3010.38	2563.20	110.01
	σ <sub>s,c</sub> 21	-26584.69	3010.38	2563.20	-248.48
	σ <sub>cls,Max</sub> 21	-26584.69	3010.38	2563.20	-21.57
	σ <sub>cls,Med</sub> 22	-26583.28	3010.56	2561.16	-8.76

Pilastro: **12/112** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 210.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
12	1	-274036.53	-3241.90	-489.57	0.32
112	1	-268381.53	-2275.31	-5094.71	0.35

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2434.41	86297.23	1523.67	61956.98	Ø 10 2br.x4br./15.0
1.13	3.23	2434.41	64722.92	1523.67	46467.73	Ø 10 2br.x4br./20.0
3.23	4.23	2434.41	86297.23	1523.67	61956.98	Ø 10 2br.x4br./15.0

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
12	Ft. 17	-181895.03	-2268.46	-391.63	-548.06
	σ <sub>s,c</sub> 15	-192961.11	-2317.68	-433.16	-685.67
	σ <sub>cls,Max</sub> 15	-192961.11	-2317.68	-433.16	-46.62
	σ <sub>cls,Med</sub> 15	-192961.11	-2317.68	-433.16	-42.27
112	Ft. 17	-177545.03	-1570.73	-3494.99	-446.45
	σ <sub>s,c</sub> 15	-188611.11	-1634.65	-3546.14	-759.23
	σ <sub>cls,Max</sub> 15	-188611.11	-1634.65	-3546.14	-54.96
	σ <sub>cls,Med</sub> 15	-188611.11	-1634.65	-3546.14	-41.31
<b>Combinazioni Frequenti</b>					
12	Ft. 20	-178299.59	-2037.96	-411.94	-539.37
	σ <sub>s,c</sub> 18	-185875.13	-2071.21	-444.12	-658.70
	σ <sub>cls,Max</sub> 18	-185875.13	-2071.21	-444.12	-44.79
	σ <sub>cls,Med</sub> 18	-185875.13	-2071.21	-444.12	-40.71
112	Ft. 20	-173949.59	-1567.63	-3336.82	-439.72
	σ <sub>s,c</sub> 18	-181525.13	-1609.75	-3366.86	-729.84
	σ <sub>cls,Max</sub> 18	-181525.13	-1609.75	-3366.86	-52.79
	σ <sub>cls,Med</sub> 18	-181525.13	-1609.75	-3366.86	-39.76
<b>Combinazioni Quasi Permanenti</b>					
12	Ft. 22	-177101.13	-1961.13	-418.72	-536.47
	σ <sub>s,c</sub> 21	-183543.98	-1990.95	-450.35	-649.93
	σ <sub>cls,Max</sub> 21	-183543.98	-1990.95	-450.35	-44.20
	σ <sub>cls,Med</sub> 21	-183543.98	-1990.95	-450.35	-40.20
112	Ft. 22	-172751.13	-1566.60	-3284.09	-437.48
	σ <sub>s,c</sub> 21	-179193.98	-1601.13	-3305.46	-720.09
	σ <sub>cls,Max</sub> 21	-179193.98	-1601.13	-3305.46	-52.06
	σ <sub>cls,Med</sub> 21	-179193.98	-1601.13	-3305.46	-39.25

Pilastro: **112/212** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
112	1	-215225.78	5736.70	11540.07	0.35
212	1	-210740.78	-720.03	-9871.84	0.33

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1878.48	86297.23	6206.35	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	1878.48	64722.92	6206.35	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	1878.48	86297.23	6206.35	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
112	Ft. 17	-139390.78	3955.36	8021.58	-138.08
	σ <sub>s,c</sub> 15	-150822.02	3962.16	8143.76	-819.41
	σ <sub>cls,Max</sub> 15	-150822.02	3962.16	8143.76	-64.63
	σ <sub>cls,Med</sub> 15	-150822.02	3962.16	8143.76	-33.04
212	Ft. 17	-135940.78	-597.37	-6946.50	-215.88
	σ <sub>s,c</sub> 15	-147372.02	-574.54	-6972.77	-715.41
	σ <sub>cls,Max</sub> 15	-147372.02	-574.54	-6972.77	-55.76

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-147372.02	-574.54	-6972.77	-32.28
<b>Combinazioni Frequenti</b>					
112	Ft. 20	-137901.94	3767.30	7672.03	-147.39
	σ <sub>s,c</sub> 18	-145752.66	3771.18	7749.61	-787.09
	σ <sub>cls,Max</sub> 18	-145752.66	3771.18	7749.61	-61.99
	σ <sub>cls,Med</sub> 18	-145752.66	3771.18	7749.61	-31.92
212	Ft. 20	-134451.94	-549.10	-6607.75	-222.56
	σ <sub>s,c</sub> 18	-142302.66	-539.90	-6618.25	-686.91
	σ <sub>cls,Max</sub> 18	-142302.66	-539.90	-6618.25	-53.45
	σ <sub>cls,Med</sub> 18	-142302.66	-539.90	-6618.25	-31.17
<b>Combinazioni Quasi Permanenti</b>					
112	Ft. 22	-137405.64	3704.61	7555.51	-150.50
	σ <sub>s,c</sub> 21	-144091.05	3707.73	7616.72	-776.37
	σ <sub>cls,Max</sub> 21	-144091.05	3707.73	7616.72	-61.11
	σ <sub>cls,Med</sub> 21	-144091.05	3707.73	7616.72	-31.56
212	Ft. 22	-133955.64	-533.01	-6494.83	-224.78
	σ <sub>s,c</sub> 21	-140641.05	-528.33	-6498.62	-677.46
	σ <sub>cls,Max</sub> 21	-140641.05	-528.33	-6498.62	-52.68
	σ <sub>cls,Med</sub> 21	-140641.05	-528.33	-6498.62	-30.81

Pilastro: **212/312** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
212	1	-162945.28	8838.80	12776.35	0.32
312	1	-158460.28	-25273.21	-18645.58	0.48

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	9887.54	86297.23	9107.81	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	9887.54	64722.92	9107.81	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	9887.54	86297.23	9107.81	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
212	Ft. 17	-101062.25	5970.69	8426.17	70.07
	σ <sub>s,c</sub> 15	-113259.74	6064.25	8895.76	-767.28
	σ <sub>cls,Max</sub> 15	-113259.74	6064.25	8895.76	-62.85
	σ <sub>cls,Med</sub> 15	-113259.74	6064.25	8895.76	-27.56
312	Ft. 17	-97612.25	-16603.35	-11770.18	734.01
	σ <sub>s,c</sub> 15	-109809.74	-17275.05	-12888.43	-1215.33
	σ <sub>cls,Max</sub> 15	-109809.74	-17275.05	-12888.43	-105.75
	σ <sub>cls,Med</sub> 15	-109809.74	-17275.05	-12888.43	-39.35
<b>Combinazioni Frequenti</b>					
212	Ft. 20	-101649.80	5781.69	8204.72	50.39
	σ <sub>s,c</sub> 18	-110072.38	5832.69	8518.63	-739.40
	σ <sub>cls,Max</sub> 18	-110072.38	5832.69	8518.63	-60.46
	σ <sub>cls,Med</sub> 18	-110072.38	5832.69	8518.63	-26.58
312	Ft. 20	-98199.80	-16415.64	-11661.41	705.08

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-106622.38	-16834.21	-12424.01	-1176.38
	σ <sub>cls,Max</sub> 18	-106622.38	-16834.21	-12424.01	-102.22
	σ <sub>cls,Med</sub> 18	-106622.38	-16834.21	-12424.01	-37.99
<b>Combinazioni Quasi Permanenti</b>					
212	Ft. 22	-101845.66	5718.69	8130.91	44.07
	σ <sub>s,c</sub> 21	-109033.76	5755.60	8389.94	-730.06
	σ <sub>cls,Max</sub> 21	-109033.76	5755.60	8389.94	-59.65
	σ <sub>cls,Med</sub> 21	-109033.76	5755.60	8389.94	-26.25
312	Ft. 22	-98395.66	-16353.07	-11625.15	695.56
	σ <sub>s,c</sub> 21	-105583.76	-16689.39	-12264.02	-1163.16
	σ <sub>cls,Max</sub> 21	-105583.76	-16689.39	-12264.02	-101.01
	σ <sub>cls,Med</sub> 21	-105583.76	-16689.39	-12264.02	-37.52

Pilastro: **13/113** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
13	1	-424599.03	-4050.00	1514.75	0.50
113	1	-418944.03	-2685.18	-1246.57	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2926.03	86297.23	694.73	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	2926.03	64722.92	694.73	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	2926.03	86297.23	694.73	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
13	Ft. 16	-286137.50	-2420.21	962.96	-869.89
	σ <sub>s,c</sub> 15	-297391.91	-2723.37	1032.75	-1054.49
	σ <sub>cls,Max</sub> 15	-297391.91	-2723.37	1032.75	-71.96
	σ <sub>cls,Med</sub> 15	-297391.91	-2723.37	1032.75	-65.14
113	Ft. 17	-282632.31	-2304.98	-893.15	-862.48
	σ <sub>s,c</sub> 15	-293041.91	-1970.86	-845.83	-1021.94
	σ <sub>cls,Max</sub> 15	-293041.91	-1970.86	-845.83	-69.45
	σ <sub>cls,Med</sub> 15	-293041.91	-1970.86	-845.83	-64.19
<b>Combinazioni Frequenti</b>					
13	Ft. 19	-282377.81	-2316.51	939.53	-859.98
	σ <sub>s,c</sub> 18	-286128.94	-2417.48	962.79	-1010.25
	σ <sub>cls,Max</sub> 18	-286128.94	-2417.48	962.79	-68.88
	σ <sub>cls,Med</sub> 18	-286128.94	-2417.48	962.79	-62.67
113	Ft. 20	-277227.31	-2261.44	-845.79	-846.94
	σ <sub>s,c</sub> 18	-281778.94	-1940.55	-789.03	-982.63
	σ <sub>cls,Max</sub> 18	-281778.94	-1940.55	-789.03	-66.75
	σ <sub>cls,Med</sub> 18	-281778.94	-1940.55	-789.03	-61.72
<b>Combinazioni Quasi Permanenti</b>					
13	Ft. 21	-282376.09	-2315.97	939.50	-859.98
	σ <sub>s,c</sub> 21	-282376.09	-2315.97	939.50	-995.52
	σ <sub>cls,Max</sub> 21	-282376.09	-2315.97	939.50	-67.85

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-282376.09	-2315.97	939.50	-61.85
113	Ft. 22	-275425.63	-2246.92	-830.00	-841.76
	σ <sub>s,c</sub> 21	-278026.09	-1930.63	-770.11	-969.54
	σ <sub>cls,Max</sub> 22	-275425.63	-2246.92	-830.00	-65.88
	σ <sub>cls,Med</sub> 21	-278026.09	-1930.63	-770.11	-60.90

Pilastro: **113/213** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
113	1	-340744.88	8962.85	975.05	0.42
213	1	-336259.88	300.16	-962.18	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2510.92	86297.23	561.52	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	2510.92	64722.92	561.52	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	2510.92	86297.23	561.52	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
113	Ft. 17	-227230.89	6093.92	630.17	-626.85
	σ <sub>s,c</sub> 15	-237594.34	6233.69	666.36	-903.78
	σ <sub>cls,Max</sub> 15	-237594.34	6233.69	666.36	-62.12
	σ <sub>cls,Med</sub> 15	-237594.34	6233.69	666.36	-52.04
213	Ft. 17	-223780.91	526.01	-500.97	-710.70
	σ <sub>s,c</sub> 15	-234144.36	61.95	-659.60	-791.28
	σ <sub>cls,Max</sub> 15	-234144.36	61.95	-659.60	-53.52
	σ <sub>cls,Med</sub> 15	-234144.36	61.95	-659.60	-51.29
<b>Combinazioni Frequenti</b>					
113	Ft. 20	-224807.92	5843.91	599.99	-623.93
	σ <sub>s,c</sub> 18	-229275.38	5951.13	620.57	-870.37
	σ <sub>cls,Max</sub> 18	-229275.38	5951.13	620.57	-59.79
	σ <sub>cls,Med</sub> 18	-229275.38	5951.13	620.57	-50.22
213	Ft. 20	-221357.94	569.64	-482.51	-702.61
	σ <sub>s,c</sub> 18	-225825.39	59.93	-622.91	-762.75
	σ <sub>cls,Max</sub> 18	-225825.39	59.93	-622.91	-51.57
	σ <sub>cls,Med</sub> 18	-225825.39	59.93	-622.91	-49.46
<b>Combinazioni Quasi Permanenti</b>					
113	Ft. 22	-224000.30	5760.57	589.93	-622.96
	σ <sub>s,c</sub> 21	-226503.48	5856.38	604.90	-859.22
	σ <sub>cls,Max</sub> 21	-226503.48	5856.38	604.90	-59.01
	σ <sub>cls,Med</sub> 21	-226503.48	5856.38	604.90	-49.61
213	Ft. 22	-220550.31	584.18	-476.36	-699.91
	σ <sub>s,c</sub> 21	-223053.50	59.65	-610.33	-753.24
	σ <sub>cls,Max</sub> 21	-223053.50	59.65	-610.33	-50.92
	σ <sub>cls,Med</sub> 21	-223053.50	59.65	-610.33	-48.86

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **213/313** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
213	1	-259643.44	15915.69	863.61	0.35
313	3	-239710.31	-46932.66	-3028.28	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	18548.65	86297.23	1262.32	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	18548.65	64722.92	1262.32	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	18548.65	86297.23	1262.32	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
213	Ft. 17	-169485.78	11742.26	878.67	-336.83
	σ <sub>s,c</sub> 15	-179784.53	10979.27	569.92	-788.40
	σ <sub>cls,Max</sub> 15	-179784.53	10979.27	569.92	-55.16
	σ <sub>cls,Med</sub> 15	-179784.53	10979.27	569.92	-39.38
313	Ft. 17	-166035.78	-32247.54	-2014.76	61.74
	σ <sub>s,c</sub> 17	-166035.78	-32247.54	-2014.76	-1145.61
	σ <sub>cls,Max</sub> 17	-166035.78	-32247.54	-2014.76	-84.63
	σ <sub>cls,Med</sub> 17	-166035.78	-32247.54	-2014.76	-38.98
<b>Combinazioni Frequenti</b>					
213	Ft. 20	-170033.05	11411.90	830.87	-345.55
	σ <sub>s,c</sub> 20	-170033.05	11411.90	830.87	-771.74
	σ <sub>cls,Max</sub> 20	-170033.05	11411.90	830.87	-54.42
	σ <sub>cls,Med</sub> 18	-174378.67	10553.12	512.42	-38.19
313	Ft. 20	-166583.05	-31886.15	-1920.02	48.11
	σ <sub>s,c</sub> 20	-166583.05	-31886.15	-1920.02	-1136.97
	σ <sub>cls,Max</sub> 20	-166583.05	-31886.15	-1920.02	-83.84
	σ <sub>cls,Med</sub> 20	-166583.05	-31886.15	-1920.02	-38.79
<b>Combinazioni Quasi Permanenti</b>					
213	Ft. 22	-170215.42	11301.79	814.94	-348.46
	σ <sub>s,c</sub> 22	-170215.42	11301.79	814.94	-770.04
	σ <sub>cls,Max</sub> 22	-170215.42	11301.79	814.94	-54.27
	σ <sub>cls,Med</sub> 21	-172577.42	10411.03	493.11	-37.80
313	Ft. 22	-166765.42	-31765.69	-1888.44	43.65
	σ <sub>s,c</sub> 22	-166765.42	-31765.69	-1888.44	-1134.12
	σ <sub>cls,Max</sub> 22	-166765.42	-31765.69	-1888.44	-83.58
	σ <sub>cls,Med</sub> 22	-166765.42	-31765.69	-1888.44	-38.73

Pilastro: **14/114** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 210.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
14	1	-427889.94	-3449.63	1072.97	0.50
114	1	-422234.94	-3646.94	-538.80	0.50



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3745.87	86297.23	536.86	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	3745.87	64722.92	536.86	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	3745.87	86297.23	536.86	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
14	Ft. 16	-287982.44	-2056.83	677.55	-890.97
	σ <sub>s,c</sub> 15	-299498.66	-2321.93	727.85	-1045.14
	σ <sub>cls,Max</sub> 15	-299498.66	-2321.93	727.85	-70.92
	σ <sub>cls,Med</sub> 15	-299498.66	-2321.93	727.85	-65.60
114	Ft. 17	-284633.69	-2938.71	-301.79	-877.50
	σ <sub>s,c</sub> 15	-295148.66	-2621.04	-360.77	-1024.07
	σ <sub>cls,Max</sub> 15	-295148.66	-2621.04	-360.77	-69.15
	σ <sub>cls,Med</sub> 15	-295148.66	-2621.04	-360.77	-64.65
<b>Combinazioni Frequenti</b>					
14	Ft. 19	-284145.19	-1965.77	660.40	-880.40
	σ <sub>s,c</sub> 18	-287984.00	-2054.04	677.15	-1001.32
	σ <sub>cls,Max</sub> 18	-287984.00	-2054.04	677.15	-67.89
	σ <sub>cls,Med</sub> 18	-287984.00	-2054.04	677.15	-63.08
114	Ft. 20	-279014.97	-2863.23	-276.60	-861.08
	σ <sub>s,c</sub> 18	-283634.00	-2548.42	-335.36	-984.24
	σ <sub>cls,Max</sub> 18	-283634.00	-2548.42	-335.36	-66.45
	σ <sub>cls,Med</sub> 18	-283634.00	-2548.42	-335.36	-62.13
<b>Combinazioni Quasi Permanenti</b>					
14	Ft. 21	-284145.50	-1965.22	660.32	-880.41
	σ <sub>s,c</sub> 21	-284145.50	-1965.22	660.32	-986.72
	σ <sub>cls,Max</sub> 21	-284145.50	-1965.22	660.32	-66.88
	σ <sub>cls,Med</sub> 21	-284145.50	-1965.22	660.32	-62.24
114	Ft. 22	-277142.06	-2838.07	-268.21	-855.60
	σ <sub>s,c</sub> 21	-279795.50	-2524.41	-326.98	-970.97
	σ <sub>cls,Max</sub> 21	-279795.50	-2524.41	-326.98	-65.55
	σ <sub>cls,Med</sub> 21	-279795.50	-2524.41	-326.98	-61.28

Pilastro: **114/214** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
114	1	-343397.63	10129.83	-39.58	0.43
214	1	-338912.63	557.17	-353.20	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2774.69	86297.23	239.51	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	2774.69	64722.92	239.51	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	2774.69	86297.23	239.51	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
114	Ft. 17	-228826.06	6951.11	-24.97	-637.32

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-239281.45	7073.47	-27.71	-902.75
	σ <sub>cls,Max</sub> 15	-239281.45	7073.47	-27.71	-61.47
	σ <sub>cls,Med</sub> 15	-239281.45	7073.47	-27.71	-52.41
214	Ft. 17	-225376.06	587.67	-347.73	-719.80
	σ <sub>s,c</sub> 15	-235831.45	202.53	-241.21	-785.82
	σ <sub>cls,Max</sub> 15	-235831.45	202.53	-241.21	-52.70
	σ <sub>cls,Med</sub> 15	-235831.45	202.53	-241.21	-51.66
<b>Combinazioni Frequenti</b>					
114	Ft. 20	-226212.66	6654.04	-30.33	-633.42
	σ <sub>s,c</sub> 18	-230749.83	6745.50	-32.27	-869.50
	σ <sub>cls,Max</sub> 18	-230749.83	6745.50	-32.27	-59.20
	σ <sub>cls,Med</sub> 18	-230749.83	6745.50	-32.27	-50.54
214	Ft. 20	-222762.66	632.91	-336.56	-710.83
	σ <sub>s,c</sub> 18	-227299.83	182.17	-227.27	-757.01
	σ <sub>cls,Max</sub> 18	-227299.83	182.17	-227.27	-50.76
	σ <sub>cls,Med</sub> 18	-227299.83	182.17	-227.27	-49.79
<b>Combinazioni Quasi Permanenti</b>					
114	Ft. 22	-225341.53	6555.02	-32.11	-632.12
	σ <sub>s,c</sub> 21	-227905.66	6635.53	-33.90	-858.40
	σ <sub>cls,Max</sub> 21	-227905.66	6635.53	-33.90	-58.44
	σ <sub>cls,Med</sub> 21	-227905.66	6635.53	-33.90	-49.92
214	Ft. 22	-221891.53	647.99	-332.83	-707.84
	σ <sub>s,c</sub> 22	-221891.53	647.99	-332.83	-750.22
	σ <sub>cls,Max</sub> 22	-221891.53	647.99	-332.83	-50.51
	σ <sub>cls,Med</sub> 21	-224455.66	175.87	-222.54	-49.16

Pilastro: **214/314** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
214	1	-261765.52	18469.23	-116.15	0.36
314	3	-241721.63	-53391.14	1324.40	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	21120.12	86297.23	542.20	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	21120.12	64722.92	542.20	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	21120.12	86297.23	542.20	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
214	Ft. 17	-170753.22	13390.16	-369.74	-330.23
	σ <sub>s,c</sub> 15	-181125.81	12720.81	-83.04	-805.81
	σ <sub>cls,Max</sub> 15	-181125.81	12720.81	-83.04	-56.07
	σ <sub>cls,Med</sub> 15	-181125.81	12720.81	-83.04	-39.67
314	Ft. 17	-167303.22	-36700.61	885.46	117.91
	σ <sub>s,c</sub> 17	-167303.22	-36700.61	885.46	-1195.50
	σ <sub>cls,Max</sub> 17	-167303.22	-36700.61	885.46	-87.62
	σ <sub>cls,Med</sub> 17	-167303.22	-36700.61	885.46	-42.20

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
214	Ft. 20	-171117.67	12981.32	-392.26	-337.40
	$\sigma_{s,c}20$	-171117.67	12981.32	-392.26	-787.03
	$\sigma_{cls,Max}20$	-171117.67	12981.32	-392.26	-55.22
	$\sigma_{cls,Med}18$	-175534.97	12181.47	-97.91	-38.45
314	Ft. 20	-167667.67	-36174.58	928.62	104.12
	$\sigma_{s,c}20$	-167667.67	-36174.58	928.62	-1187.39
	$\sigma_{cls,Max}20$	-167667.67	-36174.58	928.62	-86.99
	$\sigma_{cls,Med}20$	-167667.67	-36174.58	928.62	-41.83

<b>Combinazioni Quasi Permanenti</b>					
214	Ft. 22	-171239.16	12845.04	-399.77	-339.79
	$\sigma_{s,c}22$	-171239.16	12845.04	-399.77	-785.43
	$\sigma_{cls,Max}22$	-171239.16	12845.04	-399.77	-55.10
	$\sigma_{cls,Med}21$	-173671.00	12001.70	-102.84	-38.04
314	Ft. 22	-167789.16	-35999.24	943.01	99.62
	$\sigma_{s,c}22$	-167789.16	-35999.24	943.01	-1184.71
	$\sigma_{cls,Max}22$	-167789.16	-35999.24	943.01	-86.79
	$\sigma_{cls,Med}22$	-167789.16	-35999.24	943.01	-41.70

Pilastro: **15/115** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20 \text{ Af}=37.70 [\text{cm}^2] < 1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H >$

**Staffe:**  $\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0/\varnothing 10 \text{ 2br.x4br./20.0} \times 210.0/\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0$

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
15	1	-430299.28	-2427.89	1099.63	0.50
115	1	-424644.28	-4301.11	-881.64	0.50

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	4408.46	86297.23	549.09	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$
1.13	3.23	4408.46	64722.92	549.09	46467.73	$\varnothing 10 \text{ 2br.x4br./20.0}$
3.23	4.23	4408.46	86297.23	549.09	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
15	Ft. 17	-283617.47	-898.82	721.02	-894.19
	$\sigma_{s,c}15$	-301246.25	-1636.48	743.17	-1040.16
	$\sigma_{cls,Max}15$	-301246.25	-1636.48	743.17	-70.48
	$\sigma_{cls,Med}15$	-301246.25	-1636.48	743.17	-65.98
115	Ft. 17	-279267.47	-3272.95	-578.99	-845.58
	$\sigma_{s,c}15$	-296896.25	-3058.50	-602.92	-1044.67
	$\sigma_{cls,Max}15$	-296896.25	-3058.50	-602.92	-70.88
	$\sigma_{cls,Med}15$	-296896.25	-3058.50	-602.92	-65.03
<b>Combinazioni Frequenti</b>					
15	Ft. 20	-277999.59	-789.46	663.77	-879.34
	$\sigma_{s,c}18$	-289696.56	-1403.56	685.58	-996.57
	$\sigma_{cls,Max}18$	-289696.56	-1403.56	685.58	-67.47
	$\sigma_{cls,Med}18$	-289696.56	-1403.56	685.58	-63.45
115	Ft. 20	-273649.59	-3182.92	-539.29	-829.86
	$\sigma_{s,c}18$	-285346.56	-2969.94	-561.98	-1003.97
	$\sigma_{cls,Max}18$	-285346.56	-2969.94	-561.98	-68.10
	$\sigma_{cls,Med}18$	-285346.56	-2969.94	-561.98	-62.50
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
15	Ft. 22	-276126.94	-753.01	644.69	-874.39
	σ <sub>s,c</sub> 21	-285847.47	-1326.40	666.37	-982.05
	σ <sub>cls,Max</sub> 21	-285847.47	-1326.40	666.37	-66.47
	σ <sub>cls,Med</sub> 21	-285847.47	-1326.40	666.37	-62.61
115	Ft. 22	-271776.94	-3152.91	-526.05	-824.62
	σ <sub>s,c</sub> 21	-281497.47	-2940.63	-548.38	-990.41
	σ <sub>cls,Max</sub> 21	-281497.47	-2940.63	-548.38	-67.18
	σ <sub>cls,Med</sub> 21	-281497.47	-2940.63	-548.38	-61.66

Pilastro: **115/215** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
115	1	-345693.22	9831.19	504.02	0.43
215	1	-341208.22	314.28	-660.07	0.40

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2779.85	86297.23	422.41	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	2779.85	64722.92	422.41	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	2779.85	86297.23	422.41	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
115	Ft. 17	-223073.31	6819.28	308.12	-611.57
	σ <sub>s,c</sub> 15	-240938.33	6885.74	358.68	-915.65
	σ <sub>cls,Max</sub> 15	-240938.33	6885.74	358.68	-62.68
	σ <sub>cls,Med</sub> 15	-240938.33	6885.74	358.68	-52.77
215	Ft. 17	-219623.33	-78.52	-383.57	-708.09
	σ <sub>s,c</sub> 15	-237488.34	36.98	-460.53	-795.53
	σ <sub>cls,Max</sub> 15	-237488.34	36.98	-460.53	-53.57
	σ <sub>cls,Med</sub> 15	-237488.34	36.98	-460.53	-52.02

**Combinazioni Frequenti**

115	Ft. 20	-220472.55	6522.58	278.02	-608.83
	σ <sub>s,c</sub> 18	-232378.55	6560.73	330.59	-881.32
	σ <sub>cls,Max</sub> 18	-232378.55	6560.73	330.59	-60.30
	σ <sub>cls,Med</sub> 18	-232378.55	6560.73	330.59	-50.90
215	Ft. 20	-217022.56	-16.76	-350.22	-701.62
	σ <sub>s,c</sub> 18	-228928.56	27.82	-429.54	-766.27
	σ <sub>cls,Max</sub> 18	-228928.56	27.82	-429.54	-51.58
	σ <sub>cls,Med</sub> 18	-228928.56	27.82	-429.54	-50.14

**Combinazioni Quasi Permanenti**

115	Ft. 22	-219605.63	6423.69	267.99	-607.92
	σ <sub>s,c</sub> 21	-229525.97	6451.87	321.28	-869.87
	σ <sub>cls,Max</sub> 21	-229525.97	6451.87	321.28	-59.50
	σ <sub>cls,Med</sub> 21	-229525.97	6451.87	321.28	-50.27
215	Ft. 22	-216155.64	3.83	-339.10	-699.33
	σ <sub>s,c</sub> 21	-226075.98	25.12	-419.26	-756.53
	σ <sub>cls,Max</sub> 21	-226075.98	25.12	-419.26	-50.92

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-226075.98	25.12	-419.26	-49.52

Pilastro: **215/315** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
215	1	-263762.69	18514.22	304.46	0.36
315	1	-259277.72	-50501.65	-859.62	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	20004.60	86297.23	692.42	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	20004.60	64722.92	692.42	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	20004.60	86297.23	692.42	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
215	Ft. 17	-164366.19	12765.24	208.64	-324.59
	σ <sub>s,c</sub> 15	-182562.31	12766.45	220.42	-815.65
	σ <sub>cls,Max</sub> 15	-182562.31	12766.45	220.42	-56.89
	σ <sub>cls,Med</sub> 15	-182562.31	12766.45	220.42	-39.99
315	Ft. 17	-160916.19	-34396.08	-662.63	83.25
	σ <sub>s,c</sub> 15	-179112.31	-34830.39	-603.50	-1181.73
	σ <sub>cls,Max</sub> 15	-179112.31	-34830.39	-603.50	-85.75
	σ <sub>cls,Med</sub> 15	-179112.31	-34830.39	-603.50	-41.85
<b>Combinazioni Frequenti</b>					
215	Ft. 20	-164762.33	12360.95	181.55	-333.37
	σ <sub>s,c</sub> 18	-176957.63	12226.15	192.91	-787.52
	σ <sub>cls,Max</sub> 18	-176957.63	12226.15	192.91	-54.89
	σ <sub>cls,Med</sub> 18	-176957.63	12226.15	192.91	-38.76
315	Ft. 20	-161312.33	-33857.46	-617.21	66.54
	σ <sub>s,c</sub> 18	-173507.63	-33717.72	-549.94	-1143.16
	σ <sub>cls,Max</sub> 18	-173507.63	-33717.72	-549.94	-82.92
	σ <sub>cls,Med</sub> 18	-173507.63	-33717.72	-549.94	-40.52
<b>Combinazioni Quasi Permanenti</b>					
215	Ft. 22	-164894.39	12226.18	172.52	-336.29
	σ <sub>s,c</sub> 21	-175089.95	12046.06	183.80	-778.15
	σ <sub>cls,Max</sub> 21	-175089.95	12046.06	183.80	-54.22
	σ <sub>cls,Med</sub> 21	-175089.95	12046.06	183.80	-38.35
315	Ft. 22	-161444.39	-33677.93	-602.07	61.10
	σ <sub>s,c</sub> 21	-171639.95	-33346.05	-532.24	-1130.29
	σ <sub>cls,Max</sub> 21	-171639.95	-33346.05	-532.24	-81.97
	σ <sub>cls,Med</sub> 21	-171639.95	-33346.05	-532.24	-40.08

Pilastro: **16/116** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
16	1	-396836.94	1504.00	1177.97	0.47

**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
116	1	-391181.94	-3546.69	284.83	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5957.86	86297.23	473.18	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	5957.86	64722.92	473.18	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	5957.86	86297.23	473.18	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
16	Ft. 17	-261338.50	1714.88	784.64	-805.62
	σ <sub>s,c</sub> 15	-278513.91	1280.93	811.65	-961.84
	σ <sub>cls,Max</sub> 15	-278513.91	1280.93	811.65	-65.28
	σ <sub>cls,Med</sub> 15	-278513.91	1280.93	811.65	-61.00
116	Ft. 17	-256988.50	-2729.71	215.09	-792.85
	σ <sub>s,c</sub> 15	-274163.91	-2610.51	203.97	-949.96
	σ <sub>cls,Max</sub> 15	-274163.91	-2610.51	203.97	-64.03
	σ <sub>cls,Med</sub> 15	-274163.91	-2610.51	203.97	-60.05
<b>Combinazioni Frequenti</b>					
16	Ft. 20	-256195.36	1764.83	743.05	-789.23
	σ <sub>s,c</sub> 18	-267903.38	1416.19	761.83	-927.60
	σ <sub>cls,Max</sub> 18	-267903.38	1416.19	761.83	-62.96
	σ <sub>cls,Med</sub> 18	-267903.38	1416.19	761.83	-58.68
116	Ft. 20	-251845.36	-2676.48	206.85	-777.08
	σ <sub>s,c</sub> 18	-263553.38	-2564.04	196.25	-914.09
	σ <sub>cls,Max</sub> 18	-263553.38	-2564.04	196.25	-61.62
	σ <sub>cls,Med</sub> 18	-263553.38	-2564.04	196.25	-57.73
<b>Combinazioni Quasi Permanenti</b>					
16	Ft. 22	-254480.97	1781.48	729.19	-783.77
	σ <sub>s,c</sub> 21	-264376.78	1464.69	745.58	-916.29
	σ <sub>cls,Max</sub> 21	-264376.78	1464.69	745.58	-62.20
	σ <sub>cls,Med</sub> 21	-264376.78	1464.69	745.58	-57.91
116	Ft. 22	-250130.97	-2658.74	204.11	-771.83
	σ <sub>s,c</sub> 21	-260026.86	-2550.39	193.38	-902.19
	σ <sub>cls,Max</sub> 21	-260026.86	-2550.39	193.38	-60.82
	σ <sub>cls,Med</sub> 21	-260026.86	-2550.39	193.38	-56.95

Pilastro: **116/216** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
116	1	-315802.41	6588.05	-1837.59	0.39
216	1	-311317.41	-493.65	1093.57	0.37

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2052.67	86297.23	938.83	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	2052.67	64722.92	938.83	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	2052.67	86297.23	938.83	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
116	Ft. 17	-203402.45	4528.95	-1269.71	-553.81
	σ <sub>s,c</sub> 15	-220681.31	4595.46	-1285.99	-841.13
	σ <sub>cls,Max</sub> 15	-220681.31	4595.46	-1285.99	-58.36
	σ <sub>cls,Med</sub> 15	-220681.31	4595.46	-1285.99	-48.34
216	Ft. 17	-199952.47	-453.26	767.21	-625.13
	σ <sub>s,c</sub> 15	-217231.33	-433.95	781.77	-745.69
	σ <sub>cls,Max</sub> 15	-217231.33	-433.95	781.77	-50.68
	σ <sub>cls,Med</sub> 15	-217231.33	-433.95	781.77	-47.58
<b>Combinazioni Frequenti</b>					
116	Ft. 20	-201116.63	4327.17	-1215.45	-551.33
	σ <sub>s,c</sub> 18	-212906.02	4372.65	-1224.20	-809.98
	σ <sub>cls,Max</sub> 18	-212906.02	4372.65	-1224.20	-56.17
	σ <sub>cls,Med</sub> 18	-212906.02	4372.65	-1224.20	-46.63
216	Ft. 20	-197666.64	-411.78	724.97	-619.64
	σ <sub>s,c</sub> 18	-209456.03	-421.85	739.83	-718.61
	σ <sub>cls,Max</sub> 18	-209456.03	-421.85	739.83	-48.83
	σ <sub>cls,Med</sub> 18	-209456.03	-421.85	739.83	-45.88
<b>Combinazioni Quasi Permanenti</b>					
116	Ft. 22	-200354.69	4259.91	-1197.36	-550.50
	σ <sub>s,c</sub> 21	-210323.20	4298.16	-1203.24	-799.60
	σ <sub>cls,Max</sub> 21	-210323.20	4298.16	-1203.24	-55.44
	σ <sub>cls,Med</sub> 21	-210323.20	4298.16	-1203.24	-46.07
216	Ft. 22	-196904.70	-397.95	710.90	-617.81
	σ <sub>s,c</sub> 21	-206873.22	-417.55	725.52	-709.60
	σ <sub>cls,Max</sub> 21	-206873.22	-417.55	725.52	-48.21
	σ <sub>cls,Med</sub> 21	-206873.22	-417.55	725.52	-45.31

Pilastro: **216/316** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
216	1	-238351.94	11438.07	-2920.44	0.32
316	1	-233866.94	-31586.13	4473.69	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	12470.78	86297.23	2143.23	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	12470.78	64722.92	2143.23	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	12470.78	86297.23	2143.23	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
216	Ft. 17	-147946.06	8045.52	-1961.90	-292.07
	σ <sub>s,c</sub> 15	-165419.33	7996.66	-2005.30	-738.08
	σ <sub>cls,Max</sub> 15	-165419.33	7996.66	-2005.30	-52.92
	σ <sub>cls,Med</sub> 15	-165419.33	7996.66	-2005.30	-36.23
316	Ft. 17	-144496.06	-21989.57	2985.43	-17.75
	σ <sub>s,c</sub> 15	-161969.33	-22096.19	3048.69	-990.67
	σ <sub>cls,Max</sub> 15	-161969.33	-22096.19	3048.69	-73.45

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-161969.33	-22096.19	3048.69	-35.58
<b>Combinazioni Frequenti</b>					
216	Ft. 20	-148493.70	7782.77	-1921.58	-299.45
	σ <sub>s,c</sub> 18	-160425.95	7683.69	-1931.35	-714.21
	σ <sub>cls,Max</sub> 18	-160425.95	7683.69	-1931.35	-51.18
	σ <sub>cls,Med</sub> 18	-160425.95	7683.69	-1931.35	-35.14
316	Ft. 20	-145043.70	-21632.38	2973.62	-26.39
	σ <sub>s,c</sub> 18	-156975.95	-21476.03	2959.56	-961.29
	σ <sub>cls,Max</sub> 18	-156975.95	-21476.03	2959.56	-71.28
	σ <sub>cls,Med</sub> 18	-156975.95	-21476.03	2959.56	-34.49
<b>Combinazioni Quasi Permanenti</b>					
216	Ft. 22	-148676.23	7695.19	-1908.14	-301.91
	σ <sub>s,c</sub> 21	-158769.16	7581.33	-1906.30	-706.29
	σ <sub>cls,Max</sub> 21	-158769.16	7581.33	-1906.30	-50.61
	σ <sub>cls,Med</sub> 21	-158769.16	7581.33	-1906.30	-34.78
316	Ft. 22	-145226.23	-21513.31	2969.69	-29.25
	σ <sub>s,c</sub> 21	-155319.16	-21275.27	2929.11	-951.60
	σ <sub>cls,Max</sub> 21	-155319.16	-21275.27	2929.11	-70.56
	σ <sub>cls,Med</sub> 21	-155319.16	-21275.27	2929.11	-34.13

Pilastro: **17/117** / L 4.10[m] / Sezione **1 B 40** [cm]H **100** [cm]

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
17	1	-321057.34	3581.52	956.95	0.38
117	1	-315402.34	-5195.23	1378.98	0.38

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7112.53	86297.23	604.45	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	7112.53	64722.92	604.45	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	7112.53	86297.23	604.45	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
17	Ft. 17	-212390.52	2661.16	682.38	-632.58
	σ <sub>s,c</sub> 15	-226093.70	2577.53	655.05	-805.83
	σ <sub>cls,Max</sub> 15	-226093.70	2577.53	655.05	-54.93
	σ <sub>cls,Med</sub> 15	-226093.70	2577.53	655.05	-49.52
117	Ft. 17	-208040.52	-3638.29	935.95	-594.24
	σ <sub>s,c</sub> 15	-221743.70	-3699.43	998.58	-820.82
	σ <sub>cls,Max</sub> 15	-221743.70	-3699.43	998.58	-56.52
	σ <sub>cls,Med</sub> 15	-221743.70	-3699.43	998.58	-48.57
<b>Combinazioni Frequenti</b>					
17	Ft. 20	-207965.47	2703.09	613.46	-619.54
	σ <sub>s,c</sub> 18	-217474.02	2618.41	593.40	-776.22
	σ <sub>cls,Max</sub> 18	-217474.02	2618.41	593.40	-52.89
	σ <sub>cls,Med</sub> 18	-217474.02	2618.41	593.40	-47.63
117	Ft. 20	-203615.47	-3556.72	935.67	-581.04

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-213124.02	-3584.43	980.87	-790.06
	σ <sub>cls,Max</sub> 18	-213124.02	-3584.43	980.87	-54.43
	σ <sub>cls,Med</sub> 18	-213124.02	-3584.43	980.87	-46.68
<b>Combinazioni Quasi Permanenti</b>					
17	Ft. 22	-206490.47	2717.07	590.49	-615.20
	σ <sub>s,c</sub> 21	-214629.16	2634.33	573.33	-766.50
	σ <sub>cls,Max</sub> 21	-214629.16	2634.33	573.33	-52.22
	σ <sub>cls,Med</sub> 21	-214629.16	2634.33	573.33	-47.01
117	Ft. 22	-202140.47	-3529.53	935.58	-576.64
	σ <sub>s,c</sub> 21	-210279.16	-3547.79	974.51	-779.91
	σ <sub>cls,Max</sub> 21	-210279.16	-3547.79	974.51	-53.74
	σ <sub>cls,Med</sub> 21	-210279.16	-3547.79	974.51	-46.06

Pilastro: **117/217** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
117	1	-251591.84	7310.14	-4095.38	0.33
217	1	-247106.84	-3736.65	3231.81	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3205.96	86297.23	2123.82	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	3205.96	64722.92	2123.82	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	3205.96	86297.23	2123.82	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
117	Ft. 17	-162653.69	5050.67	-2829.55	-361.77
	σ <sub>s,c</sub> 15	-176457.50	5098.94	-2921.00	-756.08
	σ <sub>cls,Max</sub> 15	-176457.50	5098.94	-2921.00	-54.65
	σ <sub>cls,Med</sub> 15	-176457.50	5098.94	-2921.00	-38.65
217	Ft. 17	-159203.69	-2694.18	2283.85	-406.34
	σ <sub>s,c</sub> 15	-173007.50	-2636.72	2322.52	-685.43
	σ <sub>cls,Max</sub> 15	-173007.50	-2636.72	2322.52	-48.82
	σ <sub>cls,Med</sub> 15	-173007.50	-2636.72	2322.52	-37.89
<b>Combinazioni Frequenti</b>					
117	Ft. 20	-160658.38	4799.56	-2758.13	-361.60
	σ <sub>s,c</sub> 18	-170250.77	4831.26	-2820.95	-728.13
	σ <sub>cls,Max</sub> 18	-170250.77	4831.26	-2820.95	-52.62
	σ <sub>cls,Med</sub> 18	-170250.77	4831.26	-2820.95	-37.29
217	Ft. 20	-157208.38	-2539.70	2215.25	-404.50
	σ <sub>s,c</sub> 18	-166800.77	-2500.26	2239.54	-660.17
	σ <sub>cls,Max</sub> 18	-166800.77	-2500.26	2239.54	-47.01
	σ <sub>cls,Med</sub> 18	-166800.77	-2500.26	2239.54	-36.54
<b>Combinazioni Quasi Permanenti</b>					
117	Ft. 22	-159993.28	4715.86	-2734.33	-361.54
	σ <sub>s,c</sub> 21	-168207.92	4742.24	-2787.03	-718.88
	σ <sub>cls,Max</sub> 21	-168207.92	4742.24	-2787.03	-51.95

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-168207.92	4742.24	-2787.03	-36.84
217	Ft. 22	-156543.28	-2488.21	2192.39	-403.88
	σ <sub>s,c</sub> 21	-164757.92	-2454.71	2211.48	-651.82
	σ <sub>cls,Max</sub> 21	-164757.92	-2454.71	2211.48	-46.42
	σ <sub>cls,Med</sub> 21	-164757.92	-2454.71	2211.48	-36.09

Pilastro: **217/317** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
217	1	-187906.27	9004.36	-4907.47	0.27
317	1	-183421.27	-24971.75	6552.80	0.33

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	11552.82	86297.23	3321.82	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	11552.82	64722.92	3321.82	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	11552.82	86297.23	3321.82	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
217	Ft. 17	-116774.39	6173.14	-3146.75	-182.59
	σ <sub>s,c</sub> 15	-130923.05	6307.18	-3432.61	-642.52
	σ <sub>cls,Max</sub> 15	-130923.05	6307.18	-3432.61	-47.87
	σ <sub>cls,Med</sub> 15	-130923.05	6307.18	-3432.61	-28.68
317	Ft. 17	-113324.39	-16754.97	3933.80	36.17
	σ <sub>s,c</sub> 15	-127473.05	-17471.82	4544.77	-853.34
	σ <sub>cls,Max</sub> 15	-127473.05	-17471.82	4544.77	-65.30
	σ <sub>cls,Med</sub> 15	-127473.05	-17471.82	4544.77	-28.93
<b>Combinazioni Frequenti</b>					
217	Ft. 20	-117172.96	5967.16	-3129.82	-187.80
	σ <sub>s,c</sub> 18	-127021.21	6042.82	-3336.49	-622.31
	σ <sub>cls,Max</sub> 18	-127021.21	6042.82	-3336.49	-46.37
	σ <sub>cls,Med</sub> 18	-127021.21	6042.82	-3336.49	-27.82
317	Ft. 20	-113722.96	-16501.91	4008.38	32.54
	σ <sub>s,c</sub> 18	-123571.21	-16948.14	4450.53	-829.01
	σ <sub>cls,Max</sub> 18	-123571.21	-16948.14	4450.53	-63.48
	σ <sub>cls,Med</sub> 18	-123571.21	-16948.14	4450.53	-28.08
<b>Combinazioni Quasi Permanenti</b>					
217	Ft. 22	-117305.81	5898.50	-3124.18	-189.54
	σ <sub>s,c</sub> 21	-125744.27	5956.68	-3302.93	-615.64
	σ <sub>cls,Max</sub> 21	-125744.27	5956.68	-3302.93	-45.87
	σ <sub>cls,Med</sub> 21	-125744.27	5956.68	-3302.93	-27.54
317	Ft. 22	-113855.81	-16417.55	4033.24	31.34
	σ <sub>s,c</sub> 21	-122294.27	-16781.11	4416.10	-821.00
	σ <sub>cls,Max</sub> 21	-122294.27	-16781.11	4416.10	-62.88
	σ <sub>cls,Med</sub> 21	-122294.27	-16781.11	4416.10	-27.79

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **18/118** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
18	1	-155324.53	-718.77	-6522.06	0.20
118	1	-149669.53	-141.15	160.58	0.17

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	250.23	61956.98	1536.24	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	250.23	46467.73	1536.24	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	250.23	61956.98	1536.24	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
18	Ft. 16	-102158.61	-541.65	-4757.54	-240.59
	σ <sub>s,c</sub> 15	-106909.52	-540.60	-4837.03	-447.57
	σ <sub>cls,Max</sub> 15	-106909.52	-540.60	-4837.03	-31.31
	σ <sub>cls,Med</sub> 15	-106909.52	-540.60	-4837.03	-23.42
118	Ft. 16	-97808.61	-58.95	197.89	-316.24
	σ <sub>s,c</sub> 15	-102559.52	-74.23	124.70	-341.36
	σ <sub>cls,Max</sub> 15	-102559.52	-74.23	124.70	-22.86
	σ <sub>cls,Med</sub> 15	-102559.52	-74.23	124.70	-22.46
<b>Combinazioni Frequenti</b>					
18	Ft. 19	-98609.85	-540.71	-4805.46	-228.18
	σ <sub>s,c</sub> 18	-100125.74	-540.31	-4834.52	-425.23
	σ <sub>cls,Max</sub> 18	-100125.74	-540.31	-4834.52	-29.82
	σ <sub>cls,Med</sub> 18	-100125.74	-540.31	-4834.52	-21.93
118	Ft. 19	-94259.85	-44.34	187.77	-305.21
	σ <sub>s,c</sub> 20	-95765.70	-62.42	158.20	-319.21
	σ <sub>cls,Max</sub> 20	-95765.70	-62.42	158.20	-21.38
	σ <sub>cls,Med</sub> 18	-95775.74	-49.11	162.19	-20.98
<b>Combinazioni Quasi Permanenti</b>					
18	Ft. 21	-98203.28	-540.44	-4820.85	-226.60
	σ <sub>s,c</sub> 21	-98203.28	-540.44	-4820.85	-418.70
	σ <sub>cls,Max</sub> 21	-98203.28	-540.44	-4820.85	-29.39
	σ <sub>cls,Med</sub> 21	-98203.28	-540.44	-4820.85	-21.51
118	Ft. 22	-93844.80	-53.37	177.63	-303.73
	σ <sub>s,c</sub> 22	-93844.80	-53.37	177.63	-312.93
	σ <sub>cls,Max</sub> 22	-93844.80	-53.37	177.63	-20.95
	σ <sub>cls,Med</sub> 21	-93853.28	-42.37	180.63	-20.56

Pilastro: **118/218** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
118	1	-118356.78	-134.30	2492.58	0.14
218	1	-113871.78	-170.29	2150.21	0.14

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	13.00	61956.98	124.66	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	13.00	46467.73	124.66	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	13.00	61956.98	124.66	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
118	Ft. 16	-78539.88	-82.14	1631.31	-228.75
	σ <sub>s,c</sub> 15	-81367.48	-86.27	1703.20	-297.94
	σ <sub>cls,Max</sub> 15	-81367.48	-86.27	1703.20	-20.26
	σ <sub>cls,Med</sub> 15	-81367.48	-86.27	1703.20	-17.82
218	Ft. 16	-75089.88	-109.35	1615.77	-216.80
	σ <sub>s,c</sub> 15	-77917.48	-107.57	1484.28	-283.70
	σ <sub>cls,Max</sub> 15	-77917.48	-107.57	1484.28	-19.30
	σ <sub>cls,Med</sub> 15	-77917.48	-107.57	1484.28	-17.07
<b>Combinazioni Frequenti</b>					
118	Ft. 19	-75630.99	-76.47	1574.29	-220.30
	σ <sub>s,c</sub> 18	-76505.72	-77.70	1597.11	-279.96
	σ <sub>cls,Max</sub> 18	-76505.72	-77.70	1597.11	-19.04
	σ <sub>cls,Med</sub> 18	-76505.72	-77.70	1597.11	-16.76
218	Ft. 19	-72180.99	-98.42	1534.02	-208.93
	σ <sub>s,c</sub> 18	-73055.72	-97.43	1485.86	-267.43
	σ <sub>cls,Max</sub> 18	-73055.72	-97.43	1485.86	-18.20
	σ <sub>cls,Med</sub> 18	-73055.72	-97.43	1485.86	-16.00
<b>Combinazioni Quasi Permanenti</b>					
118	Ft. 22	-75218.22	-77.88	1562.67	-219.09
	σ <sub>s,c</sub> 21	-75224.16	-75.58	1567.45	-275.19
	σ <sub>cls,Max</sub> 22	-75218.22	-77.88	1562.67	-18.71
	σ <sub>cls,Med</sub> 21	-75224.16	-75.58	1567.45	-16.48
218	Ft. 21	-71774.16	-96.04	1508.04	-208.09
	σ <sub>s,c</sub> 21	-71774.16	-96.04	1508.04	-263.54
	σ <sub>cls,Max</sub> 21	-71774.16	-96.04	1508.04	-17.95
	σ <sub>cls,Med</sub> 21	-71774.16	-96.04	1508.04	-15.72

Pilastro: **218/318** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
218	1	-82522.39	-267.47	4672.04	0.11
318	1	-78037.39	-1064.69	4628.93	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	244.72	61956.98	95.51	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	244.72	46467.73	95.51	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	244.72	61956.98	95.51	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
218	Ft. 16	-55796.63	-180.13	3180.64	-125.56



**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-56700.26	-178.95	3193.08	-244.21
	σ <sub>cls,Max</sub> 15	-56700.26	-178.95	3193.08	-17.05
	σ <sub>cls,Med</sub> 15	-56700.26	-178.95	3193.08	-12.42
318	Ft. 16	-52346.63	-748.36	3357.90	-93.25
	σ <sub>s,c</sub> 16	-52346.63	-748.36	3357.90	-250.72
	σ <sub>cls,Max</sub> 16	-52346.63	-748.36	3357.90	-18.17
	σ <sub>cls,Med</sub> 15	-53250.26	-715.82	3121.93	-11.66
<b>Combinazioni Frequenti</b>					
218	Ft. 19	-53528.41	-169.80	3046.60	-120.63
	σ <sub>s,c</sub> 18	-53761.79	-169.04	3046.26	-231.84
	σ <sub>cls,Max</sub> 18	-53761.79	-169.04	3046.26	-16.19
	σ <sub>cls,Med</sub> 18	-53761.79	-169.04	3046.26	-11.78
318	Ft. 19	-50078.41	-703.28	3147.91	-90.67
	σ <sub>s,c</sub> 19	-50078.41	-703.28	3147.91	-238.40
	σ <sub>cls,Max</sub> 19	-50078.41	-703.28	3147.91	-17.26
	σ <sub>cls,Med</sub> 18	-50311.79	-690.50	3059.30	-11.02
<b>Combinazioni Quasi Permanenti</b>					
218	Ft. 21	-53121.44	-167.58	3019.72	-119.81
	σ <sub>s,c</sub> 21	-53121.44	-167.58	3019.72	-229.26
	σ <sub>cls,Max</sub> 21	-53121.44	-167.58	3019.72	-16.01
	σ <sub>cls,Med</sub> 21	-53121.44	-167.58	3019.72	-11.64
318	Ft. 22	-49667.87	-692.64	3089.57	-90.61
	σ <sub>s,c</sub> 22	-49667.87	-692.64	3089.57	-235.76
	σ <sub>cls,Max</sub> 22	-49667.87	-692.64	3089.57	-17.06
	σ <sub>cls,Med</sub> 21	-49671.44	-691.71	3088.19	-10.88

Pilastro: **318/11544** / L 4.05[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 205.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
318	2	-47927.55	-2213.25	7690.58	0.10
11544	2	-42337.55	4726.50	-4065.89	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1613.90	61956.98	2734.06	86297.23	ø 10 4br.x2br./15.0
1.13	3.18	1613.90	46467.73	2734.06	64722.92	ø 10 4br.x2br./20.0
3.18	4.18	1613.90	61956.98	2734.06	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
318	Ft. 16	-32857.50	-1492.14	5194.98	33.03
	σ <sub>s,c</sub> 16	-32857.50	-1492.14	5194.98	-245.15
	σ <sub>cls,Max</sub> 16	-32857.50	-1492.14	5194.98	-19.11
	σ <sub>cls,Med</sub> 16	-32857.50	-1492.14	5194.98	-7.90
11544	Ft. 16	-28557.50	3188.28	-2746.73	113.12
	σ <sub>s,c</sub> 16	-28557.50	3188.28	-2746.73	-264.34
	σ <sub>cls,Max</sub> 16	-28557.50	3188.28	-2746.73	-22.88
	σ <sub>cls,Med</sub> 16	-28557.50	3188.28	-2746.73	-9.29

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
318	Ft. 19	-31241.57	-1406.51	4918.11	30.33
	$\sigma_{s,c}19$	-31241.57	-1406.51	4918.11	-232.18
	$\sigma_{cls,Max}19$	-31241.57	-1406.51	4918.11	-18.09
	$\sigma_{cls,Med}19$	-31241.57	-1406.51	4918.11	-7.50
11544	Ft. 19	-26941.57	3007.22	-2594.73	106.75
	$\sigma_{s,c}19$	-26941.57	3007.22	-2594.73	-249.43
	$\sigma_{cls,Max}19$	-26941.57	3007.22	-2594.73	-21.58
	$\sigma_{cls,Med}19$	-26941.57	3007.22	-2594.73	-8.76
<b>Combinazioni Quasi Permanenti</b>					
318	Ft. 21	-30837.46	-1384.83	4853.83	29.76
	$\sigma_{s,c}21$	-30837.46	-1384.83	4853.83	-229.02
	$\sigma_{cls,Max}21$	-30837.46	-1384.83	4853.83	-17.84
	$\sigma_{cls,Med}21$	-30837.46	-1384.83	4853.83	-7.40
11544	Ft. 21	-26537.46	2961.70	-2556.87	105.14
	$\sigma_{s,c}21$	-26537.46	2961.70	-2556.87	-245.69
	$\sigma_{cls,Max}21$	-26537.46	2961.70	-2556.87	-21.26
	$\sigma_{cls,Med}22$	-26535.96	2961.98	-2554.68	-8.63

Pilastro: **19/2767** / L 2.46[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:**  $\varnothing$  10 4br.x2br./15.0 x 100.0/ $\varnothing$  10 4br.x2br./20.0 x 46.0/ $\varnothing$  10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
19	1	-96602.53	-2831.20	11385.35	0.16
2767	1	-93079.53	-502.64	6082.99	0.13

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	883.99	61956.98	1956.59	86297.23	$\varnothing$ 10 4br.x2br./15.0
1.13	1.58	883.99	46467.73	1956.59	64722.92	$\varnothing$ 10 4br.x2br./20.0
1.58	2.58	883.99	61956.98	1956.59	86297.23	$\varnothing$ 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
19	Ft. 16	-62941.54	-1796.55	8031.33	-17.70
	$\sigma_{s,c}15$	-66788.22	-1929.31	8189.80	-415.01
	$\sigma_{cls,Max}15$	-66788.22	-1929.31	8189.80	-31.33
	$\sigma_{cls,Med}15$	-66788.22	-1929.31	8189.80	-14.75
2767	Ft. 16	-60231.54	-388.82	4286.65	-115.41
	$\sigma_{s,c}15$	-64078.22	-379.86	4355.26	-293.85
	$\sigma_{cls,Max}15$	-64078.22	-379.86	4355.26	-20.80
	$\sigma_{cls,Med}15$	-64078.22	-379.86	4355.26	-14.04
<b>Combinazioni Frequenti</b>					
19	Ft. 19	-61038.16	-1728.47	7957.31	-14.71
	$\sigma_{s,c}18$	-62298.97	-1771.90	8009.41	-392.43
	$\sigma_{cls,Max}18$	-62298.97	-1771.90	8009.41	-29.62
	$\sigma_{cls,Med}18$	-62298.97	-1771.90	8009.41	-13.81
2767	Ft. 19	-58328.16	-394.91	4231.75	-109.86
	$\sigma_{s,c}18$	-59588.97	-392.03	4253.52	-277.83
	$\sigma_{cls,Max}18$	-59588.97	-392.03	4253.52	-19.72
	$\sigma_{cls,Med}18$	-59588.97	-392.03	4253.52	-13.05
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
19	Ft. 21	-60909.65	-1723.54	7952.93	-14.51
	σ <sub>s,c</sub> 21	-60909.65	-1723.54	7952.93	-385.46
	σ <sub>cls,Max</sub> 21	-60909.65	-1723.54	7952.93	-29.09
	σ <sub>cls,Med</sub> 21	-60909.65	-1723.54	7952.93	-13.52
2767	Ft. 21	-58199.65	-395.55	4225.13	-109.52
	σ <sub>s,c</sub> 21	-58199.65	-395.55	4225.13	-272.91
	σ <sub>cls,Max</sub> 21	-58199.65	-395.55	4225.13	-19.40
	σ <sub>cls,Med</sub> 21	-58199.65	-395.55	4225.13	-12.75

Pilastro: **2767/119** / L 1.39[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 139.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2767	1	-128256.59	1781.79	3818.82	0.17
119	1	-126124.59	738.28	1000.33	0.15

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.52	679.70	61956.98	1718.59	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2767	Ft. 16	-82985.16	1057.62	2710.73	-194.66
	σ <sub>s,c</sub> 15	-88305.45	1180.68	2728.46	-372.32
	σ <sub>cls,Max</sub> 15	-88305.45	1180.68	2728.46	-26.65
	σ <sub>cls,Med</sub> 15	-88305.45	1180.68	2728.46	-19.34
119	Ft. 16	-81345.16	488.47	645.13	-241.17
	σ <sub>s,c</sub> 15	-86665.45	517.47	649.71	-311.83
	σ <sub>cls,Max</sub> 15	-86665.45	517.47	649.71	-21.49
	σ <sub>cls,Med</sub> 15	-86665.45	517.47	649.71	-18.98
<b>Combinazioni Frequenti</b>					
2767	Ft. 19	-80363.52	996.50	2669.01	-188.68
	σ <sub>s,c</sub> 18	-82107.72	1036.83	2673.68	-346.48
	σ <sub>cls,Max</sub> 20	-82100.27	1069.06	2609.10	-24.78
	σ <sub>cls,Med</sub> 18	-82107.72	1036.83	2673.68	-17.98
119	Ft. 19	-78723.52	479.18	595.81	-233.66
	σ <sub>s,c</sub> 18	-80467.72	488.86	595.69	-289.67
	σ <sub>cls,Max</sub> 18	-80467.72	488.86	595.69	-19.98
	σ <sub>cls,Med</sub> 18	-80467.72	488.86	595.69	-17.63
<b>Combinazioni Quasi Permanenti</b>					
2767	Ft. 21	-80188.04	992.34	2661.60	-188.36
	σ <sub>s,c</sub> 21	-80188.04	992.34	2661.60	-338.56
	σ <sub>cls,Max</sub> 22	-80181.83	1018.84	2607.69	-24.19
	σ <sub>cls,Med</sub> 21	-80188.04	992.34	2661.60	-17.56
119	Ft. 22	-78541.83	474.62	595.82	-233.21
	σ <sub>s,c</sub> 21	-78548.04	479.26	585.93	-282.90
	σ <sub>cls,Max</sub> 21	-78548.04	479.26	585.93	-19.51
	σ <sub>cls,Med</sub> 21	-78548.04	479.26	585.93	-17.20

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **119/219** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
119	1	-94865.25	391.77	-1183.91	0.11
219	1	-90380.25	170.65	-567.18	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	67.34	61956.98	202.17	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	67.34	46467.73	202.17	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	67.34	61956.98	202.17	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
119	Ft. 16	-62107.30	257.27	-694.26	-184.51
	σ <sub>s,c</sub> 15	-65509.48	272.16	-827.95	-237.43
	σ <sub>cls,Max</sub> 15	-65509.48	272.16	-827.95	-16.29
	σ <sub>cls,Med</sub> 15	-65509.48	272.16	-827.95	-14.35
219	Ft. 16	-58657.30	131.76	-498.73	-180.37
	σ <sub>s,c</sub> 15	-62059.47	120.24	-420.61	-214.60
	σ <sub>cls,Max</sub> 15	-62059.47	120.24	-420.61	-14.52
	σ <sub>cls,Med</sub> 15	-62059.47	120.24	-420.61	-13.59
<b>Combinazioni Frequenti</b>					
119	Ft. 19	-60124.80	250.56	-699.77	-178.12
	σ <sub>s,c</sub> 18	-61229.59	255.47	-746.06	-221.50
	σ <sub>cls,Max</sub> 18	-61229.59	255.47	-746.06	-15.19
	σ <sub>cls,Med</sub> 18	-61229.59	255.47	-746.06	-13.41
219	Ft. 19	-56674.80	127.55	-485.11	-174.21
	σ <sub>s,c</sub> 18	-57779.59	123.43	-457.71	-201.25
	σ <sub>cls,Max</sub> 18	-57779.59	123.43	-457.71	-13.64
	σ <sub>cls,Med</sub> 18	-57779.59	123.43	-457.71	-12.66
<b>Combinazioni Quasi Permanenti</b>					
119	Ft. 21	-59949.25	250.20	-710.13	-177.39
	σ <sub>s,c</sub> 21	-59949.25	250.20	-710.13	-216.54
	σ <sub>cls,Max</sub> 21	-59949.25	250.20	-710.13	-14.85
	σ <sub>cls,Med</sub> 21	-59949.25	250.20	-710.13	-13.13
219	Ft. 21	-56499.25	125.88	-476.91	-173.82
	σ <sub>s,c</sub> 21	-56499.25	125.88	-476.91	-197.43
	σ <sub>cls,Max</sub> 21	-56499.25	125.88	-476.91	-13.39
	σ <sub>cls,Med</sub> 21	-56499.25	125.88	-476.91	-12.38

Pilastro: **219/319** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
219	1	-59104.56	220.81	-2845.20	0.08
319	2	-52395.95	-1943.74	-6198.18	0.09

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	634.21	61956.98	999.56	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	634.21	46467.73	999.56	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	634.21	61956.98	999.56	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
219	Ft. 16	-39409.95	165.15	-1900.61	-93.14
	σ <sub>s,c</sub> 15	-40892.35	149.50	-1964.28	-171.24
	σ <sub>cls,Max</sub> 15	-40892.35	149.50	-1964.28	-11.94
	σ <sub>cls,Med</sub> 15	-40892.35	149.50	-1964.28	-8.96
319	Ft. 16	-35959.95	-1307.38	-4176.97	-7.60
	σ <sub>s,c</sub> 16	-35959.95	-1307.38	-4176.97	-228.44
	σ <sub>cls,Max</sub> 16	-35959.95	-1307.38	-4176.97	-17.47
	σ <sub>cls,Med</sub> 15	-37442.35	-1241.16	-3881.73	-8.23
<b>Combinazioni Frequenti</b>					
219	Ft. 19	-38066.63	155.12	-1842.40	-90.00
	σ <sub>s,c</sub> 18	-38531.48	149.38	-1862.34	-161.81
	σ <sub>cls,Max</sub> 18	-38531.48	149.38	-1862.34	-11.29
	σ <sub>cls,Med</sub> 18	-38531.48	149.38	-1862.34	-8.44
319	Ft. 19	-34616.63	-1227.85	-3915.93	-10.22
	σ <sub>s,c</sub> 19	-34616.63	-1227.85	-3915.93	-217.09
	σ <sub>cls,Max</sub> 19	-34616.63	-1227.85	-3915.93	-16.58
	σ <sub>cls,Med</sub> 18	-35081.48	-1202.27	-3805.12	-7.74
<b>Combinazioni Quasi Permanenti</b>					
219	Ft. 21	-37890.94	151.96	-1834.74	-89.65
	σ <sub>s,c</sub> 21	-37890.94	151.96	-1834.74	-159.34
	σ <sub>cls,Max</sub> 21	-37890.94	151.96	-1834.74	-11.12
	σ <sub>cls,Med</sub> 21	-37890.94	151.96	-1834.74	-8.30
319	Ft. 22	-34438.32	-1208.00	-3840.92	-11.58
	σ <sub>s,c</sub> 22	-34438.32	-1208.00	-3840.92	-214.59
	σ <sub>cls,Max</sub> 22	-34438.32	-1208.00	-3840.92	-16.37
	σ <sub>cls,Med</sub> 21	-34440.94	-1206.83	-3841.56	-7.63

Pilastro: **319/11545** / L 4.05[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 205.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
319	2	-24284.23	-2954.66	-8527.49	0.11
11545	2	-18694.23	-14444.13	-1229.03	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2671.97	61956.98	1697.31	86297.23	Ø 10 4br.x2br./15.0
1.13	3.18	2671.97	46467.73	1697.31	64722.92	Ø 10 4br.x2br./20.0
3.18	4.18	2671.97	61956.98	1697.31	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
319	Ft. 16	-16904.00	-1991.80	-5758.49	259.92

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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 16	-16904.00	-1991.80	-5758.49	-274.31
	σ <sub>cls,Max</sub> 16	-16904.00	-1991.80	-5758.49	-23.91
	σ <sub>cls,Med</sub> 16	-16904.00	-1991.80	-5758.49	-8.00
11545	Ft. 16	-12604.00	-9744.57	-827.62	1630.47
	σ <sub>s,c</sub> 16	-12604.00	-9744.57	-827.62	-403.90
	σ <sub>cls,Max</sub> 16	-12604.00	-9744.57	-827.62	-62.61
	σ <sub>cls,Med</sub> 16	-12604.00	-9744.57	-827.62	-30.03
<b>Combinazioni Frequenti</b>					
319	Ft. 19	-16188.44	-1875.00	-5443.76	240.70
	σ <sub>s,c</sub> 19	-16188.44	-1875.00	-5443.76	-258.57
	σ <sub>cls,Max</sub> 19	-16188.44	-1875.00	-5443.76	-22.49
	σ <sub>cls,Med</sub> 19	-16188.44	-1875.00	-5443.76	-7.53
11545	Ft. 19	-11888.44	-9195.32	-779.77	1538.66
	σ <sub>s,c</sub> 19	-11888.44	-9195.32	-779.77	-381.06
	σ <sub>cls,Max</sub> 19	-11888.44	-9195.32	-779.77	-59.07
	σ <sub>cls,Med</sub> 19	-11888.44	-9195.32	-779.77	-28.34
<b>Combinazioni Quasi Permanenti</b>					
319	Ft. 21	-16009.60	-1844.38	-5367.63	235.89
	σ <sub>s,c</sub> 21	-16009.60	-1844.38	-5367.63	-254.63
	σ <sub>cls,Max</sub> 21	-16009.60	-1844.38	-5367.63	-22.13
	σ <sub>cls,Med</sub> 21	-16009.60	-1844.38	-5367.63	-7.42
11545	Ft. 21	-11709.60	-9058.33	-767.81	1515.77
	σ <sub>s,c</sub> 21	-11709.60	-9058.33	-767.81	-375.36
	σ <sub>cls,Max</sub> 21	-11709.60	-9058.33	-767.81	-58.19
	σ <sub>cls,Med</sub> 21	-11709.60	-9058.33	-767.81	-27.91

Pilastro: **20/120** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
20	1	-155298.28	8778.86	-522.60	0.21
120	1	-149643.28	901.75	193.33	0.17

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1812.60	86297.23	166.10	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	1812.60	64722.92	166.10	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	1812.60	86297.23	166.10	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
20	Ft. 16	-102128.80	6382.31	-314.37	-221.15
	σ <sub>s,c</sub> 15	-106882.80	6490.10	-346.80	-468.36
	σ <sub>cls,Max</sub> 15	-106882.80	6490.10	-346.80	-32.77
	σ <sub>cls,Med</sub> 15	-106882.80	6490.10	-346.80	-23.41
120	Ft. 16	-97778.80	490.81	103.28	-309.94
	σ <sub>s,c</sub> 15	-102532.80	603.75	126.11	-350.76
	σ <sub>cls,Max</sub> 15	-102532.80	603.75	126.11	-23.64
	σ <sub>cls,Med</sub> 15	-102532.80	603.75	126.11	-22.46



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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
20	Ft. 19	-98573.23	6424.90	-293.03	-209.45
	$\sigma_{s,c}18$	-100089.92	6463.54	-303.48	-444.23
	$\sigma_{cls,Max}18$	-100089.92	6463.54	-303.48	-31.11
	$\sigma_{cls,Med}20$	-100093.48	6193.15	-304.15	-21.92
120	Ft. 19	-94223.23	482.86	96.76	-298.60
	$\sigma_{s,c}20$	-95743.48	525.32	105.76	-326.52
	$\sigma_{cls,Max}20$	-95743.48	525.32	105.76	-21.98
	$\sigma_{cls,Med}20$	-95743.48	525.32	105.76	-20.97
<b>Combinazioni Quasi Permanenti</b>					
20	Ft. 21	-98165.45	6441.15	-290.85	-207.91
	$\sigma_{s,c}21$	-98165.45	6441.15	-290.85	-437.14
	$\sigma_{cls,Max}21$	-98165.45	6441.15	-290.85	-30.62
	$\sigma_{cls,Med}22$	-98168.75	6215.99	-289.93	-21.50
120	Ft. 22	-93818.75	492.13	97.51	-297.09
	$\sigma_{s,c}22$	-93818.75	492.13	97.51	-319.40
	$\sigma_{cls,Max}22$	-93818.75	492.13	97.51	-21.49
	$\sigma_{cls,Med}22$	-93818.75	492.13	97.51	-20.55

Pilastro: **120/220** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20$  Af=37.70 [cm<sup>2</sup>] <  $1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H$  >

**Staffe:**  $\varnothing 10$  2br.x4br./15.0 x 100.0/ $\varnothing 10$  2br.x4br./20.0 x 120.0/ $\varnothing 10$  2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
120	1	-118289.37	-1474.80	-97.51	0.14
220	1	-113804.37	-1807.29	-61.28	0.14

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	176.27	86297.23	10.50	61956.98	$\varnothing 10$ 2br.x4br./15.0
1.13	2.32	176.27	64722.92	10.50	46467.73	$\varnothing 10$ 2br.x4br./20.0
2.32	3.32	176.27	86297.23	10.50	61956.98	$\varnothing 10$ 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
120	Ft. 16	-78484.70	-966.03	-73.41	-239.73
	$\sigma_{s,c}15$	-81312.52	-1002.85	-69.97	-285.78
	$\sigma_{cls,Max}15$	-81312.52	-1002.85	-69.97	-19.31
	$\sigma_{cls,Med}15$	-81312.52	-1002.85	-69.97	-17.81
220	Ft. 16	-75034.70	-1397.77	-53.61	-221.96
	$\sigma_{s,c}15$	-77862.52	-1250.83	-40.34	-277.56
	$\sigma_{cls,Max}15$	-77862.52	-1250.83	-40.34	-18.77
	$\sigma_{cls,Med}15$	-77862.52	-1250.83	-40.34	-17.05
<b>Combinazioni Frequenti</b>					
120	Ft. 19	-75570.43	-924.52	-72.43	-230.86
	$\sigma_{s,c}18$	-76445.05	-935.78	-71.21	-268.73
	$\sigma_{cls,Max}18$	-76445.05	-935.78	-71.21	-18.16
	$\sigma_{cls,Med}20$	-76448.77	-934.61	-69.55	-16.74
220	Ft. 19	-72120.43	-1322.42	-48.76	-213.77
	$\sigma_{s,c}18$	-72995.05	-1269.16	-44.02	-261.99
	$\sigma_{cls,Max}18$	-72995.05	-1269.16	-44.02	-17.74
	$\sigma_{cls,Med}20$	-72998.77	-1251.48	-44.87	-15.99
<b>Combinazioni Quasi Permanenti</b>					

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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
120	Ft. 21	-75162.50	-918.47	-71.99	-229.63
	σ <sub>s,c</sub> 21	-75162.50	-918.47	-71.99	-264.26
	σ <sub>cls,Max</sub> 21	-75162.50	-918.47	-71.99	-17.86
	σ <sub>cls,Med</sub> 22	-75165.84	-917.64	-70.78	-16.46
220	Ft. 21	-71712.50	-1296.70	-46.84	-212.91
	σ <sub>s,c</sub> 21	-71712.50	-1296.70	-46.84	-258.31
	σ <sub>cls,Max</sub> 21	-71712.50	-1296.70	-46.84	-17.50
	σ <sub>cls,Med</sub> 22	-71715.84	-1281.87	-47.74	-15.71

Pilastro: **220/320** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
220	1	-82507.01	-4260.50	-184.16	0.11
320	1	-78022.01	-4718.43	-1086.37	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	235.12	86297.23	273.22	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	235.12	64722.92	273.22	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	235.12	86297.23	273.22	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
220	Ft. 16	-55779.97	-2911.98	-131.41	-131.45
	σ <sub>s,c</sub> 15	-56683.25	-2909.59	-124.63	-237.79
	σ <sub>cls,Max</sub> 15	-56683.25	-2909.59	-124.63	-16.51
	σ <sub>cls,Med</sub> 15	-56683.25	-2909.59	-124.63	-12.42
320	Ft. 16	-52329.97	-3423.19	-765.59	-91.58
	σ <sub>s,c</sub> 16	-52329.97	-3423.19	-765.59	-252.28
	σ <sub>cls,Max</sub> 16	-52329.97	-3423.19	-765.59	-18.30
	σ <sub>cls,Med</sub> 15	-53233.25	-3185.30	-731.89	-11.66
<b>Combinazioni Frequenti</b>					
220	Ft. 19	-53506.99	-2783.55	-124.17	-126.32
	σ <sub>s,c</sub> 18	-53740.09	-2778.30	-121.59	-225.88
	σ <sub>cls,Max</sub> 18	-53740.09	-2778.30	-121.59	-15.69
	σ <sub>cls,Med</sub> 20	-53742.79	-2762.92	-121.14	-11.77
320	Ft. 19	-50056.99	-3212.86	-720.60	-88.99
	σ <sub>s,c</sub> 19	-50056.99	-3212.86	-720.60	-239.94
	σ <sub>cls,Max</sub> 19	-50056.99	-3212.86	-720.60	-17.39
	σ <sub>cls,Med</sub> 20	-50292.79	-3119.15	-708.17	-11.02
<b>Combinazioni Quasi Permanenti</b>					
220	Ft. 21	-53099.02	-2756.82	-122.21	-125.48
	σ <sub>s,c</sub> 21	-53099.02	-2756.82	-122.21	-223.44
	σ <sub>cls,Max</sub> 21	-53099.02	-2756.82	-122.21	-15.52
	σ <sub>cls,Med</sub> 22	-53101.41	-2744.02	-121.88	-11.63
320	Ft. 21	-49649.02	-3152.94	-708.97	-89.00
	σ <sub>s,c</sub> 21	-49649.02	-3152.94	-708.97	-237.25
	σ <sub>cls,Max</sub> 21	-49649.02	-3152.94	-708.97	-17.19

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-49651.41	-3149.10	-709.65	-10.88

Pilastro: **320/11569** / L 4.05[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 205.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
320	2	-47965.20	-7695.34	-2212.28	0.10
11569	2	-42375.20	3998.20	4800.87	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2719.43	86297.23	1630.96	61956.98	ø 10 2br.x4br./15.0
1.13	3.18	2719.43	64722.92	1630.96	46467.73	ø 10 2br.x4br./20.0
3.18	4.18	2719.43	86297.23	1630.96	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
320	Ft. 16	-32879.70	-5197.17	-1491.56	32.95
	σ <sub>s,c</sub> 16	-32879.70	-5197.17	-1491.56	-245.23
	σ <sub>cls,Max</sub> 16	-32879.70	-5197.17	-1491.56	-19.12
	σ <sub>cls,Med</sub> 16	-32879.70	-5197.17	-1491.56	-7.91
11569	Ft. 16	-28579.70	2697.42	3238.09	116.72
	σ <sub>s,c</sub> 16	-28579.70	2697.42	3238.09	-265.86
	σ <sub>cls,Max</sub> 16	-28579.70	2697.42	3238.09	-23.08
	σ <sub>cls,Med</sub> 16	-28579.70	2697.42	3238.09	-9.41
<b>Combinazioni Frequenti</b>					
320	Ft. 19	-31259.90	-4919.50	-1405.98	30.25
	σ <sub>s,c</sub> 19	-31259.90	-4919.50	-1405.98	-232.23
	σ <sub>cls,Max</sub> 19	-31259.90	-4919.50	-1405.98	-18.09
	σ <sub>cls,Med</sub> 19	-31259.90	-4919.50	-1405.98	-7.50
11569	Ft. 19	-26959.90	2544.58	3054.15	110.06
	σ <sub>s,c</sub> 19	-26959.90	2544.58	3054.15	-250.77
	σ <sub>cls,Max</sub> 19	-26959.90	2544.58	3054.15	-21.77
	σ <sub>cls,Med</sub> 19	-26959.90	2544.58	3054.15	-8.87
<b>Combinazioni Quasi Permanenti</b>					
320	Ft. 21	-30854.91	-4854.91	-1384.23	29.67
	σ <sub>s,c</sub> 21	-30854.91	-4854.91	-1384.23	-229.06
	σ <sub>cls,Max</sub> 21	-30854.91	-4854.91	-1384.23	-17.84
	σ <sub>cls,Med</sub> 21	-30854.91	-4854.91	-1384.23	-7.40
11569	Ft. 21	-26554.91	2506.48	3007.86	108.37
	σ <sub>s,c</sub> 21	-26554.91	2506.48	3007.86	-246.98
	σ <sub>cls,Max</sub> 21	-26554.91	2506.48	3007.86	-21.44
	σ <sub>cls,Med</sub> 21	-26554.91	2506.48	3007.86	-8.74

Pilastro: **21/121** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
21	1	-414888.25	10555.86	949.55	0.51

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
121	1	-409233.25	1166.70	-4651.81	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3703.08	86297.23	1353.18	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	3703.08	64722.92	1353.18	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	3703.08	86297.23	1353.18	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
21	Ft. 16	-279701.91	7332.98	506.09	-782.92
	σ <sub>s,c</sub> 15	-290335.44	7444.05	626.71	-1095.60
	σ <sub>cls,Max</sub> 15	-290335.44	7444.05	626.71	-75.08
	σ <sub>cls,Med</sub> 15	-290335.44	7444.05	626.71	-63.59
121	Ft. 17	-279594.84	1102.76	-3318.92	-794.99
	σ <sub>s,c</sub> 15	-285985.44	817.11	-3245.27	-1056.22
	σ <sub>cls,Max</sub> 15	-285985.44	817.11	-3245.27	-74.27
	σ <sub>cls,Med</sub> 15	-285985.44	817.11	-3245.27	-62.64
<b>Combinazioni Frequenti</b>					
21	Ft. 19	-276153.72	7296.28	468.43	-773.06
	σ <sub>s,c</sub> 18	-279698.09	7333.31	508.73	-1055.09
	σ <sub>cls,Max</sub> 18	-279698.09	7333.31	508.73	-72.22
	σ <sub>cls,Med</sub> 18	-279698.09	7333.31	508.73	-61.26
121	Ft. 20	-274497.63	968.75	-3118.24	-786.82
	σ <sub>s,c</sub> 20	-274497.63	968.75	-3118.24	-1016.91
	σ <sub>cls,Max</sub> 20	-274497.63	968.75	-3118.24	-71.53
	σ <sub>cls,Med</sub> 18	-275348.09	709.46	-3030.26	-60.31
<b>Combinazioni Quasi Permanenti</b>					
21	Ft. 21	-276152.97	7296.35	468.96	-773.04
	σ <sub>s,c</sub> 21	-276152.97	7296.35	468.96	-1041.57
	σ <sub>cls,Max</sub> 21	-276152.97	7296.35	468.96	-71.27
	σ <sub>cls,Med</sub> 22	-277148.56	6858.82	572.13	-60.71
121	Ft. 22	-272798.56	924.08	-3051.34	-784.10
	σ <sub>s,c</sub> 22	-272798.56	924.08	-3051.34	-1008.47
	σ <sub>cls,Max</sub> 22	-272798.56	924.08	-3051.34	-70.88
	σ <sub>cls,Med</sub> 22	-272798.56	924.08	-3051.34	-59.75

Pilastro: **121/221** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
121	1	-340325.84	-8052.96	7240.59	0.45
221	1	-335840.84	3868.59	-4645.09	0.43

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3455.52	86297.23	3445.13	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	3455.52	64722.92	3445.13	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	3455.52	86297.23	3445.13	61956.98	ø 10 2br.x4br./15.0

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
121	Ft. 17	-231069.52	-5561.59	5030.11	-508.19
	σ <sub>s,c</sub> 15	-237147.05	-5694.16	5087.38	-1034.13
	σ <sub>cls,Max</sub> 15	-237147.05	-5694.16	5087.38	-75.76
	σ <sub>cls,Med</sub> 15	-237147.05	-5694.16	5087.38	-51.94
221	Ft. 16	-225607.25	2460.26	-3077.19	-603.10
	σ <sub>s,c</sub> 15	-233697.05	2706.02	-3264.34	-915.92
	σ <sub>cls,Max</sub> 15	-233697.05	2706.02	-3264.34	-65.27
	σ <sub>cls,Med</sub> 15	-233697.05	2706.02	-3264.34	-51.19
<b>Combinazioni Frequenti</b>					
121	Ft. 19	-226358.81	-5308.36	4711.81	-506.98
	σ <sub>s,c</sub> 18	-229055.36	-5404.18	4806.52	-993.87
	σ <sub>cls,Max</sub> 18	-229055.36	-5404.18	4806.52	-72.71
	σ <sub>cls,Med</sub> 18	-229055.36	-5404.18	4806.52	-50.17
221	Ft. 19	-222908.81	2376.62	-3017.55	-597.50
	σ <sub>s,c</sub> 18	-225605.36	2458.49	-3080.02	-879.43
	σ <sub>cls,Max</sub> 18	-225605.36	2458.49	-3080.02	-62.58
	σ <sub>cls,Med</sub> 18	-225605.36	2458.49	-3080.02	-49.42
<b>Combinazioni Quasi Permanenti</b>					
121	Ft. 21	-226358.44	-5307.90	4712.40	-506.97
	σ <sub>s,c</sub> 22	-227709.11	-5221.38	4695.02	-982.91
	σ <sub>cls,Max</sub> 22	-227709.11	-5221.38	4695.02	-71.82
	σ <sub>cls,Med</sub> 22	-227709.11	-5221.38	4695.02	-49.88
221	Ft. 21	-222908.44	2376.27	-3018.11	-597.49
	σ <sub>s,c</sub> 21	-222908.44	2376.27	-3018.11	-867.25
	σ <sub>cls,Max</sub> 21	-222908.44	2376.27	-3018.11	-61.69
	σ <sub>cls,Med</sub> 22	-224259.11	1877.55	-2868.01	-49.12

Pilastro: **221/321** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
221	1	-262639.06	-5893.15	3718.98	0.34
321	3	-249718.78	23596.25	-7730.81	0.40

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	8841.84	86297.23	3466.88	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	8841.84	64722.92	3466.88	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	8841.84	86297.23	3466.88	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
221	Ft. 17	-176200.45	-4872.40	2905.14	-406.79
	σ <sub>s,c</sub> 17	-176200.45	-4872.40	2905.14	-751.03
	σ <sub>cls,Max</sub> 17	-176200.45	-4872.40	2905.14	-54.25
	σ <sub>cls,Med</sub> 15	-181823.97	-4195.77	2564.52	-39.83
321	Ft. 17	-172750.45	16269.49	-5270.35	-133.79
	σ <sub>s,c</sub> 17	-172750.45	16269.49	-5270.35	-1001.36
	σ <sub>cls,Max</sub> 17	-172750.45	16269.49	-5270.35	-75.66

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-178373.97	13548.82	-4332.18	-39.07
<b>Combinazioni Frequenti</b>					
221	Ft. 20	-176423.81	-4833.35	2773.01	-412.37
	σ <sub>s,c</sub> 20	-176423.81	-4833.35	2773.01	-746.92
	σ <sub>cls,Max</sub> 20	-176423.81	-4833.35	2773.01	-53.82
	σ <sub>cls,Med</sub> 18	-176452.44	-4058.49	2393.04	-38.65
321	Ft. 20	-172973.81	16233.85	-5095.80	-140.66
	σ <sub>s,c</sub> 20	-172973.81	16233.85	-5095.80	-995.96
	σ <sub>cls,Max</sub> 20	-172973.81	16233.85	-5095.80	-75.10
	σ <sub>cls,Med</sub> 18	-173002.44	13059.67	-4058.75	-37.89
<b>Combinazioni Quasi Permanenti</b>					
221	Ft. 22	-176498.27	-4820.34	2728.97	-414.23
	σ <sub>s,c</sub> 22	-176498.27	-4820.34	2728.97	-745.55
	σ <sub>cls,Max</sub> 22	-176498.27	-4820.34	2728.97	-53.68
	σ <sub>cls,Med</sub> 22	-176498.27	-4820.34	2728.97	-38.66
321	Ft. 22	-173048.27	16221.97	-5037.62	-142.95
	σ <sub>s,c</sub> 22	-173048.27	16221.97	-5037.62	-994.15
	σ <sub>cls,Max</sub> 22	-173048.27	16221.97	-5037.62	-74.91
	σ <sub>cls,Med</sub> 22	-173048.27	16221.97	-5037.62	-37.90

Pilastro: **22/122** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
22	1	-456133.72	10040.43	1048.00	0.56
122	1	-450478.72	839.35	-200.69	0.52

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4353.43	86297.23	418.76	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	4353.43	64722.92	418.76	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	4353.43	86297.23	418.76	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
22	Ft. 16	-306816.53	6889.00	661.51	-874.32
	σ <sub>s,c</sub> 15	-318941.78	7028.15	709.64	-1185.42
	σ <sub>cls,Max</sub> 15	-318941.78	7028.15	709.64	-81.09
	σ <sub>cls,Med</sub> 15	-318941.78	7028.15	709.64	-69.86
122	Ft. 16	-302466.53	544.12	-106.47	-981.47
	σ <sub>s,c</sub> 15	-314591.78	632.83	-120.07	-1047.77
	σ <sub>cls,Max</sub> 15	-314591.78	632.83	-120.07	-70.10
	σ <sub>cls,Med</sub> 15	-314591.78	632.83	-120.07	-68.91
<b>Combinazioni Frequenti</b>					
22	Ft. 19	-302783.72	6845.73	645.16	-862.30
	σ <sub>s,c</sub> 18	-306825.84	6892.22	661.19	-1141.85
	σ <sub>cls,Max</sub> 18	-306825.84	6892.22	661.19	-78.10
	σ <sub>cls,Med</sub> 18	-306825.84	6892.22	661.19	-67.21
122	Ft. 19	-298433.72	515.74	-101.60	-968.84



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-302475.84	545.35	-106.12	-1006.09
	σ <sub>cls,Max</sub> 18	-302475.84	545.35	-106.12	-67.29
	σ <sub>cls,Med</sub> 18	-302475.84	545.35	-106.12	-66.25
<b>Combinazioni Quasi Permanenti</b>					
22	Ft. 21	-302785.59	6846.38	645.10	-862.30
	σ <sub>s,c</sub> 21	-302785.59	6846.38	645.10	-1127.32
	σ <sub>cls,Max</sub> 21	-302785.59	6846.38	645.10	-77.11
	σ <sub>cls,Med</sub> 22	-303057.88	6447.50	621.07	-66.38
122	Ft. 22	-298707.88	760.37	-59.02	-967.10
	σ <sub>s,c</sub> 22	-298707.88	760.37	-59.02	-995.73
	σ <sub>cls,Max</sub> 22	-298707.88	760.37	-59.02	-66.58
	σ <sub>cls,Med</sub> 22	-298707.88	760.37	-59.02	-65.43

Pilastro: **122/222** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
122	1	-368615.94	-8253.38	-674.42	0.45
222	1	-364130.94	4427.30	-70.25	0.43

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3675.56	86297.23	376.44	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	3675.56	64722.92	376.44	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	3675.56	86297.23	376.44	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
122	Ft. 16	-247562.30	-5492.73	-460.46	-708.88
	σ <sub>s,c</sub> 15	-256630.67	-5786.56	-477.64	-953.01
	σ <sub>cls,Max</sub> 15	-256630.67	-5786.56	-477.64	-65.11
	σ <sub>cls,Med</sub> 15	-256630.67	-5786.56	-477.64	-56.21
222	Ft. 16	-244112.30	2774.32	-36.95	-755.48
	σ <sub>s,c</sub> 15	-253180.67	3055.42	-40.85	-883.11
	σ <sub>cls,Max</sub> 15	-253180.67	3055.42	-40.85	-59.46
	σ <sub>cls,Med</sub> 15	-253180.67	3055.42	-40.85	-55.46
<b>Combinazioni Frequenti</b>					
122	Ft. 19	-244547.63	-5391.98	-453.93	-700.83
	σ <sub>s,c</sub> 18	-247570.70	-5489.82	-459.63	-917.82
	σ <sub>cls,Max</sub> 18	-247570.70	-5489.82	-459.63	-62.69
	σ <sub>cls,Med</sub> 18	-247570.70	-5489.82	-459.63	-54.23
222	Ft. 19	-241097.63	2678.11	-36.22	-747.17
	σ <sub>s,c</sub> 18	-244120.70	2771.72	-37.54	-848.60
	σ <sub>cls,Max</sub> 18	-244120.70	2771.72	-37.54	-57.11
	σ <sub>cls,Med</sub> 18	-244120.70	2771.72	-37.54	-53.47
<b>Combinazioni Quasi Permanenti</b>					
122	Ft. 21	-244549.31	-5391.39	-453.77	-700.85
	σ <sub>s,c</sub> 21	-244549.31	-5391.39	-453.77	-906.09
	σ <sub>cls,Max</sub> 21	-244549.31	-5391.39	-453.77	-61.88

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-245048.83	-5298.94	-390.33	-53.67
222	Ft. 21	-241099.31	2677.59	-36.34	-747.18
	σ <sub>s,c</sub> 22	-241598.83	2165.91	-252.60	-837.24
	σ <sub>cls,Max</sub> 22	-241598.83	2165.91	-252.60	-56.49
	σ <sub>cls,Med</sub> 22	-241598.83	2165.91	-252.60	-52.92

Pilastro: **222/322** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
222	1	-283783.69	-5987.50	-98.65	0.34
322	3	-268404.53	24854.95	1887.86	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	9232.91	86297.23	724.46	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	9232.91	64722.92	724.46	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	9232.91	86297.23	724.46	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
222	Ft. 17	-189013.27	-4978.52	-417.97	-526.28
	σ <sub>s,c</sub> 15	-196276.05	-4304.45	-76.05	-717.70
	σ <sub>cls,Max</sub> 17	-189013.27	-4978.52	-417.97	-49.08
	σ <sub>cls,Med</sub> 15	-196276.05	-4304.45	-76.05	-42.99
322	Ft. 17	-185563.27	17178.29	1274.83	-288.13
	σ <sub>s,c</sub> 17	-185563.27	17178.29	1274.83	-931.21
	σ <sub>cls,Max</sub> 17	-185563.27	17178.29	1274.83	-66.59
	σ <sub>cls,Med</sub> 15	-192826.05	14553.18	157.54	-42.24
<b>Combinazioni Frequenti</b>					
222	Ft. 20	-189013.58	-4967.50	-442.35	-525.68
	σ <sub>s,c</sub> 20	-189013.58	-4967.50	-442.35	-716.33
	σ <sub>cls,Max</sub> 20	-189013.58	-4967.50	-442.35	-49.14
	σ <sub>cls,Med</sub> 18	-190226.55	-4194.99	-93.94	-41.67
322	Ft. 20	-185563.58	17201.20	1319.91	-286.32
	σ <sub>s,c</sub> 20	-185563.58	17201.20	1319.91	-933.02
	σ <sub>cls,Max</sub> 20	-185563.58	17201.20	1319.91	-66.76
	σ <sub>cls,Med</sub> 18	-186776.55	14089.14	185.81	-40.91
<b>Combinazioni Quasi Permanenti</b>					
222	Ft. 22	-189013.70	-4963.83	-450.47	-525.48
	σ <sub>s,c</sub> 22	-189013.70	-4963.83	-450.47	-716.53
	σ <sub>cls,Max</sub> 22	-189013.70	-4963.83	-450.47	-49.16
	σ <sub>cls,Med</sub> 22	-189013.70	-4963.83	-450.47	-41.40
322	Ft. 22	-185563.70	17208.84	1334.94	-285.72
	σ <sub>s,c</sub> 22	-185563.70	17208.84	1334.94	-933.63
	σ <sub>cls,Max</sub> 22	-185563.70	17208.84	1334.94	-66.82
	σ <sub>cls,Med</sub> 22	-185563.70	17208.84	1334.94	-40.64

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **23/123** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
23	1	-463480.13	11544.75	798.91	0.57
123	1	-457825.13	-94.79	-1118.68	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5174.99	86297.23	539.24	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	5174.99	64722.92	539.24	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	5174.99	86297.23	539.24	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
23	Ft. 17	-314564.16	8292.29	562.17	-879.99
	σ <sub>s,c</sub> 15	-324253.31	8050.86	540.50	-1214.22
	σ <sub>cls,Max</sub> 15	-324253.31	8050.86	540.50	-82.99
	σ <sub>cls,Med</sub> 15	-324253.31	8050.86	540.50	-71.02
123	Ft. 16	-307635.19	-51.43	-732.79	-986.59
	σ <sub>s,c</sub> 15	-319903.31	9.71	-782.53	-1076.10
	σ <sub>cls,Max</sub> 15	-319903.31	9.71	-782.53	-72.64
	σ <sub>cls,Med</sub> 15	-319903.31	9.71	-782.53	-70.07
<b>Combinazioni Frequenti</b>					
23	Ft. 20	-308451.69	8237.35	506.32	-862.58
	σ <sub>s,c</sub> 18	-311970.72	7864.64	489.71	-1169.21
	σ <sub>cls,Max</sub> 18	-311970.72	7864.64	489.71	-79.90
	σ <sub>cls,Med</sub> 18	-311970.72	7864.64	489.71	-68.33
123	Ft. 20	-304101.69	-289.66	-759.21	-970.24
	σ <sub>s,c</sub> 18	-307620.72	-49.90	-731.22	-1034.77
	σ <sub>cls,Max</sub> 18	-307620.72	-49.90	-731.22	-69.83
	σ <sub>cls,Med</sub> 18	-307620.72	-49.90	-731.22	-67.38
<b>Combinazioni Quasi Permanenti</b>					
23	Ft. 22	-306414.22	8219.03	487.70	-856.78
	σ <sub>s,c</sub> 22	-306414.22	8219.03	487.70	-1156.68
	σ <sub>cls,Max</sub> 22	-306414.22	8219.03	487.70	-79.13
	σ <sub>cls,Med</sub> 21	-307878.97	7802.16	472.88	-67.44
123	Ft. 22	-302064.22	-321.08	-742.17	-963.58
	σ <sub>s,c</sub> 22	-302064.22	-321.08	-742.17	-1021.30
	σ <sub>cls,Max</sub> 22	-302064.22	-321.08	-742.17	-68.99
	σ <sub>cls,Med</sub> 21	-303528.97	-70.03	-714.38	-66.48

Pilastro: **123/223** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
123	1	-375793.78	-8861.09	1091.09	0.46
223	1	-371308.78	4344.35	-932.04	0.44

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3973.85	86297.23	619.87	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	3973.85	64722.92	619.87	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	3973.85	86297.23	619.87	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
123	Ft. 17	-252157.05	-6123.01	694.49	-706.22
	σ <sub>s,c</sub> 15	-261793.89	-6183.17	792.14	-986.47
	σ <sub>cls,Max</sub> 15	-261793.89	-6183.17	792.14	-67.77
	σ <sub>cls,Med</sub> 15	-261793.89	-6183.17	792.14	-57.34
223	Ft. 17	-248707.05	3392.27	-416.31	-748.40
	σ <sub>s,c</sub> 15	-258343.89	2995.88	-670.80	-919.14
	σ <sub>cls,Max</sub> 15	-258343.89	2995.88	-670.80	-62.57
	σ <sub>cls,Med</sub> 15	-258343.89	2995.88	-670.80	-56.59
<b>Combinazioni Frequenti</b>					
123	Ft. 20	-249120.19	-5857.35	643.78	-702.20
	σ <sub>s,c</sub> 18	-252577.02	-5870.80	744.58	-949.56
	σ <sub>cls,Max</sub> 18	-252577.02	-5870.80	744.58	-65.20
	σ <sub>cls,Med</sub> 18	-252577.02	-5870.80	744.58	-55.32
223	Ft. 20	-245670.19	3062.65	-366.12	-745.41
	σ <sub>s,c</sub> 18	-249127.02	2713.34	-629.07	-882.91
	σ <sub>cls,Max</sub> 18	-249127.02	2713.34	-629.07	-60.06
	σ <sub>cls,Med</sub> 18	-249127.02	2713.34	-629.07	-54.57
<b>Combinazioni Quasi Permanenti</b>					
123	Ft. 22	-248107.88	-5768.80	626.87	-700.86
	σ <sub>s,c</sub> 21	-249506.81	-5767.16	729.08	-937.29
	σ <sub>cls,Max</sub> 21	-249506.81	-5767.16	729.08	-64.34
	σ <sub>cls,Med</sub> 21	-249506.81	-5767.16	729.08	-54.65
223	Ft. 22	-244657.88	2952.78	-349.39	-744.41
	σ <sub>s,c</sub> 21	-246056.81	2619.51	-615.42	-870.85
	σ <sub>cls,Max</sub> 21	-246056.81	2619.51	-615.42	-59.22
	σ <sub>cls,Med</sub> 21	-246056.81	2619.51	-615.42	-53.89

Pilastro: **223/323** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
223	1	-289956.81	-5798.93	908.08	0.35
323	1	-285471.81	20081.36	-1891.80	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7501.54	86297.23	1460.43	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	7501.54	64722.92	1460.43	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	7501.54	86297.23	1460.43	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
223	Ft. 17	-191078.72	-3326.90	1018.02	-540.99

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
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 Parcheggio interrato - Tabulato di calcolo

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-200700.17	-4167.22	663.10	-748.66
	σ <sub>cls,Max</sub> 15	-200700.17	-4167.22	663.10	-51.41
	σ <sub>cls,Med</sub> 15	-200700.17	-4167.22	663.10	-43.96
323	Ft. 17	-187628.72	10611.91	-2494.20	-363.53
	σ <sub>s,c</sub> 15	-197250.17	13947.43	-1356.71	-919.37
	σ <sub>cls,Max</sub> 15	-197250.17	13947.43	-1356.71	-65.32
	σ <sub>cls,Med</sub> 15	-197250.17	13947.43	-1356.71	-43.20
<b>Combinazioni Frequenti</b>					
223	Ft. 20	-191115.70	-3316.53	977.65	-542.56
	σ <sub>s,c</sub> 18	-194536.58	-4069.00	615.74	-725.30
	σ <sub>cls,Max</sub> 18	-194536.58	-4069.00	615.74	-49.78
	σ <sub>cls,Med</sub> 18	-194536.58	-4069.00	615.74	-42.61
323	Ft. 19	-189035.97	13381.11	-1253.73	-362.32
	σ <sub>s,c</sub> 18	-191086.58	13521.85	-1277.86	-889.65
	σ <sub>cls,Max</sub> 18	-191086.58	13521.85	-1277.86	-63.17
	σ <sub>cls,Med</sub> 18	-191086.58	13521.85	-1277.86	-41.85
<b>Combinazioni Quasi Permanenti</b>					
223	Ft. 22	-191128.03	-3313.07	964.20	-543.09
	σ <sub>s,c</sub> 21	-192483.83	-4036.16	600.49	-717.53
	σ <sub>cls,Max</sub> 21	-192483.83	-4036.16	600.49	-49.24
	σ <sub>cls,Med</sub> 21	-192483.83	-4036.16	600.49	-42.16
323	Ft. 21	-189033.83	13380.50	-1252.56	-362.36
	σ <sub>s,c</sub> 21	-189033.83	13380.50	-1252.56	-879.79
	σ <sub>cls,Max</sub> 22	-187678.03	10666.79	-2432.83	-62.57
	σ <sub>cls,Med</sub> 21	-189033.83	13380.50	-1252.56	-41.40

Pilastro: **24/124** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
24	1	-270944.38	14122.91	8431.76	0.40
124	1	-265289.41	-1583.73	1201.98	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5380.24	86297.23	2303.07	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	5380.24	64722.92	2303.07	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	5380.24	86297.23	2303.07	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
24	Ft. 16	-183997.23	9865.45	5877.80	-256.17
	σ <sub>s,c</sub> 15	-191123.88	10112.00	6036.41	-985.38
	σ <sub>cls,Max</sub> 15	-191123.88	10112.00	6036.41	-74.38
	σ <sub>cls,Med</sub> 15	-191123.88	10112.00	6036.41	-41.86
124	Ft. 17	-179901.77	-1085.07	1060.75	-539.58
	σ <sub>s,c</sub> 15	-186773.88	-1151.88	792.58	-657.70
	σ <sub>cls,Max</sub> 15	-186773.88	-1151.88	792.58	-44.96
	σ <sub>cls,Med</sub> 15	-186773.88	-1151.88	792.58	-40.91

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
24	Ft. 19	-181486.52	9752.37	5799.17	-252.27
	$\sigma_{s,c}18$	-183857.39	9833.48	5851.15	-951.05
	$\sigma_{cls,Max}18$	-183857.39	9833.48	5851.15	-71.83
	$\sigma_{cls,Med}18$	-183857.39	9833.48	5851.15	-40.27
124	Ft. 20	-176182.77	-1140.23	914.97	-531.09
	$\sigma_{s,c}18$	-179507.39	-1160.21	697.03	-630.93
	$\sigma_{cls,Max}18$	-179507.39	-1160.21	697.03	-43.06
	$\sigma_{cls,Med}18$	-179507.39	-1160.21	697.03	-39.32

<b>Combinazioni Quasi Permanenti</b>					
24	Ft. 21	-181458.55	9745.97	5793.84	-252.46
	$\sigma_{s,c}21$	-181458.55	9745.97	5793.84	-939.92
	$\sigma_{cls,Max}21$	-181458.55	9745.97	5793.84	-71.01
	$\sigma_{cls,Med}21$	-181458.55	9745.97	5793.84	-39.75
124	Ft. 22	-174943.11	-1158.61	866.37	-528.27
	$\sigma_{s,c}21$	-177108.55	-1165.06	662.56	-622.03
	$\sigma_{cls,Max}22$	-174943.11	-1158.61	866.37	-42.61
	$\sigma_{cls,Med}21$	-177108.55	-1165.06	662.56	-38.79

Pilastro: **124/224** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20 \text{ Af}=37.70 [\text{cm}^2] < 1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H >$

**Staffe:**  $\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0/\varnothing 10 \text{ 2br.x4br./20.0} \times 120.0/\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0$

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
124	1	-202871.34	-7031.11	-11337.66	0.34
224	1	-198386.34	2276.87	9096.05	0.31

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	2772.61	86297.23	5966.94	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$
1.13	2.32	2772.61	64722.92	5966.94	46467.73	$\varnothing 10 \text{ 2br.x4br./20.0}$
2.32	3.32	2772.61	86297.23	5966.94	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
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**Combinazioni Rare**

124	Ft. 17	-136053.86	-4856.46	-8017.94	-112.22
	$\sigma_{s,c}15$	-142477.66	-4947.80	-7980.00	-802.92
	$\sigma_{cls,Max}15$	-142477.66	-4947.80	-7980.00	-63.52
	$\sigma_{cls,Med}15$	-142477.66	-4947.80	-7980.00	-31.24
224	Ft. 17	-132603.86	1873.95	6489.18	-198.59
	$\sigma_{s,c}15$	-139027.66	1610.92	6425.63	-687.54
	$\sigma_{cls,Max}15$	-139027.66	1610.92	6425.63	-53.46
	$\sigma_{cls,Med}15$	-139027.66	1610.92	6425.63	-30.45

**Combinazioni Frequenti**

124	Ft. 20	-134574.58	-4672.67	-7635.37	-122.77
	$\sigma_{s,c}18$	-137486.36	-4720.36	-7574.28	-769.88
	$\sigma_{cls,Max}18$	-137486.36	-4720.36	-7574.28	-60.81
	$\sigma_{cls,Med}18$	-137486.36	-4720.36	-7574.28	-30.12
224	Ft. 20	-131124.58	1671.61	6131.97	-208.40
	$\sigma_{s,c}18$	-134036.34	1445.21	6078.13	-657.38
	$\sigma_{cls,Max}18$	-134036.34	1445.21	6078.13	-51.02
	$\sigma_{cls,Med}18$	-134036.34	1445.21	6078.13	-29.36

**Combinazioni Quasi Permanenti**



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
124	Ft. 22	-134081.48	-4611.40	-7507.84	-126.24
	σ <sub>s,c</sub> 21	-135841.58	-4645.27	-7437.86	-758.91
	σ <sub>cls,Max</sub> 21	-135841.58	-4645.27	-7437.86	-59.91
	σ <sub>cls,Med</sub> 21	-135841.58	-4645.27	-7437.86	-29.76
224	Ft. 22	-130631.48	1604.16	6012.90	-211.67
	σ <sub>s,c</sub> 21	-132391.56	1390.21	5961.15	-647.35
	σ <sub>cls,Max</sub> 22	-130631.48	1604.16	6012.90	-50.27
	σ <sub>cls,Med</sub> 21	-132391.56	1390.21	5961.15	-29.00

Pilastro: **224/324** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
224	1	-149812.92	-6047.62	-14509.30	0.33
324	1	-145327.92	18029.87	21704.53	0.50

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6978.98	86297.23	10496.76	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	6978.98	64722.92	10496.76	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	6978.98	86297.23	10496.76	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
224	Ft. 17	-98054.34	-3739.00	-10004.56	148.91
	σ <sub>s,c</sub> 15	-104376.27	-4195.87	-10041.70	-759.11
	σ <sub>cls,Max</sub> 15	-104376.27	-4195.87	-10041.70	-64.23
	σ <sub>cls,Med</sub> 15	-104376.27	-4195.87	-10041.70	-29.02
324	Ft. 17	-94604.34	10330.38	14764.45	984.07
	σ <sub>s,c</sub> 15	-100926.27	12307.14	14897.63	-1196.15
	σ <sub>cls,Max</sub> 15	-100926.27	12307.14	14897.63	-110.34
	σ <sub>cls,Med</sub> 15	-100926.27	12307.14	14897.63	-43.83
<b>Combinazioni Frequenti</b>					
224	Ft. 20	-98698.85	-3692.08	-9733.35	121.36
	σ <sub>s,c</sub> 18	-101323.52	-4068.03	-9613.81	-730.82
	σ <sub>cls,Max</sub> 18	-101323.52	-4068.03	-9613.81	-61.68
	σ <sub>cls,Med</sub> 20	-98698.85	-3692.08	-9733.35	-27.97
324	Ft. 20	-95248.85	10305.60	14580.05	942.41
	σ <sub>s,c</sub> 18	-97873.52	11911.49	14349.22	-1154.08
	σ <sub>cls,Max</sub> 18	-97873.52	11911.49	14349.22	-106.27
	σ <sub>cls,Med</sub> 20	-95248.85	10305.60	14580.05	-42.65
<b>Combinazioni Quasi Permanenti</b>					
224	Ft. 22	-98913.69	-3676.44	-9642.95	112.59
	σ <sub>s,c</sub> 21	-100321.27	-4023.97	-9468.74	-721.30
	σ <sub>cls,Max</sub> 22	-98913.69	-3676.44	-9642.95	-61.02
	σ <sub>cls,Med</sub> 22	-98913.69	-3676.44	-9642.95	-27.77
324	Ft. 22	-95463.69	10297.34	14518.58	928.68
	σ <sub>s,c</sub> 21	-96871.27	11775.25	14162.20	-1139.72
	σ <sub>cls,Max</sub> 21	-96871.27	11775.25	14162.20	-104.87

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-95463.69	10297.34	14518.58	-42.45

Pilastro: **25/125** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
25	1	-155315.05	9183.00	357.25	0.21
125	1	-149660.05	1061.23	-146.61	0.17

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1881.08	86297.23	139.10	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	1881.08	64722.92	139.10	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	1881.08	86297.23	139.10	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
25	Ft. 16	-102133.63	6714.19	186.96	-219.79
	σ <sub>s,c</sub> 15	-106887.08	6790.34	223.82	-469.37
	σ <sub>cls,Max</sub> 15	-106887.08	6790.34	223.82	-32.75
	σ <sub>cls,Med</sub> 15	-106887.08	6790.34	223.82	-23.41
125	Ft. 16	-97783.63	600.51	-63.63	-309.42
	σ <sub>s,c</sub> 15	-102537.08	717.28	-89.25	-351.46
	σ <sub>cls,Max</sub> 15	-102537.08	717.28	-89.25	-23.66
	σ <sub>cls,Med</sub> 15	-102537.08	717.28	-89.25	-22.46
<b>Combinazioni Frequenti</b>					
25	Ft. 19	-98574.83	6780.87	162.22	-207.79
	σ <sub>s,c</sub> 18	-100091.24	6809.43	174.08	-445.77
	σ <sub>cls,Max</sub> 18	-100091.24	6809.43	174.08	-31.13
	σ <sub>cls,Med</sub> 20	-100096.29	6514.29	186.70	-21.92
125	Ft. 19	-94224.83	592.10	-55.51	-298.13
	σ <sub>s,c</sub> 20	-95746.29	634.62	-70.29	-327.19
	σ <sub>cls,Max</sub> 20	-95746.29	634.62	-70.29	-22.01
	σ <sub>cls,Med</sub> 20	-95746.29	634.62	-70.29	-20.97
<b>Combinazioni Quasi Permanenti</b>					
25	Ft. 21	-98166.35	6799.92	159.64	-206.22
	σ <sub>s,c</sub> 21	-98166.35	6799.92	159.64	-438.83
	σ <sub>cls,Max</sub> 21	-98166.35	6799.92	159.64	-30.64
	σ <sub>cls,Med</sub> 22	-98170.69	6555.24	169.67	-21.50
125	Ft. 22	-93820.69	600.96	-60.61	-296.49
	σ <sub>s,c</sub> 22	-93820.69	600.96	-60.61	-320.01
	σ <sub>cls,Max</sub> 22	-93820.69	600.96	-60.61	-21.51
	σ <sub>cls,Med</sub> 22	-93820.69	600.96	-60.61	-20.55

Pilastro: **125/225** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
125	1	-118306.52	-1322.56	98.71	0.14

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
225	1	-113821.52	-1793.68	80.47	0.14

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	216.26	86297.23	7.44	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	216.26	64722.92	7.44	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	216.26	86297.23	7.44	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
125	Ft. 16	-78491.36	-858.76	77.18	-241.38
	σ <sub>s,c</sub> 15	-81318.87	-892.08	72.16	-284.06
	σ <sub>cls,Max</sub> 15	-81318.87	-892.08	72.16	-19.18
	σ <sub>cls,Med</sub> 15	-81318.87	-892.08	72.16	-17.81
225	Ft. 16	-75041.36	-1393.32	68.65	-221.58
	σ <sub>s,c</sub> 15	-77868.87	-1243.33	55.03	-277.93
	σ <sub>cls,Max</sub> 15	-77868.87	-1243.33	55.03	-18.81
	σ <sub>cls,Med</sub> 15	-77868.87	-1243.33	55.03	-17.06
<b>Combinazioni Frequenti</b>					
125	Ft. 19	-75574.41	-816.75	77.25	-232.48
	σ <sub>s,c</sub> 18	-76448.83	-826.79	75.52	-267.10
	σ <sub>cls,Max</sub> 18	-76448.83	-826.79	75.52	-18.04
	σ <sub>cls,Med</sub> 20	-76453.77	-827.42	72.27	-16.75
225	Ft. 19	-72124.41	-1319.79	64.11	-213.34
	σ <sub>s,c</sub> 18	-72998.83	-1265.53	59.25	-262.42
	σ <sub>cls,Max</sub> 18	-72998.83	-1265.53	59.25	-17.79
	σ <sub>cls,Med</sub> 20	-73003.77	-1246.42	58.65	-15.99
<b>Combinazioni Quasi Permanenti</b>					
125	Ft. 21	-75165.90	-810.35	76.91	-231.26
	σ <sub>s,c</sub> 21	-75165.90	-810.35	76.91	-262.66
	σ <sub>cls,Max</sub> 21	-75165.90	-810.35	76.91	-17.74
	σ <sub>cls,Med</sub> 22	-75170.09	-810.52	74.27	-16.46
225	Ft. 21	-71715.90	-1294.23	62.23	-212.47
	σ <sub>s,c</sub> 21	-71715.90	-1294.23	62.23	-258.77
	σ <sub>cls,Max</sub> 21	-71715.90	-1294.23	62.23	-17.55
	σ <sub>cls,Med</sub> 22	-71720.09	-1278.16	61.78	-15.71

Pilastro: **225/325** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
225	1	-82521.66	-4246.78	188.37	0.11
325	1	-78036.66	-4734.53	1085.87	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	242.81	86297.23	271.88	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	242.81	64722.92	271.88	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	242.81	86297.23	271.88	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
225	Ft. 16	-55786.87	-2904.80	134.55	-131.49
	σ <sub>s,c</sub> 15	-56689.82	-2899.45	127.83	-237.75
	σ <sub>cls,Max</sub> 15	-56689.82	-2899.45	127.83	-16.51
	σ <sub>cls,Med</sub> 15	-56689.82	-2899.45	127.83	-12.42
325	Ft. 16	-52336.87	-3438.45	765.88	-91.35
	σ <sub>s,c</sub> 16	-52336.87	-3438.45	765.88	-252.56
	σ <sub>cls,Max</sub> 16	-52336.87	-3438.45	765.88	-18.32
	σ <sub>cls,Med</sub> 15	-53239.82	-3199.81	732.16	-11.66
<b>Combinazioni Frequenti</b>					
225	Ft. 19	-53512.00	-2777.13	127.51	-126.33
	σ <sub>s,c</sub> 18	-53744.92	-2770.89	124.95	-225.88
	σ <sub>cls,Max</sub> 18	-53744.92	-2770.89	124.95	-15.69
	σ <sub>cls,Med</sub> 20	-53748.38	-2754.73	124.15	-11.77
325	Ft. 19	-50062.00	-3229.14	721.21	-88.72
	σ <sub>s,c</sub> 19	-50062.00	-3229.14	721.21	-240.24
	σ <sub>cls,Max</sub> 19	-50062.00	-3229.14	721.21	-17.41
	σ <sub>cls,Med</sub> 20	-50298.38	-3134.09	708.36	-11.02
<b>Combinazioni Quasi Permanenti</b>					
225	Ft. 21	-53103.61	-2750.35	125.59	-125.49
	σ <sub>s,c</sub> 21	-53103.61	-2750.35	125.59	-223.46
	σ <sub>cls,Max</sub> 21	-53103.61	-2750.35	125.59	-15.53
	σ <sub>cls,Med</sub> 22	-53106.54	-2736.77	124.93	-11.63
325	Ft. 21	-49653.61	-3169.37	709.64	-88.72
	σ <sub>s,c</sub> 21	-49653.61	-3169.37	709.64	-237.55
	σ <sub>cls,Max</sub> 21	-49653.61	-3169.37	709.64	-17.21
	σ <sub>cls,Med</sub> 22	-49656.54	-3164.70	709.92	-10.88

Pilastro: **325/11570** / L 4.05[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 205.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
325	2	-47977.82	-7713.91	2204.07	0.10
11570	2	-42387.82	4004.79	-4782.54	0.11

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2725.28	86297.23	1624.79	61956.98	ø 10 2br.x4br./15.0
1.13	3.18	2725.28	64722.92	1624.79	46467.73	ø 10 2br.x4br./20.0
3.18	4.18	2725.28	86297.23	1624.79	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
325	Ft. 16	-32886.73	-5210.92	1486.14	32.97
	σ <sub>s,c</sub> 16	-32886.73	-5210.92	1486.14	-245.30
	σ <sub>cls,Max</sub> 16	-32886.73	-5210.92	1486.14	-19.12
	σ <sub>cls,Med</sub> 16	-32886.73	-5210.92	1486.14	-7.91
11570	Ft. 16	-28586.73	2699.76	-3225.95	115.41
	σ <sub>s,c</sub> 16	-28586.73	2699.76	-3225.95	-265.27
	σ <sub>cls,Max</sub> 16	-28586.73	2699.76	-3225.95	-23.01

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 16	-28586.73	2699.76	-3225.95	-9.38
<b>Combinazioni Frequenti</b>					
325	Ft. 19	-31265.85	-4933.22	1400.91	30.30
	σ <sub>s,c</sub> 19	-31265.85	-4933.22	1400.91	-232.31
	σ <sub>cls,Max</sub> 19	-31265.85	-4933.22	1400.91	-18.09
	σ <sub>cls,Med</sub> 19	-31265.85	-4933.22	1400.91	-7.50
11570	Ft. 19	-26965.85	2545.80	-3042.75	108.81
	σ <sub>s,c</sub> 19	-26965.85	2545.80	-3042.75	-250.20
	σ <sub>cls,Max</sub> 19	-26965.85	2545.80	-3042.75	-21.71
	σ <sub>cls,Med</sub> 19	-26965.85	2545.80	-3042.75	-8.84
<b>Combinazioni Quasi Permanenti</b>					
325	Ft. 21	-30860.62	-4868.56	1379.26	29.73
	σ <sub>s,c</sub> 21	-30860.62	-4868.56	1379.26	-229.15
	σ <sub>cls,Max</sub> 21	-30860.62	-4868.56	1379.26	-17.84
	σ <sub>cls,Med</sub> 21	-30860.62	-4868.56	1379.26	-7.40
11570	Ft. 21	-26560.62	2507.45	-2996.65	107.13
	σ <sub>s,c</sub> 22	-26561.95	2508.99	-2996.15	-246.43
	σ <sub>cls,Max</sub> 21	-26560.62	2507.45	-2996.65	-21.38
	σ <sub>cls,Med</sub> 21	-26560.62	2507.45	-2996.65	-8.71

Pilastro: **26/126** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
26	1	-201890.19	-1650.75	2063.27	0.25
126	1	-196235.19	-2447.19	2591.76	0.25

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	342.54	61956.98	1272.49	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	342.54	46467.73	1272.49	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	342.54	61956.98	1272.49	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
26	Ft. 16	-137111.13	-1179.32	1331.89	-391.18
	σ <sub>s,c</sub> 15	-142282.89	-1227.23	1549.28	-531.86
	σ <sub>cls,Max</sub> 15	-142282.89	-1227.23	1549.28	-37.13
	σ <sub>cls,Med</sub> 15	-142282.89	-1227.23	1549.28	-31.16
126	Ft. 17	-133524.56	-1722.39	1669.41	-356.60
	σ <sub>s,c</sub> 15	-137932.89	-1676.20	1607.88	-532.81
	σ <sub>cls,Max</sub> 15	-137932.89	-1676.20	1607.88	-37.72
	σ <sub>cls,Med</sub> 15	-137932.89	-1676.20	1607.88	-30.21
<b>Combinazioni Frequenti</b>					
26	Ft. 19	-135206.67	-1148.02	1245.61	-387.33
	σ <sub>s,c</sub> 18	-136924.36	-1163.46	1317.60	-508.43
	σ <sub>cls,Max</sub> 18	-136924.36	-1163.46	1317.60	-35.46
	σ <sub>cls,Med</sub> 18	-136924.36	-1163.46	1317.60	-29.99
126	Ft. 20	-130475.51	-1683.74	1701.85	-347.28

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-132574.38	-1611.71	1607.19	-513.14
	σ <sub>cls,Max</sub> 18	-132574.38	-1611.71	1607.19	-36.33
	σ <sub>cls,Med</sub> 18	-132574.38	-1611.71	1607.19	-29.04
<b>Combinazioni Quasi Permanenti</b>					
26	Ft. 21	-135169.31	-1144.85	1242.75	-387.35
	σ <sub>s,c</sub> 21	-135169.31	-1144.85	1242.75	-500.85
	σ <sub>cls,Max</sub> 21	-135169.31	-1144.85	1242.75	-34.92
	σ <sub>cls,Med</sub> 21	-135169.31	-1144.85	1242.75	-29.61
126	Ft. 22	-129459.15	-1670.86	1712.66	-344.17
	σ <sub>s,c</sub> 21	-130819.33	-1588.61	1606.54	-506.63
	σ <sub>cls,Max</sub> 22	-129459.15	-1670.86	1712.66	-35.98
	σ <sub>cls,Med</sub> 21	-130819.33	-1588.61	1606.54	-28.65

Pilastro: **126/226** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
126	1	-166403.84	5577.38	1801.88	0.24
226	1	-161918.86	-3484.38	-4161.59	0.22

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2626.60	61956.98	1732.23	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	2626.60	46467.73	1732.23	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	2626.60	61956.98	1732.23	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
126	Ft. 17	-111999.02	3905.43	1019.84	-227.05
	σ <sub>s,c</sub> 15	-116647.26	3929.45	1005.95	-524.71
	σ <sub>cls,Max</sub> 15	-116647.26	3929.45	1005.95	-39.65
	σ <sub>cls,Med</sub> 15	-116647.26	3929.45	1005.95	-25.55
226	Ft. 17	-108549.02	-2476.27	-2765.80	-232.62
	σ <sub>s,c</sub> 15	-113197.26	-2483.56	-2771.22	-496.25
	σ <sub>cls,Max</sub> 15	-113197.26	-2483.56	-2771.22	-36.41
	σ <sub>cls,Med</sub> 15	-113197.26	-2483.56	-2771.22	-24.79
<b>Combinazioni Frequenti</b>					
126	Ft. 20	-110254.52	3782.46	977.41	-225.93
	σ <sub>s,c</sub> 18	-112485.81	3774.25	937.00	-504.97
	σ <sub>cls,Max</sub> 18	-112485.81	3774.25	937.00	-38.14
	σ <sub>cls,Med</sub> 18	-112485.81	3774.25	937.00	-24.64
226	Ft. 20	-106804.52	-2403.74	-2633.24	-231.37
	σ <sub>s,c</sub> 18	-109035.81	-2399.18	-2560.00	-476.44
	σ <sub>cls,Max</sub> 18	-109035.81	-2399.18	-2560.00	-34.96
	σ <sub>cls,Med</sub> 18	-109035.81	-2399.18	-2560.00	-23.88
<b>Combinazioni Quasi Permanenti</b>					
126	Ft. 22	-109673.02	3741.47	963.27	-225.55
	σ <sub>s,c</sub> 21	-111127.86	3721.90	915.02	-498.48
	σ <sub>cls,Max</sub> 21	-111127.86	3721.90	915.02	-37.64



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-111127.86	3721.90	915.02	-24.34
226	Ft. 22	-106223.02	-2379.56	-2589.05	-230.95
	σ <sub>s,c</sub> 21	-107677.86	-2370.66	-2489.84	-469.92
	σ <sub>cls,Max</sub> 21	-107677.86	-2370.66	-2489.84	-34.48
	σ <sub>cls,Med</sub> 21	-107677.86	-2370.66	-2489.84	-23.59

Pilastro: **226/326** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
226	1	-126246.29	4680.22	4870.72	0.19
326	1	-121761.29	-8336.76	-8273.79	0.23

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3787.02	61956.98	3810.00	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3787.02	46467.73	3810.00	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3787.02	61956.98	3810.00	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
226	Ft. 17	-82914.46	3271.30	3219.45	-115.69
	σ <sub>s,c</sub> 15	-87898.00	3245.11	3361.09	-447.00
	σ <sub>cls,Max</sub> 15	-87898.00	3245.11	3361.09	-34.10
	σ <sub>cls,Med</sub> 15	-87898.00	3245.11	3361.09	-19.25
326	Ft. 17	-79464.46	-5728.71	-4763.10	10.30
	σ <sub>s,c</sub> 15	-84448.00	-5722.75	-5487.67	-554.24
	σ <sub>cls,Max</sub> 15	-84448.00	-5722.75	-5487.67	-44.62
	σ <sub>cls,Med</sub> 15	-84448.00	-5722.75	-5487.67	-19.62
<b>Combinazioni Frequenti</b>					
226	Ft. 20	-82798.83	3271.64	2981.97	-119.18
	σ <sub>s,c</sub> 18	-85240.85	3165.32	3153.80	-432.34
	σ <sub>cls,Max</sub> 18	-85240.85	3165.32	3153.80	-33.00
	σ <sub>cls,Med</sub> 18	-85240.85	3165.32	3153.80	-18.67
326	Ft. 20	-79348.83	-5760.53	-4438.82	5.71
	σ <sub>s,c</sub> 18	-81790.85	-5578.05	-5100.56	-534.23
	σ <sub>cls,Max</sub> 18	-81790.85	-5578.05	-5100.56	-43.04
	σ <sub>cls,Med</sub> 18	-81790.85	-5578.05	-5100.56	-18.99
<b>Combinazioni Quasi Permanenti</b>					
226	Ft. 22	-82760.28	3271.75	2902.81	-120.35
	σ <sub>s,c</sub> 21	-84383.02	3136.37	3086.29	-427.50
	σ <sub>cls,Max</sub> 21	-84383.02	3136.37	3086.29	-32.63
	σ <sub>cls,Med</sub> 21	-84383.02	3136.37	3086.29	-18.48
326	Ft. 22	-79310.28	-5771.14	-4330.73	4.19
	σ <sub>s,c</sub> 21	-80933.02	-5525.29	-4979.85	-527.62
	σ <sub>cls,Max</sub> 21	-80933.02	-5525.29	-4979.85	-42.51
	σ <sub>cls,Med</sub> 21	-80933.02	-5525.29	-4979.85	-18.78

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **27/127** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
27	1	-367118.34	5043.93	1097.77	0.44
127	1	-361463.34	-2732.52	-5626.94	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2898.18	86297.23	1581.82	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	2898.18	64722.92	1581.82	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	2898.18	86297.23	1581.82	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
27	Ft. 17	-242719.73	3165.19	810.96	-719.89
	σ <sub>s,c</sub> 15	-256831.34	3416.33	727.44	-922.85
	σ <sub>cls,Max</sub> 15	-256831.34	3416.33	727.44	-62.96
	σ <sub>cls,Med</sub> 15	-256831.34	3416.33	727.44	-56.25
127	Ft. 17	-238369.73	-1703.19	-3952.21	-629.58
	σ <sub>s,c</sub> 15	-252481.34	-1833.71	-3931.60	-984.60
	σ <sub>cls,Max</sub> 15	-252481.34	-1833.71	-3931.60	-70.46
	σ <sub>cls,Med</sub> 15	-252481.34	-1833.71	-3931.60	-55.30
<b>Combinazioni Frequenti</b>					
27	Ft. 20	-238349.55	3211.19	671.22	-709.22
	σ <sub>s,c</sub> 18	-247533.28	3438.29	599.17	-888.58
	σ <sub>cls,Max</sub> 18	-247533.28	3438.29	599.17	-60.53
	σ <sub>cls,Med</sub> 18	-247533.28	3438.29	599.17	-54.22
127	Ft. 20	-233999.55	-1702.31	-3717.35	-622.71
	σ <sub>s,c</sub> 18	-243183.28	-1810.22	-3681.42	-945.71
	σ <sub>cls,Max</sub> 18	-243183.28	-1810.22	-3681.42	-67.57
	σ <sub>cls,Med</sub> 18	-243183.28	-1810.22	-3681.42	-53.27
<b>Combinazioni Quasi Permanenti</b>					
27	Ft. 22	-236892.81	3226.52	624.64	-705.67
	σ <sub>s,c</sub> 21	-244434.94	3445.08	555.76	-877.13
	σ <sub>cls,Max</sub> 21	-244434.94	3445.08	555.76	-59.72
	σ <sub>cls,Med</sub> 21	-244434.94	3445.08	555.76	-53.54
127	Ft. 22	-232542.81	-1702.02	-3639.06	-620.42
	σ <sub>s,c</sub> 21	-240084.94	-1802.41	-3597.64	-932.73
	σ <sub>cls,Max</sub> 21	-240084.94	-1802.41	-3597.64	-66.61
	σ <sub>cls,Med</sub> 21	-240084.94	-1802.41	-3597.64	-52.59

Pilastro: **127/227** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
127	1	-308344.63	-505.67	7487.65	0.42
227	1	-303859.63	1763.43	-2859.40	0.37

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1190.30	86297.23	2999.15	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	1190.30	64722.92	2999.15	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	1190.30	86297.23	2999.15	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
127	Ft. 17	-200360.64	-310.90	5164.98	-488.89
	σ <sub>s,c</sub> 15	-214863.95	-314.78	5251.47	-878.15
	σ <sub>cls,Max</sub> 15	-214863.95	-314.78	5251.47	-64.60
	σ <sub>cls,Med</sub> 15	-214863.95	-314.78	5251.47	-47.06
227	Ft. 17	-196910.64	1030.60	-1846.58	-571.35
	σ <sub>s,c</sub> 15	-211413.95	1127.39	-1986.44	-776.24
	σ <sub>cls,Max</sub> 15	-211413.95	1127.39	-1986.44	-54.22
	σ <sub>cls,Med</sub> 15	-211413.95	1127.39	-1986.44	-46.31
<b>Combinazioni Frequenti</b>					
127	Ft. 20	-197965.83	-296.06	4927.78	-488.81
	σ <sub>s,c</sub> 18	-207506.84	-286.77	4977.33	-844.80
	σ <sub>cls,Max</sub> 18	-207506.84	-286.77	4977.33	-62.05
	σ <sub>cls,Med</sub> 18	-207506.84	-286.77	4977.33	-45.45
227	Ft. 20	-194515.83	957.63	-1776.75	-566.90
	σ <sub>s,c</sub> 18	-204056.84	1025.23	-1889.30	-747.31
	σ <sub>cls,Max</sub> 18	-204056.84	1025.23	-1889.30	-52.16
	σ <sub>cls,Med</sub> 18	-204056.84	1025.23	-1889.30	-44.70
<b>Combinazioni Quasi Permanenti</b>					
127	Ft. 22	-197167.56	-291.11	4848.71	-488.79
	σ <sub>s,c</sub> 21	-205055.03	-277.68	4885.41	-833.67
	σ <sub>cls,Max</sub> 21	-205055.03	-277.68	4885.41	-61.21
	σ <sub>cls,Med</sub> 21	-205055.03	-277.68	4885.41	-44.91
227	Ft. 22	-193717.56	933.30	-1753.47	-565.42
	σ <sub>s,c</sub> 21	-201605.03	991.46	-1856.43	-737.65
	σ <sub>cls,Max</sub> 21	-201605.03	991.46	-1856.43	-51.47
	σ <sub>cls,Med</sub> 21	-201605.03	991.46	-1856.43	-44.16

Pilastro: **227/327** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
227	1	-236265.77	6674.04	-736.95	0.29
327	1	-231780.77	-14520.55	-865.10	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6143.36	86297.23	664.82	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	6143.36	64722.92	664.82	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	6143.36	86297.23	664.82	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
227	Ft. 17	-148673.63	4210.36	-417.29	-406.33

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-163610.38	4497.40	-565.32	-629.09
	σ <sub>cls,Max</sub> 15	-163610.38	4497.40	-565.32	-43.38
	σ <sub>cls,Med</sub> 15	-163610.38	4497.40	-565.32	-35.84
327	Ft. 17	-145223.63	-8810.47	-1001.75	-301.15
	σ <sub>s,c</sub> 15	-160160.38	-9846.80	-538.16	-704.39
	σ <sub>cls,Max</sub> 15	-160160.38	-9846.80	-538.16	-49.32
	σ <sub>cls,Med</sub> 15	-160160.38	-9846.80	-538.16	-35.08
<b>Combinazioni Frequenti</b>					
227	Ft. 20	-148720.58	4069.91	-426.36	-408.49
	σ <sub>s,c</sub> 18	-158707.02	4307.70	-582.38	-610.42
	σ <sub>cls,Max</sub> 18	-158707.02	4307.70	-582.38	-42.12
	σ <sub>cls,Med</sub> 18	-158707.02	4307.70	-582.38	-34.76
327	Ft. 20	-145270.58	-8689.22	-887.94	-306.91
	σ <sub>s,c</sub> 18	-155257.02	-9586.14	-415.32	-680.11
	σ <sub>cls,Max</sub> 18	-155257.02	-9586.14	-415.32	-47.52
	σ <sub>cls,Med</sub> 18	-155257.02	-9586.14	-415.32	-34.01
<b>Combinazioni Quasi Permanenti</b>					
227	Ft. 22	-148736.22	4023.10	-429.39	-409.21
	σ <sub>s,c</sub> 21	-157072.80	4244.48	-588.47	-604.21
	σ <sub>cls,Max</sub> 21	-157072.80	4244.48	-588.47	-41.71
	σ <sub>cls,Med</sub> 21	-157072.80	4244.48	-588.47	-34.40
327	Ft. 22	-145286.22	-8648.81	-850.00	-308.83
	σ <sub>s,c</sub> 21	-153622.80	-9498.76	-373.63	-671.99
	σ <sub>cls,Max</sub> 21	-153622.80	-9498.76	-373.63	-46.91
	σ <sub>cls,Med</sub> 21	-153622.80	-9498.76	-373.63	-33.65

Pilastro: **28/128** / L 4.10[m] / Sezione **1 B 40** [cm]H **100** [cm]

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
28	1	-384865.41	4968.87	924.90	0.46
128	1	-379210.41	-3503.44	48.98	0.45

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3996.68	86297.23	338.33	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	3996.68	64722.92	338.33	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	3996.68	86297.23	338.33	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
28	Ft. 17	-254790.03	3125.79	628.30	-766.00
	σ <sub>s,c</sub> 15	-269147.66	3318.56	622.48	-958.37
	σ <sub>cls,Max</sub> 15	-269147.66	3318.56	622.48	-65.19
	σ <sub>cls,Med</sub> 15	-269147.66	3318.56	622.48	-58.95
128	Ft. 17	-250440.03	-2178.80	51.13	-785.56
	σ <sub>s,c</sub> 15	-264797.66	-2310.56	57.10	-909.61
	σ <sub>cls,Max</sub> 15	-264797.66	-2310.56	57.10	-61.12
	σ <sub>cls,Med</sub> 15	-264797.66	-2310.56	57.10	-58.00

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
28	Ft. 20	-249710.78	3174.74	588.25	-749.79
	$\sigma_{s,c}18$	-259041.78	3369.80	577.34	-924.57
	$\sigma_{cls,Max}18$	-259041.78	3369.80	577.34	-62.90
	$\sigma_{cls,Med}18$	-259041.78	3369.80	577.34	-56.74
128	Ft. 20	-245360.78	-2168.96	57.14	-768.84
	$\sigma_{s,c}18$	-254691.78	-2279.73	63.89	-876.12
	$\sigma_{cls,Max}18$	-254691.78	-2279.73	63.89	-58.89
	$\sigma_{cls,Med}18$	-254691.78	-2279.73	63.89	-55.79
<b>Combinazioni Quasi Permanenti</b>					
28	Ft. 22	-248017.69	3191.06	574.90	-744.38
	$\sigma_{s,c}21$	-255671.84	3386.36	562.34	-913.30
	$\sigma_{cls,Max}21$	-255671.84	3386.36	562.34	-62.13
	$\sigma_{cls,Med}21$	-255671.84	3386.36	562.34	-56.00
128	Ft. 22	-243667.69	-2165.69	59.14	-763.27
	$\sigma_{s,c}21$	-251321.84	-2269.64	66.10	-864.95
	$\sigma_{cls,Max}21$	-251321.84	-2269.64	66.10	-58.14
	$\sigma_{cls,Med}21$	-251321.84	-2269.64	66.10	-55.05

Pilastro: **128/228** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20$  Af=37.70 [cm<sup>2</sup>] <  $1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H$  >

**Staffe:**  $\varnothing 10$  2br.x4br./15.0 x 100.0/ $\varnothing 10$  2br.x4br./20.0 x 120.0/ $\varnothing 10$  2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
128	1	-311503.41	-2008.62	-1009.11	0.37
228	1	-307018.41	2949.53	33.55	0.36

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	1437.14	86297.23	447.92	61956.98	$\varnothing 10$ 2br.x4br./15.0
1.13	2.32	1437.14	64722.92	447.92	46467.73	$\varnothing 10$ 2br.x4br./20.0
2.32	3.32	1437.14	86297.23	447.92	61956.98	$\varnothing 10$ 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
128	Ft. 17	-202217.34	-1260.93	-633.26	-623.62
	$\sigma_{s,c}15$	-216927.66	-1304.36	-710.45	-756.66
	$\sigma_{cls,Max}15$	-216927.66	-1304.36	-710.45	-51.49
	$\sigma_{cls,Med}15$	-216927.66	-1304.36	-710.45	-47.51
228	Ft. 17	-198767.34	1812.85	-117.30	-619.67
	$\sigma_{s,c}15$	-213477.66	1912.88	27.49	-733.55
	$\sigma_{cls,Max}15$	-213477.66	1912.88	27.49	-49.27
	$\sigma_{cls,Med}15$	-213477.66	1912.88	27.49	-46.76
<b>Combinazioni Frequenti</b>					
128	Ft. 20	-199584.36	-1224.55	-609.45	-616.32
	$\sigma_{s,c}18$	-209294.84	-1238.44	-681.80	-729.59
	$\sigma_{cls,Max}18$	-209294.84	-1238.44	-681.80	-49.64
	$\sigma_{cls,Med}18$	-209294.84	-1238.44	-681.80	-45.84
228	Ft. 20	-196134.36	1689.30	-115.89	-613.08
	$\sigma_{s,c}18$	-205844.84	1754.67	29.48	-705.95
	$\sigma_{cls,Max}18$	-205844.84	1754.67	29.48	-47.41
	$\sigma_{cls,Med}18$	-205844.84	1754.67	29.48	-45.09
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
128	Ft. 22	-198706.70	-1212.42	-601.51	-613.89
	σ <sub>s,c</sub> 21	-206749.36	-1216.95	-672.39	-720.58
	σ <sub>cls,Max</sub> 21	-206749.36	-1216.95	-672.39	-49.02
	σ <sub>cls,Med</sub> 21	-206749.36	-1216.95	-672.39	-45.29
228	Ft. 22	-195256.70	1648.11	-115.42	-610.89
	σ <sub>s,c</sub> 21	-203299.36	1702.36	30.25	-696.75
	σ <sub>cls,Max</sub> 21	-203299.36	1702.36	30.25	-46.79
	σ <sub>cls,Med</sub> 21	-203299.36	1702.36	30.25	-44.53

Pilastro: **228/328** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
228	1	-239258.11	4992.11	129.06	0.29
328	1	-234773.11	-7863.61	56.25	0.29

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3726.30	86297.23	386.77	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	3726.30	64722.92	386.77	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	3726.30	86297.23	386.77	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
228	Ft. 17	-150403.48	3043.69	16.01	-443.86
	σ <sub>s,c</sub> 15	-165597.03	3273.24	81.42	-600.20
	σ <sub>cls,Max</sub> 15	-165597.03	3273.24	81.42	-40.69
	σ <sub>cls,Med</sub> 15	-165597.03	3273.24	81.42	-36.27
328	Ft. 17	-146953.48	-4579.51	441.70	-393.86
	σ <sub>s,c</sub> 15	-162147.03	-5208.12	54.24	-619.65
	σ <sub>cls,Max</sub> 15	-162147.03	-5208.12	54.24	-42.30
	σ <sub>cls,Med</sub> 15	-162147.03	-5208.12	54.24	-35.52
<b>Combinazioni Frequenti</b>					
228	Ft. 20	-150165.28	2924.73	-16.35	-445.01
	σ <sub>s,c</sub> 18	-160405.98	3126.95	54.12	-579.89
	σ <sub>cls,Max</sub> 18	-160405.98	3126.95	54.12	-39.28
	σ <sub>cls,Med</sub> 18	-160405.98	3126.95	54.12	-35.13
328	Ft. 20	-146715.28	-4491.04	486.59	-393.10
	σ <sub>s,c</sub> 18	-156955.98	-5120.59	86.64	-602.20
	σ <sub>cls,Max</sub> 18	-156955.98	-5120.59	86.64	-41.15
	σ <sub>cls,Med</sub> 18	-156955.98	-5120.59	86.64	-34.38
<b>Combinazioni Quasi Permanenti</b>					
228	Ft. 22	-150085.88	2885.08	-27.14	-445.06
	σ <sub>s,c</sub> 21	-158674.50	3078.29	44.98	-573.11
	σ <sub>cls,Max</sub> 21	-158674.50	3078.29	44.98	-38.81
	σ <sub>cls,Med</sub> 21	-158674.50	3078.29	44.98	-34.76
328	Ft. 22	-146635.88	-4461.55	501.55	-392.84
	σ <sub>s,c</sub> 21	-155224.50	-5090.71	97.61	-596.37
	σ <sub>cls,Max</sub> 21	-155224.50	-5090.71	97.61	-40.77



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-155224.50	-5090.71	97.61	-34.00

Pilastro: **29/129** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
29	1	-393946.25	6697.88	674.20	0.47
129	1	-388291.25	-4800.67	-1171.42	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4883.23	86297.23	487.91	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	4883.23	64722.92	487.91	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	4883.23	86297.23	487.91	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
29	Ft. 16	-265366.34	4463.25	406.13	-785.94
	σ <sub>s,c</sub> 15	-275679.84	4477.24	454.30	-993.44
	σ <sub>cls,Max</sub> 15	-275679.84	4477.24	454.30	-67.54
	σ <sub>cls,Med</sub> 15	-275679.84	4477.24	454.30	-60.38
129	Ft. 16	-261016.31	-3089.28	-768.02	-782.61
	σ <sub>s,c</sub> 15	-271329.84	-3162.93	-821.71	-969.34
	σ <sub>cls,Max</sub> 15	-271329.84	-3162.93	-821.71	-66.12
	σ <sub>cls,Med</sub> 15	-271329.84	-3162.93	-821.71	-59.43
<b>Combinazioni Frequenti</b>					
29	Ft. 19	-261910.31	4461.03	389.33	-775.16
	σ <sub>s,c</sub> 18	-265347.53	4465.77	405.36	-957.75
	σ <sub>cls,Max</sub> 18	-265347.53	4465.77	405.36	-65.11
	σ <sub>cls,Med</sub> 20	-265644.72	4265.56	453.19	-58.19
129	Ft. 19	-257560.31	-3063.16	-748.29	-772.31
	σ <sub>s,c</sub> 20	-261294.70	-2965.41	-832.45	-933.48
	σ <sub>cls,Max</sub> 20	-261294.70	-2965.41	-832.45	-63.71
	σ <sub>cls,Med</sub> 20	-261294.70	-2965.41	-832.45	-57.23
<b>Combinazioni Quasi Permanenti</b>					
29	Ft. 21	-261906.55	4461.53	389.17	-775.14
	σ <sub>s,c</sub> 22	-263941.31	4262.98	434.99	-950.75
	σ <sub>cls,Max</sub> 22	-263941.31	4262.98	434.99	-64.64
	σ <sub>cls,Med</sub> 22	-263941.31	4262.98	434.99	-57.81
129	Ft. 21	-257556.55	-3062.83	-747.91	-772.32
	σ <sub>s,c</sub> 22	-259591.31	-2950.26	-814.35	-927.06
	σ <sub>cls,Max</sub> 22	-259591.31	-2950.26	-814.35	-63.26
	σ <sub>cls,Med</sub> 22	-259591.31	-2950.26	-814.35	-56.86

Pilastro: **129/229** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
129	1	-320954.22	-3076.38	1167.39	0.38

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
229	1	-316469.22	3150.27	-906.41	0.37

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1804.83	86297.23	601.10	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	1804.83	64722.92	601.10	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	1804.83	86297.23	601.10	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
129	Ft. 16	-215838.58	-1902.14	806.33	-652.38
	σ <sub>s,c</sub> 15	-223685.80	-1998.32	854.42	-794.79
	σ <sub>cls,Max</sub> 15	-223685.80	-1998.32	854.42	-54.32
	σ <sub>cls,Med</sub> 15	-223685.80	-1998.32	854.42	-48.99
229	Ft. 16	-212388.58	1862.38	-621.15	-647.58
	σ <sub>s,c</sub> 15	-220235.80	2032.54	-660.80	-777.86
	σ <sub>cls,Max</sub> 15	-220235.80	2032.54	-660.80	-52.97
	σ <sub>cls,Med</sub> 15	-220235.80	2032.54	-660.80	-48.24
<b>Combinazioni Frequenti</b>					
129	Ft. 19	-213206.94	-1866.79	787.80	-644.90
	σ <sub>s,c</sub> 18	-215822.13	-1898.73	803.75	-765.71
	σ <sub>cls,Max</sub> 18	-215822.13	-1898.73	803.75	-52.30
	σ <sub>cls,Med</sub> 20	-216423.38	-1867.05	708.81	-47.40
229	Ft. 19	-209756.94	1803.04	-606.08	-640.39
	σ <sub>s,c</sub> 18	-212372.13	1859.67	-619.23	-747.87
	σ <sub>cls,Max</sub> 18	-212372.13	1859.67	-619.23	-50.90
	σ <sub>cls,Med</sub> 20	-212973.38	1786.19	-312.13	-46.65
<b>Combinazioni Quasi Permanenti</b>					
129	Ft. 21	-213203.64	-1866.10	787.29	-644.92
	σ <sub>s,c</sub> 22	-215537.69	-1846.68	691.19	-760.35
	σ <sub>cls,Max</sub> 22	-215537.69	-1846.68	691.19	-51.81
	σ <sub>cls,Med</sub> 22	-215537.69	-1846.68	691.19	-47.21
229	Ft. 21	-209753.64	1802.50	-605.70	-640.40
	σ <sub>s,c</sub> 21	-209753.64	1802.50	-605.70	-737.90
	σ <sub>cls,Max</sub> 21	-209753.64	1802.50	-605.70	-50.21
	σ <sub>cls,Med</sub> 22	-212087.69	1744.48	-295.16	-46.45

Pilastro: **229/329** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
229	1	-247396.88	5254.18	1107.75	0.30
329	3	-236677.88	-7397.16	-4627.60	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3909.62	86297.23	1891.87	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	3909.62	64722.92	1891.87	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	3909.62	86297.23	1891.87	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
229	Ft. 17	-167237.09	3201.66	1334.28	-454.64
	σ <sub>s,c</sub> 15	-171393.11	3444.53	806.54	-645.12
	σ <sub>cls,Max</sub> 17	-167237.09	3201.66	1334.28	-45.04
	σ <sub>cls,Med</sub> 15	-171393.11	3444.53	806.54	-37.54
329	Ft. 17	-163787.09	-4915.14	-3199.38	-355.95
	σ <sub>s,c</sub> 17	-163787.09	-4915.14	-3199.38	-720.30
	σ <sub>cls,Max</sub> 17	-163787.09	-4915.14	-3199.38	-52.55
	σ <sub>cls,Med</sub> 15	-167943.11	-5473.05	-1610.21	-36.79
<b>Combinazioni Frequenti</b>					
229	Ft. 20	-167044.73	3073.45	1291.13	-457.48
	σ <sub>s,c</sub> 20	-167044.73	3073.45	1291.13	-640.18
	σ <sub>cls,Max</sub> 20	-167044.73	3073.45	1291.13	-44.70
	σ <sub>cls,Med</sub> 20	-167044.73	3073.45	1291.13	-36.59
329	Ft. 20	-163594.73	-4809.87	-3154.13	-358.48
	σ <sub>s,c</sub> 20	-163594.73	-4809.87	-3154.13	-716.51
	σ <sub>cls,Max</sub> 20	-163594.73	-4809.87	-3154.13	-52.22
	σ <sub>cls,Med</sub> 20	-163594.73	-4809.87	-3154.13	-35.83
<b>Combinazioni Quasi Permanenti</b>					
229	Ft. 22	-166980.61	3030.72	1276.75	-458.43
	σ <sub>s,c</sub> 22	-166980.61	3030.72	1276.75	-638.81
	σ <sub>cls,Max</sub> 22	-166980.61	3030.72	1276.75	-44.58
	σ <sub>cls,Med</sub> 22	-166980.61	3030.72	1276.75	-36.57
329	Ft. 22	-163530.61	-4774.77	-3139.04	-359.32
	σ <sub>s,c</sub> 22	-163530.61	-4774.77	-3139.04	-715.24
	σ <sub>cls,Max</sub> 22	-163530.61	-4774.77	-3139.04	-52.12
	σ <sub>cls,Med</sub> 22	-163530.61	-4774.77	-3139.04	-35.82

Pilastro: **30/130** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
30	1	-235003.66	1630.77	7907.22	0.34
130	1	-229348.66	-2208.10	1010.17	0.27

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1671.74	86297.23	1585.53	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	1671.74	64722.92	1585.53	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	1671.74	86297.23	1585.53	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
30	Ft. 16	-159783.95	1038.87	5494.69	-333.18
	σ <sub>s,c</sub> 15	-165905.20	1031.79	5656.30	-741.90
	σ <sub>cls,Max</sub> 15	-165905.20	1031.79	5656.30	-56.10
	σ <sub>cls,Med</sub> 15	-165905.20	1031.79	5656.30	-36.34
130	Ft. 17	-156911.45	-1391.27	984.27	-461.47
	σ <sub>s,c</sub> 15	-161555.20	-1440.14	668.69	-575.62
	σ <sub>cls,Max</sub> 15	-161555.20	-1440.14	668.69	-39.39

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-161555.20	-1440.14	668.69	-35.39
<b>Combinazioni Frequenti</b>					
30	Ft. 19	-157596.50	1043.21	5417.17	-328.39
	σ <sub>s,c</sub> 18	-159631.84	1040.92	5470.23	-715.52
	σ <sub>cls,Max</sub> 18	-159631.84	1040.92	5470.23	-54.13
	σ <sub>cls,Med</sub> 18	-159631.84	1040.92	5470.23	-34.96
130	Ft. 20	-153796.33	-1362.48	851.85	-455.92
	σ <sub>s,c</sub> 20	-153796.33	-1362.48	851.85	-554.69
	σ <sub>cls,Max</sub> 20	-153796.33	-1362.48	851.85	-38.19
	σ <sub>cls,Med</sub> 18	-155281.84	-1393.64	592.07	-34.01
<b>Combinazioni Quasi Permanenti</b>					
30	Ft. 21	-157566.08	1043.62	5412.28	-328.44
	σ <sub>s,c</sub> 21	-157566.08	1043.62	5412.28	-706.93
	σ <sub>cls,Max</sub> 21	-157566.08	1043.62	5412.28	-53.49
	σ <sub>cls,Med</sub> 21	-157566.08	1043.62	5412.28	-34.51
130	Ft. 22	-152757.95	-1352.88	807.71	-454.07
	σ <sub>s,c</sub> 22	-152757.95	-1352.88	807.71	-549.71
	σ <sub>cls,Max</sub> 22	-152757.95	-1352.88	807.71	-37.81
	σ <sub>cls,Med</sub> 21	-153216.08	-1378.36	564.16	-33.56

Pilastro: **130/230** / L 3.20[m] / Sezione **1 B 40** [cm]H **100** [cm]

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
130	1	-175839.23	-1300.47	-10723.71	0.30
230	1	-171354.23	1103.46	8867.87	0.27

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	696.79	86297.23	5767.40	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	696.79	64722.92	5767.40	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	696.79	86297.23	5767.40	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
130	Ft. 17	-119693.85	-796.07	-7656.51	-136.67
	σ <sub>s,c</sub> 15	-123611.20	-819.44	-7548.91	-659.68
	σ <sub>cls,Max</sub> 15	-123611.20	-819.44	-7548.91	-52.74
	σ <sub>cls,Med</sub> 15	-123611.20	-819.44	-7548.91	-27.08
230	Ft. 17	-116243.85	619.16	6354.24	-169.65
	σ <sub>s,c</sub> 15	-120161.20	702.91	6257.85	-605.37
	σ <sub>cls,Max</sub> 15	-120161.20	702.91	6257.85	-47.63
	σ <sub>cls,Med</sub> 15	-120161.20	702.91	6257.85	-26.32
<b>Combinazioni Frequenti</b>					
130	Ft. 20	-118450.63	-770.49	-7296.14	-144.46
	σ <sub>s,c</sub> 20	-118450.63	-770.49	-7296.14	-633.88
	σ <sub>cls,Max</sub> 20	-118450.63	-770.49	-7296.14	-50.73
	σ <sub>cls,Med</sub> 18	-119270.88	-778.93	-7169.70	-26.12
230	Ft. 20	-115000.63	567.34	6013.92	-177.24

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-115820.88	619.46	5925.40	-579.16
	σ <sub>cls,Max</sub> 20	-115000.63	567.34	6013.92	-45.53
	σ <sub>cls,Med</sub> 18	-115820.88	619.46	5925.40	-25.37
<b>Combinazioni Quasi Permanenti</b>					
130	Ft. 22	-118036.23	-761.96	-7176.02	-147.06
	σ <sub>s,c</sub> 22	-118036.23	-761.96	-7176.02	-628.56
	σ <sub>cls,Max</sub> 22	-118036.23	-761.96	-7176.02	-50.23
	σ <sub>cls,Med</sub> 22	-118036.23	-761.96	-7176.02	-25.85
230	Ft. 22	-114586.23	550.06	5900.48	-179.77
	σ <sub>s,c</sub> 22	-114586.23	550.06	5900.48	-573.18
	σ <sub>cls,Max</sub> 22	-114586.23	550.06	5900.48	-45.05
	σ <sub>cls,Med</sub> 22	-114586.23	550.06	5900.48	-25.10

Pilastro: **230/330** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
230	1	-133134.95	1188.22	-13246.30	0.29
330	3	-123495.54	-2500.59	19357.26	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1593.88	86297.23	9526.01	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	1593.88	64722.92	9526.01	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	1593.88	86297.23	9526.01	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
230	Ft. 17	-89411.80	648.62	-9350.76	93.21
	σ <sub>s,c</sub> 15	-92848.08	756.90	-9176.65	-625.70
	σ <sub>cls,Max</sub> 17	-89411.80	648.62	-9350.76	-54.01
	σ <sub>cls,Med</sub> 17	-89411.80	648.62	-9350.76	-26.49
330	Ft. 17	-85961.80	-1666.10	13297.67	634.04
	σ <sub>s,c</sub> 17	-85961.80	-1666.10	13297.67	-816.06
	σ <sub>cls,Max</sub> 17	-85961.80	-1666.10	13297.67	-79.32
	σ <sub>cls,Med</sub> 17	-85961.80	-1666.10	13297.67	-37.97
<b>Combinazioni Frequenti</b>					
230	Ft. 20	-89872.20	596.56	-9095.33	68.32
	σ <sub>s,c</sub> 20	-89872.20	596.56	-9095.33	-611.77
	σ <sub>cls,Max</sub> 20	-89872.20	596.56	-9095.33	-52.69
	σ <sub>cls,Med</sub> 20	-89872.20	596.56	-9095.33	-25.88
330	Ft. 20	-86422.20	-1631.39	13131.78	600.58
	σ <sub>s,c</sub> 20	-86422.20	-1631.39	13131.78	-808.70
	σ <sub>cls,Max</sub> 20	-86422.20	-1631.39	13131.78	-78.13
	σ <sub>cls,Med</sub> 20	-86422.20	-1631.39	13131.78	-37.42
<b>Combinazioni Quasi Permanenti</b>					
230	Ft. 22	-90025.65	579.21	-9010.19	60.39
	σ <sub>s,c</sub> 22	-90025.65	579.21	-9010.19	-608.24
	σ <sub>cls,Max</sub> 22	-90025.65	579.21	-9010.19	-52.26

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-90025.65	579.21	-9010.19	-25.68
330	Ft. 22	-86575.65	-1619.82	13076.48	589.56
	σ <sub>s,c</sub> 22	-86575.65	-1619.82	13076.48	-806.24
	σ <sub>cls,Max</sub> 22	-86575.65	-1619.82	13076.48	-77.74
	σ <sub>cls,Med</sub> 22	-86575.65	-1619.82	13076.48	-37.24

Pilastro: **31/2571** / L 0.85[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 85.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
31	1	-105597.20	1870.69	6106.70	0.18
2571	1	-104167.20	4784.48	2246.73	0.14

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	0.98	4893.04	86297.23	3509.06	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
31	Ft. 17	-69732.68	1253.98	4089.78	-78.49
	σ <sub>s,c</sub> 15	-73685.58	1222.13	4219.97	-396.33
	σ <sub>cls,Max</sub> 15	-73685.58	1222.13	4219.97	-31.46
	σ <sub>cls,Med</sub> 15	-73685.58	1222.13	4219.97	-16.14
2571	Ft. 17	-68632.68	3260.07	1479.07	-125.12
	σ <sub>s,c</sub> 15	-72585.58	3193.84	1552.33	-340.11
	σ <sub>cls,Max</sub> 15	-72585.58	3193.84	1552.33	-25.01
	σ <sub>cls,Med</sub> 15	-72585.58	3193.84	1552.33	-15.90
<b>Combinazioni Frequenti</b>					
31	Ft. 20	-68502.51	1210.15	3970.90	-78.95
	σ <sub>s,c</sub> 18	-71315.76	1187.73	4059.12	-382.87
	σ <sub>cls,Max</sub> 18	-71315.76	1187.73	4059.12	-30.37
	σ <sub>cls,Med</sub> 18	-71315.76	1187.73	4059.12	-15.62
2571	Ft. 20	-67402.51	3187.25	1445.12	-123.35
	σ <sub>s,c</sub> 18	-70215.76	3129.70	1496.89	-329.51
	σ <sub>cls,Max</sub> 18	-70215.76	3129.70	1496.89	-24.23
	σ <sub>cls,Med</sub> 18	-70215.76	3129.70	1496.89	-15.38
<b>Combinazioni Quasi Permanenti</b>					
31	Ft. 22	-68092.45	1195.54	3931.28	-79.10
	σ <sub>s,c</sub> 21	-70536.16	1175.89	4005.90	-378.42
	σ <sub>cls,Max</sub> 21	-70536.16	1175.89	4005.90	-30.01
	σ <sub>cls,Med</sub> 21	-70536.16	1175.89	4005.90	-15.45
2571	Ft. 22	-66992.45	3162.98	1433.80	-122.76
	σ <sub>s,c</sub> 21	-69436.16	3106.39	1478.72	-325.99
	σ <sub>cls,Max</sub> 21	-69436.16	3106.39	1478.72	-23.97
	σ <sub>cls,Med</sub> 21	-69436.16	3106.39	1478.72	-15.21

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **2571/131** / L 3.00[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 100.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2571	1	-267084.78	13947.17	-1655.48	0.35
131	1	-262859.78	-8507.06	2965.05	0.34

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	10261.53	86297.23	1756.03	61956.98	ø 10 2br.x4br./15.0
1.13	2.13	10261.53	64722.92	1756.03	46467.73	ø 10 2br.x4br./20.0
2.13	3.13	10261.53	86297.23	1756.03	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2571	Ft. 17	-175638.88	9391.30	-1089.33	-388.80
	σ <sub>s,c</sub> 15	-186317.06	9454.14	-1229.79	-805.91
	σ <sub>cls,Max</sub> 15	-186317.06	9454.14	-1229.79	-56.81
	σ <sub>cls,Med</sub> 15	-186317.06	9454.14	-1229.79	-40.81
131	Ft. 17	-172388.88	-5646.15	2031.19	-409.42
	σ <sub>s,c</sub> 15	-183067.06	-5651.72	2170.93	-762.98
	σ <sub>cls,Max</sub> 15	-183067.06	-5651.72	2170.93	-54.35
	σ <sub>cls,Med</sub> 15	-183067.06	-5651.72	2170.93	-40.10
<b>Combinazioni Frequenti</b>					
2571	Ft. 20	-172878.25	9231.10	-1109.07	-381.72
	σ <sub>s,c</sub> 18	-180515.41	9245.71	-1217.37	-783.05
	σ <sub>cls,Max</sub> 18	-180515.41	9245.71	-1217.37	-55.23
	σ <sub>cls,Med</sub> 18	-180515.41	9245.71	-1217.37	-39.54
131	Ft. 20	-169628.25	-5514.27	1993.68	-403.70
	σ <sub>s,c</sub> 18	-177265.41	-5488.21	2097.92	-738.92
	σ <sub>cls,Max</sub> 18	-177265.41	-5488.21	2097.92	-52.63
	σ <sub>cls,Med</sub> 18	-177265.41	-5488.21	2097.92	-38.83
<b>Combinazioni Quasi Permanenti</b>					
2571	Ft. 22	-171958.00	9177.70	-1115.65	-379.36
	σ <sub>s,c</sub> 21	-178606.50	9171.65	-1213.19	-775.43
	σ <sub>cls,Max</sub> 21	-178606.50	9171.65	-1213.19	-54.71
	σ <sub>cls,Med</sub> 21	-178606.50	9171.65	-1213.19	-39.12
131	Ft. 22	-168708.00	-5470.31	1981.18	-401.79
	σ <sub>s,c</sub> 21	-175356.50	-5432.16	2073.75	-730.96
	σ <sub>cls,Max</sub> 21	-175356.50	-5432.16	2073.75	-52.06
	σ <sub>cls,Med</sub> 21	-175356.50	-5432.16	2073.75	-38.41

Pilastro: **131/231** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
131	1	-222233.89	-5268.08	-3478.79	0.29
231	1	-217748.89	-1527.80	2115.57	0.27



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Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1140.63	86297.23	1621.55	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	1140.63	64722.92	1621.55	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	1140.63	86297.23	1621.55	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
131	Ft. 17	-143705.81	-3506.83	-2482.99	-335.80
	σ <sub>s,c</sub> 15	-154230.30	-3452.88	-2529.24	-643.67
	σ <sub>cls,Max</sub> 15	-154230.30	-3452.88	-2529.24	-46.41
	σ <sub>cls,Med</sub> 15	-154230.30	-3452.88	-2529.24	-33.78
231	Ft. 17	-140255.81	-1040.05	1623.57	-392.15
	σ <sub>s,c</sub> 15	-150780.30	-1116.02	1589.65	-564.22
	σ <sub>cls,Max</sub> 15	-150780.30	-1116.02	1589.65	-39.63
	σ <sub>cls,Med</sub> 15	-150780.30	-1116.02	1589.65	-33.03
<b>Combinazioni Frequenti</b>					
131	Ft. 20	-142394.59	-3365.01	-2377.40	-337.17
	σ <sub>s,c</sub> 18	-149935.84	-3295.25	-2411.40	-623.23
	σ <sub>cls,Max</sub> 18	-149935.84	-3295.25	-2411.40	-44.89
	σ <sub>cls,Med</sub> 18	-149935.84	-3295.25	-2411.40	-32.84
231	Ft. 20	-138944.59	-1072.00	1504.49	-391.11
	σ <sub>s,c</sub> 18	-146485.84	-1148.81	1486.36	-547.36
	σ <sub>cls,Max</sub> 18	-146485.84	-1148.81	1486.36	-38.39
	σ <sub>cls,Med</sub> 18	-146485.84	-1148.81	1486.36	-32.09
<b>Combinazioni Quasi Permanenti</b>					
131	Ft. 22	-141957.56	-3317.74	-2342.20	-337.63
	σ <sub>s,c</sub> 21	-148526.98	-3243.60	-2372.13	-616.51
	σ <sub>cls,Max</sub> 21	-148526.98	-3243.60	-2372.13	-44.39
	σ <sub>cls,Med</sub> 21	-148526.98	-3243.60	-2372.13	-32.53
231	Ft. 22	-138507.56	-1082.64	1464.79	-390.76
	σ <sub>s,c</sub> 21	-145076.98	-1158.90	1451.65	-541.79
	σ <sub>cls,Max</sub> 21	-145076.98	-1158.90	1451.65	-37.98
	σ <sub>cls,Med</sub> 21	-145076.98	-1158.90	1451.65	-31.78

Pilastro: **231/331** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
231	1	-185373.52	2608.59	-4698.03	0.25
331	1	-180888.52	-8257.31	7827.03	0.28

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4157.32	86297.23	3630.45	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	4157.32	64722.92	3630.45	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	4157.32	86297.23	3630.45	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
231	Ft. 17	-116865.87	1592.68	-3099.62	-259.31

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Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-127669.81	1733.76	-3354.53	-554.54
	σ <sub>cls,Max</sub> 15	-127669.81	1733.76	-3354.53	-41.11
	σ <sub>cls,Med</sub> 15	-127669.81	1733.76	-3354.53	-27.96
331	Ft. 17	-113415.87	-5200.07	4882.73	-132.24
	σ <sub>s,c</sub> 15	-124219.81	-5605.90	5525.82	-675.61
	σ <sub>cls,Max</sub> 15	-124219.81	-5605.90	5525.82	-52.35
	σ <sub>cls,Med</sub> 15	-124219.81	-5605.90	5525.82	-27.21
<b>Combinazioni Frequenti</b>					
231	Ft. 20	-116933.38	1614.88	-3078.98	-259.82
	σ <sub>s,c</sub> 18	-124695.10	1692.36	-3265.73	-541.26
	σ <sub>cls,Max</sub> 18	-124695.10	1692.36	-3265.73	-40.11
	σ <sub>cls,Med</sub> 18	-124695.10	1692.36	-3265.73	-27.31
331	Ft. 20	-113483.38	-5348.68	5002.81	-126.21
	σ <sub>s,c</sub> 18	-121245.10	-5670.17	5457.38	-664.71
	σ <sub>cls,Max</sub> 18	-121245.10	-5670.17	5457.38	-51.55
	σ <sub>cls,Med</sub> 18	-121245.10	-5670.17	5457.38	-26.56
<b>Combinazioni Quasi Permanenti</b>					
231	Ft. 22	-116955.89	1622.28	-3072.10	-259.99
	σ <sub>s,c</sub> 21	-123723.23	1676.27	-3236.19	-536.86
	σ <sub>cls,Max</sub> 21	-123723.23	1676.27	-3236.19	-39.78
	σ <sub>cls,Med</sub> 21	-123723.23	1676.27	-3236.19	-27.10
331	Ft. 22	-113505.89	-5398.22	5042.84	-124.20
	σ <sub>s,c</sub> 21	-120273.23	-5681.59	5435.15	-661.00
	σ <sub>cls,Max</sub> 21	-120273.23	-5681.59	5435.15	-51.28
	σ <sub>cls,Med</sub> 21	-120273.23	-5681.59	5435.15	-26.34

Pilastro: **32/2574** / L 0.85[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 85.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
32	1	-83835.78	3743.73	-349.27	0.11
2574	1	-82405.78	6070.94	1940.32	0.12

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	0.98	5219.04	86297.23	2081.45	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
32	Ft. 17	-56473.57	2582.15	-204.09	-136.82
	σ <sub>s,c</sub> 15	-58320.71	2552.19	-238.64	-240.95
	σ <sub>cls,Max</sub> 15	-58320.71	2552.19	-238.64	-16.79
	σ <sub>cls,Med</sub> 15	-58320.71	2552.19	-238.64	-12.77
2574	Ft. 17	-55373.57	4174.30	1266.81	-73.35
	σ <sub>s,c</sub> 15	-57220.71	4084.59	1331.36	-297.17
	σ <sub>cls,Max</sub> 15	-57220.71	4084.59	1331.36	-22.06
	σ <sub>cls,Med</sub> 15	-57220.71	4084.59	1331.36	-12.53
<b>Combinazioni Frequenti</b>					
32	Ft. 20	-55282.90	2434.68	-224.92	-134.65

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Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-56400.02	2413.00	-248.96	-232.69
	σ <sub>cls,Max</sub> 18	-56400.02	2413.00	-248.96	-16.23
	σ <sub>cls,Med</sub> 18	-56400.02	2413.00	-248.96	-12.35
2574	Ft. 20	-54182.90	3980.98	1262.93	-72.73
	σ <sub>s,c</sub> 18	-55300.02	3908.00	1304.15	-287.10
	σ <sub>cls,Max</sub> 18	-55300.02	3908.00	1304.15	-21.32
	σ <sub>cls,Med</sub> 18	-55300.02	3908.00	1304.15	-12.11
<b>Combinazioni Quasi Permanenti</b>					
32	Ft. 22	-54886.01	2385.52	-231.87	-133.93
	σ <sub>s,c</sub> 21	-55776.10	2368.58	-251.83	-230.01
	σ <sub>cls,Max</sub> 21	-55776.10	2368.58	-251.83	-16.04
	σ <sub>cls,Med</sub> 21	-55776.10	2368.58	-251.83	-12.22
2574	Ft. 22	-53786.01	3916.54	1261.64	-72.52
	σ <sub>s,c</sub> 21	-54676.10	3849.49	1294.53	-283.79
	σ <sub>cls,Max</sub> 21	-54676.10	3849.49	1294.53	-21.08
	σ <sub>cls,Med</sub> 21	-54676.10	3849.49	1294.53	-11.98

Pilastro: **2574/132** / L 3.00[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 100.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2574	1	-197120.36	11546.59	-430.68	0.26
132	1	-192895.36	-14835.44	397.82	0.27

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	10719.32	86297.23	1175.66	61956.98	ø 10 2br.x4br./15.0
1.13	2.13	10719.32	64722.92	1175.66	46467.73	ø 10 2br.x4br./20.0
2.13	3.13	10719.32	86297.23	1175.66	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2574	Ft. 17	-132358.28	7862.39	-248.16	-298.37
	σ <sub>s,c</sub> 15	-136949.45	7777.80	-316.31	-587.23
	σ <sub>cls,Max</sub> 15	-136949.45	7777.80	-316.31	-40.89
	σ <sub>cls,Med</sub> 15	-136949.45	7777.80	-316.31	-30.00
132	Ft. 17	-129108.29	-10040.56	206.90	-253.37
	σ <sub>s,c</sub> 15	-133699.45	-10012.41	263.13	-611.42
	σ <sub>cls,Max</sub> 15	-133699.45	-10012.41	263.13	-42.84
	σ <sub>cls,Med</sub> 15	-133699.45	-10012.41	263.13	-29.28
<b>Combinazioni Frequenti</b>					
2574	Ft. 20	-129775.25	7619.26	-325.50	-291.40
	σ <sub>s,c</sub> 18	-132549.47	7531.26	-371.80	-570.51
	σ <sub>cls,Max</sub> 18	-132549.47	7531.26	-371.80	-39.80
	σ <sub>cls,Med</sub> 18	-132549.47	7531.26	-371.80	-29.03
132	Ft. 20	-126525.25	-9731.63	257.12	-248.34
	σ <sub>s,c</sub> 18	-129299.48	-9651.80	297.95	-592.17
	σ <sub>cls,Max</sub> 18	-129299.48	-9651.80	297.95	-41.53
	σ <sub>cls,Med</sub> 18	-129299.48	-9651.80	297.95	-28.32

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Quasi Permanenti</b>					
2574	Ft. 22	-128914.22	7538.21	-351.28	-289.07
	$\sigma_{s,c}21$	-131119.98	7446.16	-389.45	-564.98
	$\sigma_{cls,Max}21$	-131119.98	7446.16	-389.45	-39.43
	$\sigma_{cls,Med}21$	-131119.98	7446.16	-389.45	-28.72
132	Ft. 22	-125664.22	-9628.66	273.85	-246.66
	$\sigma_{s,c}21$	-127869.98	-9529.95	308.80	-585.82
	$\sigma_{cls,Max}21$	-127869.98	-9529.95	308.80	-41.10
	$\sigma_{cls,Med}21$	-127869.98	-9529.95	308.80	-28.01

Pilastro: **132/232** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:**  $\varnothing$  10 2br.x4br./15.0 x 100.0/ $\varnothing$  10 2br.x4br./20.0 x 120.0/ $\varnothing$  10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
132	1	-183501.81	2522.91	1394.53	0.22
232	1	-179016.81	-3781.11	-3320.59	0.23

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	3018.37	86297.23	1412.79	61956.98	$\varnothing$ 10 2br.x4br./15.0
1.13	2.32	3018.37	64722.92	1412.79	46467.73	$\varnothing$ 10 2br.x4br./20.0
2.32	3.32	3018.37	86297.23	1412.79	61956.98	$\varnothing$ 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
132	Ft. 17	-121996.45	1994.86	1077.04	-333.93
	$\sigma_{s,c}15$	-126742.18	2067.48	1029.10	-482.97
	$\sigma_{cls,Max}15$	-126742.18	2067.48	1029.10	-33.74
	$\sigma_{cls,Med}15$	-126742.18	2067.48	1029.10	-27.76
232	Ft. 17	-118546.45	-2887.06	-2412.01	-265.53
	$\sigma_{s,c}15$	-123292.18	-2820.07	-2353.94	-526.09
	$\sigma_{cls,Max}15$	-123292.18	-2820.07	-2353.94	-38.26
	$\sigma_{cls,Med}15$	-123292.18	-2820.07	-2353.94	-27.01

**Combinazioni Frequenti**

132	Ft. 20	-120165.98	1944.31	954.75	-332.63
	$\sigma_{s,c}18$	-123009.35	2015.78	923.47	-466.50
	$\sigma_{cls,Max}18$	-123009.35	2015.78	923.47	-32.51
	$\sigma_{cls,Med}18$	-123009.35	2015.78	923.47	-26.94
232	Ft. 20	-116715.98	-2729.98	-2195.61	-268.97
	$\sigma_{s,c}18$	-119559.35	-2740.05	-2164.25	-506.48
	$\sigma_{cls,Max}18$	-119559.35	-2740.05	-2164.25	-36.72
	$\sigma_{cls,Med}18$	-119559.35	-2740.05	-2164.25	-26.19

**Combinazioni Quasi Permanenti**

132	Ft. 22	-119555.83	1927.46	913.99	-332.20
	$\sigma_{s,c}21$	-121798.78	1996.41	888.46	-461.09
	$\sigma_{cls,Max}21$	-121798.78	1996.41	888.46	-32.11
	$\sigma_{cls,Med}21$	-121798.78	1996.41	888.46	-26.68
232	Ft. 22	-116105.83	-2677.62	-2123.48	-270.12
	$\sigma_{s,c}21$	-118348.78	-2711.40	-2100.87	-500.02
	$\sigma_{cls,Max}21$	-118348.78	-2711.40	-2100.87	-36.22
	$\sigma_{cls,Med}21$	-118348.78	-2711.40	-2100.87	-25.92

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **232/332** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
232	1	-151332.33	14276.05	5285.08	0.24
332	1	-146847.33	-41081.24	-6266.63	0.38

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	16045.59	86297.23	3407.60	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	16045.59	64722.92	3407.60	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	16045.59	86297.23	3407.60	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
232	Ft. 17	-98819.20	9594.57	3756.76	-47.80
	σ <sub>s,c</sub> 15	-103676.54	9797.44	3696.90	-618.56
	σ <sub>cls,Max</sub> 15	-103676.54	9797.44	3696.90	-47.20
	σ <sub>cls,Med</sub> 15	-103676.54	9797.44	3696.90	-22.77
332	Ft. 17	-95369.20	-27227.31	-4413.17	508.79
	σ <sub>s,c</sub> 15	-100226.54	-28068.60	-4336.69	-1025.95
	σ <sub>cls,Max</sub> 15	-100226.54	-28068.60	-4336.69	-81.28
	σ <sub>cls,Med</sub> 15	-100226.54	-28068.60	-4336.69	-32.07
<b>Combinazioni Frequenti</b>					
232	Ft. 20	-98280.90	9444.82	3555.46	-55.13
	σ <sub>s,c</sub> 18	-101188.59	9460.79	3476.54	-597.83
	σ <sub>cls,Max</sub> 18	-101188.59	9460.79	3476.54	-45.51
	σ <sub>cls,Med</sub> 18	-101188.59	9460.79	3476.54	-22.19
332	Ft. 20	-94830.90	-27221.84	-4291.10	506.06
	σ <sub>s,c</sub> 18	-97738.59	-27494.47	-4146.75	-999.77
	σ <sub>cls,Max</sub> 20	-94830.90	-27221.84	-4291.10	-79.41
	σ <sub>cls,Med</sub> 18	-97738.59	-27494.47	-4146.75	-31.34
<b>Combinazioni Quasi Permanenti</b>					
232	Ft. 22	-98101.45	9394.90	3488.35	-57.54
	σ <sub>s,c</sub> 21	-100387.70	9344.59	3403.94	-590.97
	σ <sub>cls,Max</sub> 21	-100387.70	9344.59	3403.94	-44.94
	σ <sub>cls,Med</sub> 21	-100387.70	9344.59	3403.94	-22.01
332	Ft. 22	-94651.45	-27220.01	-4250.41	505.17
	σ <sub>s,c</sub> 22	-94651.45	-27220.01	-4250.41	-996.13
	σ <sub>cls,Max</sub> 22	-94651.45	-27220.01	-4250.41	-79.21
	σ <sub>cls,Med</sub> 22	-94651.45	-27220.01	-4250.41	-31.08

Pilastro: **34/134** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
34	1	-350647.66	-36.75	-3539.92	0.41
134	1	-344992.66	-2111.81	683.07	0.41

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	542.19	61956.98	2270.26	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	542.19	46467.73	2270.26	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	542.19	61956.98	2270.26	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
34	Ft. 16	-237675.83	-30.74	-2573.21	-737.82
	σ <sub>s,c</sub> 15	-246152.97	-34.69	-2434.87	-849.67
	σ <sub>cls,Max</sub> 15	-246152.97	-34.69	-2434.87	-57.12
	σ <sub>cls,Med</sub> 15	-246152.97	-34.69	-2434.87	-53.92
134	Ft. 16	-233325.83	-1420.52	385.87	-715.10
	σ <sub>s,c</sub> 17	-240417.03	-1497.39	543.18	-846.42
	σ <sub>cls,Max</sub> 17	-240417.03	-1497.39	543.18	-58.23
	σ <sub>cls,Med</sub> 15	-241802.97	-1480.80	261.36	-52.96
<b>Combinazioni Frequenti</b>					
34	Ft. 19	-234755.81	-27.38	-2618.42	-727.59
	σ <sub>s,c</sub> 20	-240394.16	-4.07	-2815.89	-836.01
	σ <sub>cls,Max</sub> 20	-240394.16	-4.07	-2815.89	-56.24
	σ <sub>cls,Med</sub> 20	-240394.16	-4.07	-2815.89	-52.65
134	Ft. 19	-230405.81	-1401.80	428.58	-705.40
	σ <sub>s,c</sub> 20	-236044.16	-1446.52	672.41	-832.54
	σ <sub>cls,Max</sub> 20	-236044.16	-1446.52	672.41	-57.27
	σ <sub>cls,Med</sub> 20	-236044.16	-1446.52	672.41	-51.70
<b>Combinazioni Quasi Permanenti</b>					
34	Ft. 21	-234736.31	-26.96	-2618.23	-727.55
	σ <sub>s,c</sub> 22	-238936.52	-4.66	-2845.10	-831.72
	σ <sub>cls,Max</sub> 22	-238936.52	-4.66	-2845.10	-55.96
	σ <sub>cls,Med</sub> 22	-238936.52	-4.66	-2845.10	-52.34
134	Ft. 21	-230386.31	-1402.09	428.83	-705.32
	σ <sub>s,c</sub> 22	-234586.52	-1429.56	715.49	-827.92
	σ <sub>cls,Max</sub> 22	-234586.52	-1429.56	715.49	-56.95
	σ <sub>cls,Med</sub> 22	-234586.52	-1429.56	715.49	-51.38

Pilastro: **134/234** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
134	1	-281369.28	3882.67	9005.36	0.36
234	1	-276884.28	-2718.17	-6146.16	0.35

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1913.29	61956.98	4594.44	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1913.29	46467.73	4594.44	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1913.29	61956.98	4594.44	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
134	Ft. 16	-190412.39	2616.85	5820.42	-447.15

**Comune di Catania**  
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 Parcheggio interrato - Tabulato di calcolo

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-196603.78	2747.62	6062.34	-832.52
	σ <sub>cls,Max</sub> 15	-196603.78	2747.62	6062.34	-59.71
	σ <sub>cls,Med</sub> 15	-196603.78	2747.62	6062.34	-43.06
234	Ft. 16	-186962.39	-1830.74	-3960.26	-491.25
	σ <sub>s,c</sub> 17	-192250.25	-1873.43	-4564.00	-765.89
	σ <sub>cls,Max</sub> 17	-192250.25	-1873.43	-4564.00	-54.01
	σ <sub>cls,Med</sub> 15	-193153.78	-1943.10	-4174.83	-42.31
<b>Combinazioni Frequenti</b>					
134	Ft. 19	-188267.14	2573.97	5738.42	-442.81
	σ <sub>s,c</sub> 20	-193626.63	2592.48	5963.52	-816.18
	σ <sub>cls,Max</sub> 20	-193626.63	2592.48	5963.52	-58.43
	σ <sub>cls,Med</sub> 20	-193626.63	2592.48	5963.52	-42.41
234	Ft. 19	-184817.14	-1793.99	-3889.33	-486.53
	σ <sub>s,c</sub> 20	-190176.63	-1755.79	-4413.85	-752.88
	σ <sub>cls,Max</sub> 20	-190176.63	-1755.79	-4413.85	-52.98
	σ <sub>cls,Med</sub> 20	-190176.63	-1755.79	-4413.85	-41.66
<b>Combinazioni Quasi Permanenti</b>					
134	Ft. 21	-188250.28	2574.11	5738.14	-442.75
	σ <sub>s,c</sub> 22	-192935.41	2552.74	5904.91	-811.69
	σ <sub>cls,Max</sub> 22	-192935.41	2552.74	5904.91	-58.08
	σ <sub>cls,Med</sub> 22	-192935.41	2552.74	5904.91	-42.26
234	Ft. 21	-184800.28	-1794.13	-3889.45	-486.47
	σ <sub>s,c</sub> 22	-189485.41	-1716.57	-4363.80	-748.54
	σ <sub>cls,Max</sub> 22	-189485.41	-1716.57	-4363.80	-52.64
	σ <sub>cls,Med</sub> 22	-189485.41	-1716.57	-4363.80	-41.50

Pilastro: **234/334** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
234	1	-226529.08	3785.70	8245.39	0.30
334	1	-222044.08	-6407.95	-22435.82	0.35

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3077.86	61956.98	8893.11	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3077.86	46467.73	8893.11	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3077.86	61956.98	8893.11	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
234	Ft. 16	-152981.52	2538.68	5572.52	-330.71
	σ <sub>s,c</sub> 15	-157169.58	2638.78	5832.51	-695.73
	σ <sub>cls,Max</sub> 15	-157169.58	2638.78	5832.51	-50.43
	σ <sub>cls,Med</sub> 15	-157169.58	2638.78	5832.51	-34.43
334	Ft. 15	-153719.58	-4413.50	-15408.89	-112.60
	σ <sub>s,c</sub> 15	-153719.58	-4413.50	-15408.89	-897.50
	σ <sub>cls,Max</sub> 15	-153719.58	-4413.50	-15408.89	-67.61
	σ <sub>cls,Med</sub> 15	-153719.58	-4413.50	-15408.89	-33.67



**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Combinazioni Frequenti					
234	Ft. 19	-151515.36	2506.74	5479.09	-328.44
	$\sigma_{s,c}20$	-156909.20	2635.58	4971.67	-680.69
	$\sigma_{cls,Max}20$	-156909.20	2635.58	4971.67	-49.27
	$\sigma_{cls,Med}20$	-156909.20	2635.58	4971.67	-34.37
334	Ft. 18	-149458.95	-4310.72	-14725.04	-113.06
	$\sigma_{s,c}18$	-149458.95	-4310.72	-14725.04	-869.04
	$\sigma_{cls,Max}18$	-149458.95	-4310.72	-14725.04	-65.47
	$\sigma_{cls,Med}20$	-153459.20	-4615.24	-12707.07	-33.61
Combinazioni Quasi Permanenti					
234	Ft. 21	-151500.84	2507.04	5477.69	-328.41
	$\sigma_{s,c}22$	-156946.45	2612.09	4902.12	-678.93
	$\sigma_{cls,Max}22$	-156946.45	2612.09	4902.12	-49.12
	$\sigma_{cls,Med}22$	-156946.45	2612.09	4902.12	-34.38
334	Ft. 21	-148050.84	-4276.10	-14500.21	-113.21
	$\sigma_{s,c}21$	-148050.84	-4276.10	-14500.21	-859.64
	$\sigma_{cls,Max}21$	-148050.84	-4276.10	-14500.21	-64.77
	$\sigma_{cls,Med}22$	-153496.45	-4610.48	-12624.82	-33.62

Pilastro: **35/135** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:**  $\varnothing$  10 2br.x4br./15.0 x 100.0/ $\varnothing$  10 2br.x4br./20.0 x 210.0/ $\varnothing$  10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
35	1	-500885.91	-6989.38	1558.01	0.60
135	1	-495230.91	-4558.94	-5665.56	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2171.00	86297.23	1712.83	61956.98	$\varnothing$ 10 2br.x4br./15.0
1.13	3.23	2171.00	64722.92	1712.83	46467.73	$\varnothing$ 10 2br.x4br./20.0
3.23	4.23	2171.00	86297.23	1712.83	61956.98	$\varnothing$ 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	$\sigma$ [kg/cm <sup>2</sup> ]
Combinazioni Rare					
35	Ft. 16	-337060.13	-4749.77	917.56	-1000.54
	$\sigma_{s,c}15$	-348653.41	-5049.59	1045.78	-1261.37
	$\sigma_{cls,Max}15$	-348653.41	-5049.59	1045.78	-86.18
	$\sigma_{cls,Med}15$	-348653.41	-5049.59	1045.78	-76.37
135	Ft. 17	-332765.41	-3429.42	-4005.72	-909.78
	$\sigma_{s,c}15$	-344303.41	-3069.07	-3948.82	-1307.04
	$\sigma_{cls,Max}15$	-344303.41	-3069.07	-3948.82	-92.19
	$\sigma_{cls,Med}15$	-344303.41	-3069.07	-3948.82	-75.41
Combinazioni Frequenti					
35	Ft. 20	-331639.06	-4094.91	1005.46	-990.64
	$\sigma_{s,c}18$	-337042.22	-4742.51	921.50	-1214.25
	$\sigma_{cls,Max}18$	-337042.22	-4742.51	921.50	-82.84
	$\sigma_{cls,Med}18$	-337042.22	-4742.51	921.50	-73.82
135	Ft. 20	-327289.06	-3328.26	-3780.27	-900.62
	$\sigma_{s,c}18$	-332692.22	-2987.05	-3711.85	-1260.01
	$\sigma_{cls,Max}18$	-332692.22	-2987.05	-3711.85	-88.77
	$\sigma_{cls,Med}18$	-332692.22	-2987.05	-3711.85	-72.87
Combinazioni Quasi Permanenti					

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
35	Ft. 22	-329813.66	-4049.33	960.50	-986.82
	σ <sub>s,c</sub> 21	-333174.88	-4641.36	879.41	-1198.55
	σ <sub>cls,Max</sub> 21	-333174.88	-4641.36	879.41	-81.73
	σ <sub>cls,Med</sub> 21	-333174.88	-4641.36	879.41	-72.98
135	Ft. 22	-325463.66	-3294.54	-3705.13	-897.56
	σ <sub>s,c</sub> 21	-328824.88	-2959.48	-3632.39	-1244.32
	σ <sub>cls,Max</sub> 21	-328824.88	-2959.48	-3632.39	-87.63
	σ <sub>cls,Med</sub> 21	-328824.88	-2959.48	-3632.39	-72.02

Pilastro: **135/235** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
135	1	-429598.09	6640.75	6844.84	0.55
235	1	-425113.09	3162.24	-1852.97	0.50

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1525.33	86297.23	2521.11	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	1525.33	64722.92	2521.11	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	1525.33	86297.23	2521.11	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
135	Ft. 17	-286153.75	4632.65	4689.45	-715.21
	σ <sub>s,c</sub> 15	-297711.75	4776.38	4775.58	-1208.19
	σ <sub>cls,Max</sub> 15	-297711.75	4776.38	4775.58	-86.85
	σ <sub>cls,Med</sub> 15	-297711.75	4776.38	4775.58	-65.21
235	Ft. 17	-282703.75	2343.24	-1031.19	-857.70
	σ <sub>s,c</sub> 15	-294261.75	1917.02	-1251.60	-1037.98
	σ <sub>cls,Max</sub> 15	-294261.75	1917.02	-1251.60	-70.97
	σ <sub>cls,Med</sub> 15	-294261.75	1917.02	-1251.60	-64.45
<b>Combinazioni Frequenti</b>					
135	Ft. 20	-283238.72	4412.03	4490.50	-715.57
	σ <sub>s,c</sub> 18	-288590.47	4545.27	4541.78	-1167.00
	σ <sub>cls,Max</sub> 18	-288590.47	4545.27	4541.78	-83.79
	σ <sub>cls,Med</sub> 18	-288590.47	4545.27	4541.78	-63.21
235	Ft. 20	-279788.72	2463.96	-1023.11	-846.40
	σ <sub>s,c</sub> 18	-285140.47	1947.02	-1210.04	-1007.18
	σ <sub>cls,Max</sub> 18	-285140.47	1947.02	-1210.04	-68.87
	σ <sub>cls,Med</sub> 18	-285140.47	1947.02	-1210.04	-62.46
<b>Combinazioni Quasi Permanenti</b>					
135	Ft. 22	-282267.06	4338.49	4424.19	-715.69
	σ <sub>s,c</sub> 21	-285552.47	4468.16	4463.25	-1153.26
	σ <sub>cls,Max</sub> 21	-285552.47	4468.16	4463.25	-82.77
	σ <sub>cls,Med</sub> 21	-285552.47	4468.16	4463.25	-62.55
235	Ft. 22	-278817.06	2504.21	-1020.42	-842.64
	σ <sub>s,c</sub> 21	-282102.47	1957.25	-1195.70	-996.91
	σ <sub>cls,Max</sub> 21	-282102.47	1957.25	-1195.70	-68.17

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-282102.47	1957.25	-1195.70	-61.79

Pilastro: **235/335** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
235	1	-342251.84	17390.12	-2643.32	0.45
335	1	-337766.84	-50736.45	1845.99	0.57

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	21306.10	86297.23	1578.60	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	21306.10	64722.92	1578.60	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	21306.10	86297.23	1578.60	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
235	Ft. 17	-224005.59	12574.75	-1560.22	-480.66
	σ <sub>s,c</sub> 15	-235510.47	11819.89	-1920.99	-1028.22
	σ <sub>cls,Max</sub> 15	-235510.47	11819.89	-1920.99	-72.84
	σ <sub>cls,Med</sub> 15	-235510.47	11819.89	-1920.99	-51.58
335	Ft. 17	-220555.59	-37208.61	276.30	-107.23
	σ <sub>s,c</sub> 15	-232060.47	-34377.16	1365.18	-1368.18
	σ <sub>cls,Max</sub> 15	-232060.47	-34377.16	1365.18	-98.87
	σ <sub>cls,Med</sub> 15	-232060.47	-34377.16	1365.18	-50.83

**Combinazioni Frequenti**

235	Ft. 20	-224272.77	12360.22	-1507.38	-486.72
	σ <sub>s,c</sub> 18	-229521.34	11492.25	-1854.98	-1001.09
	σ <sub>cls,Max</sub> 18	-229521.34	11492.25	-1854.98	-70.90
	σ <sub>cls,Med</sub> 18	-229521.34	11492.25	-1854.98	-50.27
335	Ft. 20	-220822.77	-37093.76	353.18	-107.54
	σ <sub>s,c</sub> 20	-220822.77	-37093.76	353.18	-1343.50
	σ <sub>cls,Max</sub> 18	-226071.34	-33829.86	1387.66	-96.94
	σ <sub>cls,Med</sub> 18	-226071.34	-33829.86	1387.66	-49.52

**Combinazioni Quasi Permanenti**

235	Ft. 22	-224361.83	12288.71	-1489.76	-488.75
	σ <sub>s,c</sub> 21	-227526.98	11383.12	-1833.58	-992.07
	σ <sub>cls,Max</sub> 21	-227526.98	11383.12	-1833.58	-70.25
	σ <sub>cls,Med</sub> 21	-227526.98	11383.12	-1833.58	-49.84
335	Ft. 22	-220911.83	-37055.47	378.80	-107.64
	σ <sub>s,c</sub> 22	-220911.83	-37055.47	378.80	-1343.98
	σ <sub>cls,Max</sub> 22	-220911.83	-37055.47	378.80	-96.61
	σ <sub>cls,Med</sub> 21	-224076.98	-33647.15	1396.34	-49.08

Pilastro: **36/136** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
36	1	-509363.03	-4380.95	816.03	0.60

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
136	1	-503708.03	-7139.30	-19.65	0.60

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2939.94	86297.23	350.77	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	2939.94	64722.92	350.77	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	2939.94	86297.23	350.77	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
36	Ft. 16	-342332.31	-2997.78	500.38	-1059.79
	σ <sub>s,c</sub> 15	-354398.47	-3273.92	544.89	-1235.27
	σ <sub>cls,Max</sub> 15	-354398.47	-3273.92	544.89	-83.55
	σ <sub>cls,Med</sub> 15	-354398.47	-3273.92	544.89	-77.63
136	Ft. 17	-338936.69	-5067.25	47.73	-1029.18
	σ <sub>s,c</sub> 15	-350048.47	-4778.78	9.67	-1228.57
	σ <sub>cls,Max</sub> 15	-350048.47	-4778.78	9.67	-82.76
	σ <sub>cls,Med</sub> 15	-350048.47	-4778.78	9.67	-76.67
<b>Combinazioni Frequenti</b>					
36	Ft. 19	-338319.72	-2903.06	485.35	-1048.63
	σ <sub>s,c</sub> 18	-342342.13	-2995.01	500.18	-1189.67
	σ <sub>cls,Max</sub> 18	-342342.13	-2995.01	500.18	-80.41
	σ <sub>cls,Med</sub> 18	-342342.13	-2995.01	500.18	-74.98
136	Ft. 20	-332863.94	-4935.87	58.40	-1011.04
	σ <sub>s,c</sub> 18	-337992.13	-4644.69	21.00	-1187.12
	σ <sub>cls,Max</sub> 18	-337992.13	-4644.69	21.00	-79.99
	σ <sub>cls,Med</sub> 18	-337992.13	-4644.69	21.00	-74.03
<b>Combinazioni Quasi Permanenti</b>					
36	Ft. 22	-335189.69	-2356.72	463.78	-1047.97
	σ <sub>s,c</sub> 21	-338321.69	-2902.50	485.31	-1174.48
	σ <sub>cls,Max</sub> 21	-338321.69	-2902.50	485.31	-79.37
	σ <sub>cls,Med</sub> 21	-338321.69	-2902.50	485.31	-74.10
136	Ft. 22	-330839.69	-4892.08	61.96	-1004.99
	σ <sub>s,c</sub> 21	-333971.69	-4600.17	24.73	-1173.30
	σ <sub>cls,Max</sub> 21	-333971.69	-4600.17	24.73	-79.07
	σ <sub>cls,Med</sub> 21	-333971.69	-4600.17	24.73	-73.15

Pilastro: **136/236** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
136	1	-421154.84	4294.25	-847.79	0.50
236	1	-416669.84	4809.97	31.52	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	596.56	86297.23	392.49	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	596.56	64722.92	392.49	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	596.56	86297.23	392.49	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
136	Ft. 17	-280535.22	3188.92	-529.60	-852.70
	σ <sub>s,c</sub> 15	-291596.66	3234.31	-590.81	-1029.75
	σ <sub>cls,Max</sub> 15	-291596.66	3234.31	-590.81	-69.90
	σ <sub>cls,Med</sub> 15	-291596.66	3234.31	-590.81	-63.87
236	Ft. 17	-277085.22	3301.65	-166.65	-851.06
	σ <sub>s,c</sub> 15	-288146.66	2980.14	17.50	-996.01
	σ <sub>cls,Max</sub> 15	-288146.66	2980.14	17.50	-66.95
	σ <sub>cls,Med</sub> 15	-288146.66	2980.14	17.50	-63.11
<b>Combinazioni Frequenti</b>					
136	Ft. 20	-277553.03	2994.98	-513.94	-846.57
	σ <sub>s,c</sub> 18	-282626.31	3061.86	-568.65	-996.75
	σ <sub>cls,Max</sub> 18	-282626.31	3061.86	-568.65	-67.64
	σ <sub>cls,Med</sub> 18	-282626.31	3061.86	-568.65	-61.90
236	Ft. 20	-274103.03	3405.27	-156.27	-839.90
	σ <sub>s,c</sub> 18	-279176.31	2958.80	23.27	-966.38
	σ <sub>cls,Max</sub> 18	-279176.31	2958.80	23.27	-64.98
	σ <sub>cls,Med</sub> 18	-279176.31	2958.80	23.27	-61.15
<b>Combinazioni Quasi Permanenti</b>					
136	Ft. 22	-276558.97	2930.33	-508.72	-844.53
	σ <sub>s,c</sub> 21	-279634.66	3003.89	-561.38	-985.74
	σ <sub>cls,Max</sub> 21	-279634.66	3003.89	-561.38	-66.89
	σ <sub>cls,Med</sub> 21	-279634.66	3003.89	-561.38	-61.25
236	Ft. 22	-273108.97	3439.80	-152.81	-836.18
	σ <sub>s,c</sub> 22	-273108.97	3439.80	-152.81	-958.43
	σ <sub>cls,Max</sub> 22	-273108.97	3439.80	-152.81	-64.68
	σ <sub>cls,Med</sub> 21	-276184.66	2952.11	25.29	-60.49

Pilastro: **236/336** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
236	1	-335952.94	19796.00	495.97	0.45
336	3	-315031.75	-57324.29	740.08	0.57

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	22637.68	86297.23	522.56	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	22637.68	64722.92	522.56	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	22637.68	86297.23	522.56	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
236	Ft. 17	-220029.83	14068.96	60.75	-490.85
	σ <sub>s,c</sub> 15	-230987.28	13415.83	335.41	-989.03
	σ <sub>cls,Max</sub> 15	-230987.28	13415.83	335.41	-68.70
	σ <sub>cls,Med</sub> 15	-230987.28	13415.83	335.41	-50.59
336	Ft. 17	-216579.83	-38773.18	496.98	-60.35
	σ <sub>s,c</sub> 17	-216579.83	-38773.18	496.98	-1362.26
	σ <sub>cls,Max</sub> 17	-216579.83	-38773.18	496.98	-98.28

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
*Parcheggio interrato - Tabulato di calcolo*

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-227537.28	-36029.30	-401.60	-49.84
<b>Combinazioni Frequenti</b>					
236	Ft. 20	-220067.41	13819.10	22.03	-496.30
	σ <sub>s,c</sub> 18	-225029.64	13023.69	297.43	-961.83
	σ <sub>cls,Max</sub> 18	-225029.64	13023.69	297.43	-66.77
	σ <sub>cls,Med</sub> 18	-225029.64	13023.69	297.43	-49.29
336	Ft. 20	-216617.41	-38655.07	541.68	-61.07
	σ <sub>s,c</sub> 20	-216617.41	-38655.07	541.68	-1361.83
	σ <sub>cls,Max</sub> 20	-216617.41	-38655.07	541.68	-98.28
	σ <sub>cls,Med</sub> 18	-221579.64	-35462.54	-355.72	-48.53
<b>Combinazioni Quasi Permanenti</b>					
236	Ft. 22	-220079.94	13735.81	9.12	-498.11
	σ <sub>s,c</sub> 21	-223042.31	12893.07	284.76	-952.76
	σ <sub>cls,Max</sub> 21	-223042.31	12893.07	284.76	-66.13
	σ <sub>cls,Med</sub> 21	-223042.31	12893.07	284.76	-48.85
336	Ft. 22	-216629.94	-38615.70	556.58	-61.31
	σ <sub>s,c</sub> 22	-216629.94	-38615.70	556.58	-1361.69
	σ <sub>cls,Max</sub> 22	-216629.94	-38615.70	556.58	-98.29
	σ <sub>cls,Med</sub> 22	-216629.94	-38615.70	556.58	-48.23

Pilastro: **37/137** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
37	1	-518288.88	-2018.15	643.19	0.60
137	1	-512633.88	-9208.57	-976.31	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4161.79	86297.23	462.89	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	4161.79	64722.92	462.89	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	4161.79	86297.23	462.89	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
37	Ft. 17	-347755.88	-1893.78	455.37	-1097.10
	σ <sub>s,c</sub> 15	-360758.81	-1712.34	430.35	-1226.98
	σ <sub>cls,Max</sub> 15	-360758.81	-1712.34	430.35	-82.59
	σ <sub>cls,Med</sub> 15	-360758.81	-1712.34	430.35	-79.02
137	Ft. 17	-343405.88	-5810.02	-708.55	-1010.69
	σ <sub>s,c</sub> 15	-356408.81	-6123.64	-680.52	-1292.80
	σ <sub>cls,Max</sub> 15	-356408.81	-6123.64	-680.52	-88.05
	σ <sub>cls,Med</sub> 15	-356408.81	-6123.64	-680.52	-78.07
<b>Combinazioni Frequenti</b>					
37	Ft. 20	-341664.38	-1852.56	402.68	-1079.43
	σ <sub>s,c</sub> 18	-348474.25	-1520.64	381.28	-1181.92
	σ <sub>cls,Max</sub> 18	-348474.25	-1520.64	381.28	-79.50
	σ <sub>cls,Med</sub> 18	-348474.25	-1520.64	381.28	-76.33
137	Ft. 20	-337314.38	-5614.82	-658.29	-995.47

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-344124.25	-5913.89	-628.71	-1247.36
	σ <sub>cls,Max</sub> 18	-344124.25	-5913.89	-628.71	-84.93
	σ <sub>cls,Med</sub> 18	-344124.25	-5913.89	-628.71	-75.38
<b>Combinazioni Quasi Permanenti</b>					
37	Ft. 22	-339633.88	-1838.83	385.11	-1073.55
	σ <sub>s,c</sub> 21	-344381.97	-1457.16	365.02	-1166.92
	σ <sub>cls,Max</sub> 21	-344381.97	-1457.16	365.02	-78.47
	σ <sub>cls,Med</sub> 21	-344381.97	-1457.16	365.02	-75.43
137	Ft. 22	-335283.88	-5549.75	-641.54	-990.40
	σ <sub>s,c</sub> 21	-340031.97	-5844.29	-611.69	-1232.24
	σ <sub>cls,Max</sub> 21	-340031.97	-5844.29	-611.69	-83.89
	σ <sub>cls,Med</sub> 21	-340031.97	-5844.29	-611.69	-74.48

Pilastro: **137/237** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
137	1	-430948.16	2437.03	765.12	0.50
237	1	-426463.16	5533.49	-600.71	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	982.67	86297.23	452.00	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	982.67	64722.92	452.00	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	982.67	86297.23	452.00	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
137	Ft. 17	-285405.09	2160.67	508.33	-886.19
	σ <sub>s,c</sub> 15	-298526.06	2033.39	572.62	-1032.29
	σ <sub>cls,Max</sub> 15	-298526.06	2033.39	572.62	-69.83
	σ <sub>cls,Med</sub> 15	-298526.06	2033.39	572.62	-65.39
237	Ft. 16	-285883.78	3367.29	-417.68	-870.91
	σ <sub>s,c</sub> 15	-295076.06	3426.68	-448.34	-1039.79
	σ <sub>cls,Max</sub> 15	-295076.06	3426.68	-448.34	-70.44
	σ <sub>cls,Med</sub> 15	-295076.06	3426.68	-448.34	-64.63
<b>Combinazioni Frequenti</b>					
137	Ft. 20	-282414.81	2013.41	466.36	-880.11
	σ <sub>s,c</sub> 18	-289320.56	1924.75	533.38	-999.02
	σ <sub>cls,Max</sub> 18	-289320.56	1924.75	533.38	-67.55
	σ <sub>cls,Med</sub> 18	-289320.56	1924.75	533.38	-63.37
237	Ft. 19	-282807.00	3344.25	-405.90	-861.55
	σ <sub>s,c</sub> 18	-285870.56	3363.93	-416.07	-1007.49
	σ <sub>cls,Max</sub> 18	-285870.56	3363.93	-416.07	-68.24
	σ <sub>cls,Med</sub> 18	-285870.56	3363.93	-416.07	-62.62
<b>Combinazioni Quasi Permanenti</b>					
137	Ft. 22	-281418.13	1964.32	452.37	-878.08
	σ <sub>s,c</sub> 21	-286254.34	1887.88	520.66	-987.94
	σ <sub>cls,Max</sub> 21	-286254.34	1887.88	520.66	-66.79



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-286254.34	1887.88	520.66	-62.70
237	Ft. 22	-277968.13	2847.88	-220.63	-859.67
	σ <sub>s,c</sub> 21	-282804.34	3343.58	-405.58	-996.75
	σ <sub>cls,Max</sub> 21	-282804.34	3343.58	-405.58	-67.51
	σ <sub>cls,Med</sub> 21	-282804.34	3343.58	-405.58	-61.94

Pilastro: **237/337** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
237	1	-344116.41	20754.13	810.19	0.46
337	1	-339631.41	-53993.10	-1608.47	0.58

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	21665.87	86297.23	1157.34	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	21665.87	64722.92	1157.34	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	21665.87	86297.23	1157.34	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
237	Ft. 17	-223448.22	12922.78	842.21	-495.97
	σ <sub>s,c</sub> 15	-236726.33	14030.69	590.27	-1026.05
	σ <sub>cls,Max</sub> 15	-236726.33	14030.69	590.27	-71.57
	σ <sub>cls,Med</sub> 15	-236726.33	14030.69	590.27	-51.85
337	Ft. 16	-227180.53	-35916.68	-1080.51	-124.54
	σ <sub>s,c</sub> 15	-233276.33	-36538.54	-1155.29	-1400.85
	σ <sub>cls,Max</sub> 15	-233276.33	-36538.54	-1155.29	-101.20
	σ <sub>cls,Med</sub> 15	-233276.33	-36538.54	-1155.29	-51.10
<b>Combinazioni Frequenti</b>					
237	Ft. 20	-223576.70	12638.44	803.05	-502.29
	σ <sub>s,c</sub> 18	-230619.83	13581.19	538.28	-996.98
	σ <sub>cls,Max</sub> 18	-230619.83	13581.19	538.28	-69.49
	σ <sub>cls,Med</sub> 18	-230619.83	13581.19	538.28	-50.51
337	Ft. 19	-225138.23	-35714.35	-1049.97	-122.11
	σ <sub>s,c</sub> 18	-227169.83	-35921.81	-1074.70	-1368.13
	σ <sub>cls,Max</sub> 18	-227169.83	-35921.81	-1074.70	-98.81
	σ <sub>cls,Med</sub> 18	-227169.83	-35921.81	-1074.70	-49.76
<b>Combinazioni Quasi Permanenti</b>					
237	Ft. 22	-223619.52	12543.67	789.99	-504.40
	σ <sub>s,c</sub> 21	-228586.09	13431.54	521.50	-987.31
	σ <sub>cls,Max</sub> 21	-228586.09	13431.54	521.50	-68.80
	σ <sub>cls,Med</sub> 21	-228586.09	13431.54	521.50	-50.07
337	Ft. 21	-225136.09	-35715.38	-1048.81	-122.13
	σ <sub>s,c</sub> 21	-225136.09	-35715.38	-1048.81	-1357.25
	σ <sub>cls,Max</sub> 21	-225136.09	-35715.38	-1048.81	-98.02
	σ <sub>cls,Med</sub> 21	-225136.09	-35715.38	-1048.81	-49.31

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **38/138** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 7f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 210.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
38	1	-312581.44	-7280.17	6199.02	0.37
138	1	-306926.44	-5472.30	2674.01	0.34

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4332.64	86297.23	1271.73	61956.98	Ø 10 2br.x4br./15.0
1.13	3.23	4332.64	64722.92	1271.73	46467.73	Ø 10 2br.x4br./20.0
3.23	4.23	4332.64	86297.23	1271.73	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
38	Ft. 16	-211825.63	-5411.56	4354.46	-433.51
	σ <sub>s,c</sub> 15	-219322.41	-5652.09	4492.27	-882.69
	σ <sub>cls,Max</sub> 15	-219322.41	-5652.09	4492.27	-64.44
	σ <sub>cls,Med</sub> 15	-219322.41	-5652.09	4492.27	-44.37
138	Ft. 17	-206268.78	-3637.09	2054.33	-510.43
	σ <sub>s,c</sub> 15	-214972.41	-3472.28	1805.07	-758.26
	σ <sub>cls,Max</sub> 15	-214972.41	-3472.28	1805.07	-53.00
	σ <sub>cls,Med</sub> 15	-214972.41	-3472.28	1805.07	-43.49
<b>Combinazioni Frequenti</b>					
38	Ft. 19	-209160.52	-5289.21	4281.79	-429.41
	σ <sub>s,c</sub> 18	-211653.73	-5367.94	4326.80	-850.24
	σ <sub>cls,Max</sub> 18	-211653.73	-5367.94	4326.80	-62.06
	σ <sub>cls,Med</sub> 18	-211653.73	-5367.94	4326.80	-42.82
138	Ft. 20	-202525.95	-3472.92	1894.91	-506.21
	σ <sub>s,c</sub> 18	-207303.73	-3340.42	1703.22	-730.01
	σ <sub>cls,Max</sub> 18	-207303.73	-3340.42	1703.22	-50.99
	σ <sub>cls,Med</sub> 18	-207303.73	-3340.42	1703.22	-41.94
<b>Combinazioni Quasi Permanenti</b>					
38	Ft. 21	-209126.14	-5280.49	4276.25	-429.60
	σ <sub>s,c</sub> 21	-209126.14	-5280.49	4276.25	-839.76
	σ <sub>cls,Max</sub> 21	-209126.14	-5280.49	4276.25	-61.30
	σ <sub>cls,Med</sub> 21	-209126.14	-5280.49	4276.25	-42.31
138	Ft. 22	-201278.33	-3418.19	1841.77	-504.80
	σ <sub>s,c</sub> 21	-204776.14	-3294.41	1666.53	-720.57
	σ <sub>cls,Max</sub> 21	-204776.14	-3294.41	1666.53	-50.32
	σ <sub>cls,Med</sub> 21	-204776.14	-3294.41	1666.53	-41.43

Pilastro: **138/238** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 7f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
138	1	-245767.44	3096.70	-12228.20	0.35
238	1	-241282.45	2942.51	9633.84	0.32

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	567.40	86297.23	6399.22	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	567.40	64722.92	6399.22	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	567.40	86297.23	6399.22	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
138	Ft. 17	-163107.17	2428.05	-8626.25	-208.80
	σ <sub>s,c</sub> 15	-171500.08	2447.09	-8579.58	-805.66
	σ <sub>cls,Max</sub> 15	-171500.08	2447.09	-8579.58	-63.00
	σ <sub>cls,Med</sub> 15	-171500.08	2447.09	-8579.58	-34.70
238	Ft. 17	-159657.17	1414.19	6886.17	-264.19
	σ <sub>s,c</sub> 15	-168050.08	1755.25	6789.32	-732.87
	σ <sub>cls,Max</sub> 15	-168050.08	1755.25	6789.32	-56.18
	σ <sub>cls,Med</sub> 15	-168050.08	1755.25	6789.32	-34.00
<b>Combinazioni Frequenti</b>					
138	Ft. 20	-161636.39	2320.98	-8233.20	-217.32
	σ <sub>s,c</sub> 18	-166150.41	2339.19	-8170.18	-775.95
	σ <sub>cls,Max</sub> 18	-166150.41	2339.19	-8170.18	-60.58
	σ <sub>cls,Med</sub> 18	-166150.41	2339.19	-8170.18	-33.62
238	Ft. 20	-158186.39	1490.01	6519.03	-269.13
	σ <sub>s,c</sub> 18	-162700.41	1727.25	6438.15	-706.08
	σ <sub>cls,Max</sub> 18	-162700.41	1727.25	6438.15	-54.02
	σ <sub>cls,Med</sub> 18	-162700.41	1727.25	6438.15	-32.92
<b>Combinazioni Quasi Permanenti</b>					
138	Ft. 22	-161146.13	2285.29	-8102.19	-220.16
	σ <sub>s,c</sub> 21	-164391.23	2303.13	-8032.56	-766.09
	σ <sub>cls,Max</sub> 21	-164391.23	2303.13	-8032.56	-59.77
	σ <sub>cls,Med</sub> 21	-164391.23	2303.13	-8032.56	-33.26
238	Ft. 22	-157696.13	1515.28	6396.65	-270.77
	σ <sub>s,c</sub> 21	-160941.23	1718.24	6320.00	-697.20
	σ <sub>cls,Max</sub> 21	-160941.23	1718.24	6320.00	-53.31
	σ <sub>cls,Med</sub> 21	-160941.23	1718.24	6320.00	-32.56

Pilastro: **238/338** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 7f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
238	1	-193921.09	16640.29	-17127.04	0.38
338	1	-189436.09	-45845.13	27042.99	0.63

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	18111.72	86297.23	12802.91	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	18111.72	64722.92	12802.91	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	18111.72	86297.23	12802.91	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
238	Ft. 17	-125605.35	10848.54	-11669.89	207.71

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-134148.11	11221.93	-11793.25	-955.21
	σ <sub>cls,Max</sub> 15	-134148.11	11221.93	-11793.25	-79.00
	σ <sub>cls,Med</sub> 15	-134148.11	11221.93	-11793.25	-32.54
338	Ft. 17	-122155.35	-29414.36	18105.58	1345.01
	σ <sub>s,c</sub> 15	-130698.15	-30916.75	18464.91	-1690.53
	σ <sub>cls,Max</sub> 15	-130698.15	-30916.75	18464.91	-148.71
	σ <sub>cls,Med</sub> 15	-130698.15	-30916.75	18464.91	-51.91
<b>Combinazioni Frequenti</b>					
238	Ft. 20	-126300.25	10609.43	-11385.75	181.81
	σ <sub>s,c</sub> 18	-130794.97	10837.37	-11369.50	-924.21
	σ <sub>cls,Max</sub> 18	-130794.97	10837.37	-11369.50	-76.33
	σ <sub>cls,Med</sub> 18	-130794.97	10837.37	-11369.50	-31.50
338	Ft. 20	-122850.25	-29220.14	17894.85	1308.43
	σ <sub>s,c</sub> 18	-127344.95	-30298.24	17916.62	-1647.87
	σ <sub>cls,Max</sub> 18	-127344.95	-30298.24	17916.62	-144.85
	σ <sub>cls,Med</sub> 18	-127344.95	-30298.24	17916.62	-50.50
<b>Combinazioni Quasi Permanenti</b>					
238	Ft. 22	-126531.88	10529.73	-11291.03	173.41
	σ <sub>s,c</sub> 21	-129697.21	10707.47	-11225.34	-913.79
	σ <sub>cls,Max</sub> 21	-129697.21	10707.47	-11225.34	-75.42
	σ <sub>cls,Med</sub> 21	-129697.21	10707.47	-11225.34	-31.15
338	Ft. 22	-123081.88	-29155.40	17824.61	1296.30
	σ <sub>s,c</sub> 21	-126247.21	-30085.70	17728.63	-1633.25
	σ <sub>cls,Max</sub> 21	-126247.21	-30085.70	17728.63	-143.52
	σ <sub>cls,Med</sub> 21	-126247.21	-30085.70	17728.63	-50.01

Pilastro: **39/2575** / L 0.85[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 85.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
39	1	-255963.39	-33189.78	5422.47	0.42
2575	1	-254533.36	-3058.84	3253.13	0.32

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	0.98	27391.76	86297.23	1972.13	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
39	Ft. 17	-169654.20	-22412.00	3650.72	-74.40
	σ <sub>s,c</sub> 15	-178185.70	-23439.00	3722.75	-1087.37
	σ <sub>cls,Max</sub> 15	-178185.70	-23439.00	3722.75	-80.91
	σ <sub>cls,Med</sub> 15	-178185.70	-23439.00	3722.75	-39.14
2575	Ft. 17	-168554.20	-2186.36	2223.92	-447.28
	σ <sub>s,c</sub> 15	-177085.70	-2486.15	2223.14	-693.21
	σ <sub>cls,Max</sub> 15	-177085.70	-2486.15	2223.14	-49.19
	σ <sub>cls,Med</sub> 15	-177085.70	-2486.15	2223.14	-38.79
<b>Combinazioni Frequenti</b>					
39	Ft. 20	-167120.53	-22022.10	3554.40	-75.56

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-172938.11	-22693.72	3592.96	-1053.79
	σ <sub>cls,Max</sub> 18	-172938.11	-22693.72	3592.96	-78.39
	σ <sub>cls,Med</sub> 18	-172938.11	-22693.72	3592.96	-37.98
2575	Ft. 20	-166020.53	-2142.93	2153.10	-441.92
	σ <sub>s,c</sub> 18	-171838.11	-2355.44	2137.14	-671.09
	σ <sub>cls,Max</sub> 18	-171838.11	-2355.44	2137.14	-47.60
	σ <sub>cls,Med</sub> 18	-171838.11	-2355.44	2137.14	-37.64
<b>Combinazioni Quasi Permanenti</b>					
39	Ft. 22	-166275.98	-21892.13	3522.29	-75.95
	σ <sub>s,c</sub> 21	-171202.38	-22451.76	3549.98	-1042.76
	σ <sub>cls,Max</sub> 21	-171202.38	-22451.76	3549.98	-77.56
	σ <sub>cls,Med</sub> 21	-171202.38	-22451.76	3549.98	-37.59
2575	Ft. 22	-165175.98	-2128.45	2129.50	-440.13
	σ <sub>s,c</sub> 21	-170102.38	-2317.24	2108.69	-663.86
	σ <sub>cls,Max</sub> 21	-170102.38	-2317.24	2108.69	-47.08
	σ <sub>cls,Med</sub> 21	-170102.38	-2317.24	2108.69	-37.26

Pilastro: **2575/139** / L 3.00[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 100.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2575	1	-386000.38	22820.08	1897.44	0.52
139	1	-381775.38	-17872.88	1702.45	0.50

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	13481.21	86297.23	926.12	61956.98	ø 10 2br.x4br./15.0
1.13	2.13	13481.21	64722.92	926.12	46467.73	ø 10 2br.x4br./20.0
2.13	3.13	13481.21	86297.23	926.12	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2575	Ft. 17	-254556.34	14681.50	1331.20	-553.86
	σ <sub>s,c</sub> 15	-267768.56	15320.48	1261.16	-1170.48
	σ <sub>cls,Max</sub> 15	-267768.56	15320.48	1261.16	-82.19
	σ <sub>cls,Med</sub> 15	-267768.56	15320.48	1261.16	-58.65
139	Ft. 17	-251306.34	-11800.87	1187.67	-594.86
	σ <sub>s,c</sub> 15	-264518.56	-11971.45	1296.84	-1106.15
	σ <sub>cls,Max</sub> 15	-264518.56	-11971.45	1296.84	-77.35
	σ <sub>cls,Med</sub> 15	-264518.56	-11971.45	1296.84	-57.94
<b>Combinazioni Frequenti</b>					
2575	Ft. 20	-250907.95	14516.97	1272.94	-546.41
	σ <sub>s,c</sub> 18	-260000.88	14968.71	1200.76	-1137.28
	σ <sub>cls,Max</sub> 18	-260000.88	14968.71	1200.76	-79.85
	σ <sub>cls,Med</sub> 18	-260000.88	14968.71	1200.76	-56.95
139	Ft. 20	-247657.95	-11466.12	1133.49	-590.07
	σ <sub>s,c</sub> 18	-256750.88	-11533.04	1228.88	-1071.30
	σ <sub>cls,Max</sub> 18	-256750.88	-11533.04	1228.88	-74.87
	σ <sub>cls,Med</sub> 18	-256750.88	-11533.04	1228.88	-56.24

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Quasi Permanenti</b>					
2575	Ft. 22	-249691.81	14462.13	1253.52	-543.93
	$\sigma_{s,c}21$	-257419.97	14844.34	1180.68	-1126.13
	$\sigma_{cls,Max}21$	-257419.97	14844.34	1180.68	-79.06
	$\sigma_{cls,Med}21$	-257419.97	14844.34	1180.68	-56.38
139	Ft. 22	-246441.81	-11354.54	1115.43	-588.48
	$\sigma_{s,c}21$	-254169.97	-11384.71	1206.54	-1059.68
	$\sigma_{cls,Max}21$	-254169.97	-11384.71	1206.54	-74.04
	$\sigma_{cls,Med}21$	-254169.97	-11384.71	1206.54	-55.67

Pilastro: **139/239** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:**  $\varnothing$  10 2br.x4br./15.0 x 100.0/ $\varnothing$  10 2br.x4br./20.0 x 120.0/ $\varnothing$  10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
139	1	-329136.22	-4986.03	-5180.16	0.42
239	1	-324651.22	1252.20	2957.70	0.40

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	1808.18	86297.23	2358.80	61956.98	$\varnothing$ 10 2br.x4br./15.0
1.13	2.32	1808.18	64722.92	2358.80	46467.73	$\varnothing$ 10 2br.x4br./20.0
2.32	3.32	1808.18	86297.23	2358.80	61956.98	$\varnothing$ 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
139	Ft. 17	-213885.52	-2781.69	-3681.70	-540.10
	$\sigma_{s,c}15$	-227192.30	-2970.15	-3741.12	-914.04
	$\sigma_{cls,Max}15$	-227192.30	-2970.15	-3741.12	-65.74
	$\sigma_{cls,Med}15$	-227192.30	-2970.15	-3741.12	-49.76
239	Ft. 17	-210435.52	376.49	2225.49	-614.43
	$\sigma_{s,c}15$	-223742.30	561.07	2210.54	-814.61
	$\sigma_{cls,Max}15$	-223742.30	561.07	2210.54	-56.93
	$\sigma_{cls,Med}15$	-223742.30	561.07	2210.54	-49.01

**Combinazioni Frequenti**

139	Ft. 20	-212184.81	-2819.63	-3478.08	-540.37
	$\sigma_{s,c}18$	-221400.91	-2918.67	-3533.66	-887.57
	$\sigma_{cls,Max}18$	-221400.91	-2918.67	-3533.66	-63.72
	$\sigma_{cls,Med}18$	-221400.91	-2918.67	-3533.66	-48.49
239	Ft. 20	-208734.81	509.69	2024.53	-613.06
	$\sigma_{s,c}18$	-217950.91	556.18	2038.69	-790.03
	$\sigma_{cls,Max}18$	-217950.91	556.18	2038.69	-55.10
	$\sigma_{cls,Med}18$	-217950.91	556.18	2038.69	-47.74

**Combinazioni Quasi Permanenti**

139	Ft. 22	-211617.92	-2832.28	-3410.20	-540.46
	$\sigma_{s,c}21$	-219477.61	-2901.21	-3464.93	-878.78
	$\sigma_{cls,Max}21$	-219477.61	-2901.21	-3464.93	-63.06
	$\sigma_{cls,Med}21$	-219477.61	-2901.21	-3464.93	-48.07
239	Ft. 22	-208167.92	554.08	1957.54	-612.60
	$\sigma_{s,c}21$	-216027.61	555.31	1981.62	-781.89
	$\sigma_{cls,Max}21$	-216027.61	555.31	1981.62	-54.49
	$\sigma_{cls,Med}21$	-216027.61	555.31	1981.62	-47.32

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **239/339** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
239	1	-272778.47	14835.47	-5006.76	0.37
339	1	-268293.47	-40189.29	8038.46	0.48

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	15949.21	86297.23	3781.22	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	15949.21	64722.92	3781.22	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	15949.21	86297.23	3781.22	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
239	Ft. 17	-173361.55	9910.33	-3276.17	-303.26
	σ <sub>s,c</sub> 15	-186964.98	10088.23	-3572.14	-892.93
	σ <sub>cls,Max</sub> 15	-186964.98	10088.23	-3572.14	-65.40
	σ <sub>cls,Med</sub> 15	-186964.98	10088.23	-3572.14	-40.95
339	Ft. 17	-169911.55	-26478.98	4955.29	43.91
	σ <sub>s,c</sub> 15	-183514.98	-27369.78	5640.94	-1236.25
	σ <sub>cls,Max</sub> 15	-183514.98	-27369.78	5640.94	-93.89
	σ <sub>cls,Med</sub> 15	-183514.98	-27369.78	5640.94	-41.72
<b>Combinazioni Frequenti</b>					
239	Ft. 20	-173585.33	9672.47	-3204.75	-310.16
	σ <sub>s,c</sub> 18	-183120.13	9669.96	-3442.04	-869.32
	σ <sub>cls,Max</sub> 18	-183120.13	9669.96	-3442.04	-63.60
	σ <sub>cls,Med</sub> 18	-183120.13	9669.96	-3442.04	-40.11
339	Ft. 20	-170135.33	-26362.97	5039.48	44.04
	σ <sub>s,c</sub> 18	-179670.13	-26712.07	5545.39	-1209.64
	σ <sub>cls,Max</sub> 18	-179670.13	-26712.07	5545.39	-91.89
	σ <sub>cls,Med</sub> 18	-179670.13	-26712.07	5545.39	-40.84
<b>Combinazioni Quasi Permanenti</b>					
239	Ft. 22	-173659.91	9593.18	-3180.94	-312.45
	σ <sub>s,c</sub> 21	-181844.75	9529.69	-3399.53	-861.48
	σ <sub>cls,Max</sub> 21	-181844.75	9529.69	-3399.53	-63.01
	σ <sub>cls,Med</sub> 21	-181844.75	9529.69	-3399.53	-39.83
339	Ft. 22	-170209.91	-26324.30	5067.54	44.08
	σ <sub>s,c</sub> 21	-178394.75	-26488.24	5515.23	-1200.76
	σ <sub>cls,Max</sub> 21	-178394.75	-26488.24	5515.23	-91.22
	σ <sub>cls,Med</sub> 21	-178394.75	-26488.24	5515.23	-40.55

Pilastro: **40/2576** / L 0.85[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 85.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
40	1	-235958.97	-15448.76	5989.47	0.34
2576	1	-234528.97	-6028.46	4753.75	0.31



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	0.98	9430.58	86297.23	1313.10	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
40	Ft. 16	-158756.64	-10677.58	4034.84	-218.59
	σ <sub>s,c</sub> 15	-163429.91	-10963.92	4164.08	-848.76
	σ <sub>cls,Max</sub> 15	-163429.91	-10963.92	4164.08	-63.29
	σ <sub>cls,Med</sub> 15	-163429.91	-10963.92	4164.08	-35.80
2576	Ft. 16	-157656.64	-4403.66	3157.77	-345.50
	σ <sub>s,c</sub> 15	-162329.91	-4510.47	3276.05	-711.33
	σ <sub>cls,Max</sub> 15	-162329.91	-4510.47	3276.05	-51.96
	σ <sub>cls,Med</sub> 15	-162329.91	-4510.47	3276.05	-35.56
<b>Combinazioni Frequenti</b>					
40	Ft. 19	-157201.41	-10569.83	3989.75	-216.67
	σ <sub>s,c</sub> 18	-158759.23	-10664.85	4032.76	-824.34
	σ <sub>cls,Max</sub> 18	-158759.23	-10664.85	4032.76	-61.45
	σ <sub>cls,Med</sub> 18	-158759.23	-10664.85	4032.76	-34.77
2576	Ft. 19	-156101.41	-4345.69	3119.23	-342.56
	σ <sub>s,c</sub> 18	-157659.23	-4380.52	3158.69	-690.13
	σ <sub>cls,Max</sub> 18	-157659.23	-4380.52	3158.69	-50.39
	σ <sub>cls,Med</sub> 18	-157659.23	-4380.52	3158.69	-34.53
<b>Combinazioni Quasi Permanenti</b>					
40	Ft. 21	-157201.92	-10567.28	3989.33	-216.73
	σ <sub>s,c</sub> 21	-157201.92	-10567.28	3989.33	-816.25
	σ <sub>cls,Max</sub> 21	-157201.92	-10567.28	3989.33	-60.85
	σ <sub>cls,Med</sub> 22	-157782.36	-10359.12	3974.42	-34.56
2576	Ft. 21	-156101.92	-4341.06	3119.42	-342.63
	σ <sub>s,c</sub> 22	-156682.36	-4153.58	3162.52	-683.33
	σ <sub>cls,Max</sub> 22	-156682.36	-4153.58	3162.52	-49.90
	σ <sub>cls,Med</sub> 22	-156682.36	-4153.58	3162.52	-34.32

Pilastro: **2576/140** / L 3.00[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 100.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2576	1	-439374.25	22030.31	-2997.15	0.58
140	1	-435149.25	-16814.84	-4353.34	0.56

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	13793.43	86297.23	783.38	61956.98	Ø 10 2br.x4br./15.0
1.13	2.13	13793.43	64722.92	783.38	46467.73	Ø 10 2br.x4br./20.0
2.13	3.13	13793.43	86297.23	783.38	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2576	Ft. 16	-294971.09	14286.09	-2126.04	-667.82
	σ <sub>s,c</sub> 15	-303639.94	14753.80	-2092.62	-1305.51
	σ <sub>cls,Max</sub> 15	-303639.94	14753.80	-2092.62	-92.04

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-303639.94	14753.80	-2092.62	-66.51
140	Ft. 17	-296208.72	-11377.85	-3202.88	-685.20
	σ <sub>s,c</sub> 15	-300389.94	-11180.27	-3065.23	-1267.33
	σ <sub>cls,Max</sub> 15	-300389.94	-11180.27	-3065.23	-89.97
	σ <sub>cls,Med</sub> 15	-300389.94	-11180.27	-3065.23	-65.80
<b>Combinazioni Frequenti</b>					
2576	Ft. 19	-292106.94	14159.83	-2137.95	-660.10
	σ <sub>s,c</sub> 20	-295242.53	14632.02	-2037.34	-1274.17
	σ <sub>cls,Max</sub> 20	-295242.53	14632.02	-2037.34	-89.87
	σ <sub>cls,Med</sub> 20	-295242.53	14632.02	-2037.34	-64.67
140	Ft. 20	-291992.53	-11015.45	-2958.57	-685.05
	σ <sub>s,c</sub> 20	-291992.53	-11015.45	-2958.57	-1233.65
	σ <sub>cls,Max</sub> 20	-291992.53	-11015.45	-2958.57	-87.58
	σ <sub>cls,Med</sub> 20	-291992.53	-11015.45	-2958.57	-63.96
<b>Combinazioni Quasi Permanenti</b>					
2576	Ft. 21	-292112.22	14165.97	-2138.11	-660.01
	σ <sub>s,c</sub> 22	-293837.13	14517.92	-2072.72	-1268.82
	σ <sub>cls,Max</sub> 22	-293837.13	14517.92	-2072.72	-89.53
	σ <sub>cls,Med</sub> 22	-293837.13	14517.92	-2072.72	-64.36
140	Ft. 22	-290587.13	-10894.66	-2877.14	-685.00
	σ <sub>s,c</sub> 22	-290587.13	-10894.66	-2877.14	-1224.46
	σ <sub>cls,Max</sub> 22	-290587.13	-10894.66	-2877.14	-86.85
	σ <sub>cls,Med</sub> 22	-290587.13	-10894.66	-2877.14	-63.65

Pilastro: **140/240** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
140	1	-377928.50	-5879.01	9405.66	0.51
240	1	-373443.53	789.79	-7321.03	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2043.53	86297.23	4866.44	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	2043.53	64722.92	4866.44	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	2043.53	86297.23	4866.44	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
140	Ft. 17	-255709.17	-3676.59	6710.28	-566.53
	σ <sub>s,c</sub> 15	-259843.77	-3586.04	6675.02	-1124.73
	σ <sub>cls,Max</sub> 15	-259843.77	-3586.04	6675.02	-83.24
	σ <sub>cls,Med</sub> 15	-259843.77	-3586.04	6675.02	-56.91
240	Ft. 17	-252259.19	448.07	-5236.48	-654.89
	σ <sub>s,c</sub> 15	-256393.78	284.36	-5230.07	-1013.42
	σ <sub>cls,Max</sub> 15	-256393.78	284.36	-5230.07	-73.58
	σ <sub>cls,Med</sub> 15	-256393.78	284.36	-5230.07	-56.16
<b>Combinazioni Frequenti</b>					
140	Ft. 19	-251208.39	-3420.17	6198.65	-572.21

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 20	-253686.75	-3602.87	6355.76	-1094.62
	σ <sub>cls,Max</sub> 20	-253686.75	-3602.87	6355.76	-80.87
	σ <sub>cls,Med</sub> 20	-253686.75	-3602.87	6355.76	-55.57
240	Ft. 19	-247758.41	222.13	-4780.98	-658.29
	σ <sub>s,c</sub> 20	-250236.77	510.40	-4861.35	-985.16
	σ <sub>cls,Max</sub> 20	-250236.77	510.40	-4861.35	-71.32
	σ <sub>cls,Med</sub> 20	-250236.77	510.40	-4861.35	-54.81
<b>Combinazioni Quasi Permanenti</b>					
140	Ft. 21	-251213.14	-3419.60	6198.61	-572.24
	σ <sub>s,c</sub> 22	-253012.63	-3578.30	6237.58	-1088.24
	σ <sub>cls,Max</sub> 22	-253012.63	-3578.30	6237.58	-80.31
	σ <sub>cls,Med</sub> 22	-253012.63	-3578.30	6237.58	-55.42
240	Ft. 21	-247763.16	220.97	-4781.04	-658.32
	σ <sub>s,c</sub> 22	-249562.64	531.18	-4736.31	-979.30
	σ <sub>cls,Max</sub> 22	-249562.64	531.18	-4736.31	-70.79
	σ <sub>cls,Med</sub> 22	-249562.64	531.18	-4736.31	-54.66

Pilastro: **240/340** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
240	1	-315278.81	11166.03	9895.89	0.45
340	3	-304904.28	-32410.68	-17418.28	0.57

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	12754.12	86297.23	8062.96	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	12754.12	64722.92	8062.96	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	12754.12	86297.23	8062.96	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
240	Ft. 17	-211231.34	7827.03	7253.56	-335.23
	σ <sub>s,c</sub> 17	-211231.34	7827.03	7253.56	-1052.78
	σ <sub>cls,Max</sub> 17	-211231.34	7827.03	7253.56	-79.86
	σ <sub>cls,Med</sub> 15	-215157.72	7543.69	6918.20	-47.13
340	Ft. 17	-207781.34	-22065.25	-11957.73	88.81
	σ <sub>s,c</sub> 17	-207781.34	-22065.25	-11957.73	-1441.09
	σ <sub>cls,Max</sub> 17	-207781.34	-22065.25	-11957.73	-114.17
	σ <sub>cls,Med</sub> 17	-207781.34	-22065.25	-11957.73	-48.59
<b>Combinazioni Frequenti</b>					
240	Ft. 20	-211472.03	7658.71	7005.50	-346.66
	σ <sub>s,c</sub> 20	-211472.03	7658.71	7005.50	-1042.93
	σ <sub>cls,Max</sub> 20	-211472.03	7658.71	7005.50	-78.89
	σ <sub>cls,Med</sub> 20	-211472.03	7658.71	7005.50	-46.32
340	Ft. 20	-208022.03	-22002.32	-11841.61	81.39
	σ <sub>s,c</sub> 20	-208022.03	-22002.32	-11841.61	-1436.13
	σ <sub>cls,Max</sub> 20	-208022.03	-22002.32	-11841.61	-113.66
	σ <sub>cls,Med</sub> 20	-208022.03	-22002.32	-11841.61	-48.51

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Quasi Permanenti</b>					
240	Ft. 22	-211552.27	7602.60	6922.82	-350.47
	$\sigma_{s,c}22$	-211552.27	7602.60	6922.82	-1039.65
	$\sigma_{cls,Max}22$	-211552.27	7602.60	6922.82	-78.56
	$\sigma_{cls,Med}22$	-211552.27	7602.60	6922.82	-46.34
340	Ft. 22	-208102.27	-21981.34	-11802.91	78.93
	$\sigma_{s,c}22$	-208102.27	-21981.34	-11802.91	-1434.48
	$\sigma_{cls,Max}22$	-208102.27	-21981.34	-11802.91	-113.49
	$\sigma_{cls,Med}22$	-208102.27	-21981.34	-11802.91	-48.49

Pilastro: **41/141** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 20  $\varnothing$  20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 7f20 x 2 H >

**Staffe:**  $\varnothing$  10 2br.x4br./15.0 x 100.0/ $\varnothing$  10 2br.x4br./20.0 x 210.0/ $\varnothing$  10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
41	1	-261622.19	2853.80	254.69	0.28
141	1	-255967.19	-6363.34	5690.74	0.31

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	3671.00	86297.23	1659.23	61956.98	$\varnothing$ 10 2br.x4br./15.0
1.13	3.23	3671.00	64722.92	1659.23	46467.73	$\varnothing$ 10 2br.x4br./20.0
3.23	4.23	3671.00	86297.23	1659.23	61956.98	$\varnothing$ 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
41	Ft. 17	-178352.48	1723.32	84.13	-512.15
	$\sigma_{s,c}15$	-184161.09	1385.10	142.86	-584.50
	$\sigma_{cls,Max}15$	-184161.09	1385.10	142.86	-39.35
	$\sigma_{cls,Med}15$	-184161.09	1385.10	142.86	-37.26
141	Ft. 17	-174002.48	-4123.00	4078.24	-346.65
	$\sigma_{s,c}15$	-179811.09	-3998.41	4038.96	-724.08
	$\sigma_{cls,Max}15$	-179811.09	-3998.41	4038.96	-53.12
	$\sigma_{cls,Med}15$	-179811.09	-3998.41	4038.96	-36.38

**Combinazioni Frequenti**

41	Ft. 20	-175657.73	1532.41	117.99	-505.95
	$\sigma_{s,c}18$	-178089.17	1250.55	173.07	-564.86
	$\sigma_{cls,Max}18$	-178089.17	1250.55	173.07	-38.05
	$\sigma_{cls,Med}18$	-178089.17	1250.55	173.07	-36.03
141	Ft. 20	-171307.73	-3953.66	3885.65	-346.65
	$\sigma_{s,c}18$	-173739.17	-3812.74	3829.26	-696.73
	$\sigma_{cls,Max}18$	-173739.17	-3812.74	3829.26	-51.05
	$\sigma_{cls,Med}18$	-173739.17	-3812.74	3829.26	-35.15

**Combinazioni Quasi Permanenti**

41	Ft. 22	-174759.48	1468.77	129.28	-503.89
	$\sigma_{s,c}21$	-176081.50	1203.43	183.28	-558.33
	$\sigma_{cls,Max}21$	-176081.50	1203.43	183.28	-37.61
	$\sigma_{cls,Med}21$	-176081.50	1203.43	183.28	-35.63
141	Ft. 22	-170409.48	-3897.21	3821.45	-346.65
	$\sigma_{s,c}22$	-170409.48	-3897.21	3821.45	-687.71
	$\sigma_{cls,Max}22$	-170409.48	-3897.21	3821.45	-50.46
	$\sigma_{cls,Med}21$	-171731.50	-3751.15	3759.35	-34.75

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **141/241** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 7f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
141	1	-216566.53	-3003.36	-12693.77	0.32
241	1	-212081.53	-1378.59	8457.30	0.28

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	606.48	86297.23	6130.74	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	606.48	64722.92	6130.74	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	606.48	86297.23	6130.74	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
141	Ft. 17	-145969.38	-1772.17	-8909.38	-158.79
	σ <sub>s,c</sub> 15	-151792.61	-1681.45	-8911.65	-743.55
	σ <sub>cls,Max</sub> 15	-151792.61	-1681.45	-8911.65	-59.07
	σ <sub>cls,Med</sub> 15	-151792.61	-1681.45	-8911.65	-30.71
241	Ft. 17	-142519.38	-1066.53	5985.50	-243.52
	σ <sub>s,c</sub> 15	-148342.61	-1120.51	6036.58	-641.53
	σ <sub>cls,Max</sub> 15	-148342.61	-1120.51	6036.58	-49.20
	σ <sub>cls,Med</sub> 15	-148342.61	-1120.51	6036.58	-30.01
<b>Combinazioni Frequenti</b>					
141	Ft. 20	-144691.31	-1719.45	-8379.29	-171.01
	σ <sub>s,c</sub> 18	-147119.31	-1616.08	-8389.57	-713.31
	σ <sub>cls,Max</sub> 18	-147119.31	-1616.08	-8389.57	-56.50
	σ <sub>cls,Med</sub> 18	-147119.31	-1616.08	-8389.57	-29.77
241	Ft. 20	-141241.31	-1047.01	5432.51	-255.88
	σ <sub>s,c</sub> 18	-143669.31	-1180.85	5546.40	-614.16
	σ <sub>cls,Max</sub> 18	-143669.31	-1180.85	5546.40	-46.88
	σ <sub>cls,Med</sub> 18	-143669.31	-1180.85	5546.40	-29.07
<b>Combinazioni Quasi Permanenti</b>					
141	Ft. 22	-144265.30	-1701.87	-8202.60	-175.08
	σ <sub>s,c</sub> 21	-145577.23	-1595.26	-8215.43	-703.29
	σ <sub>cls,Max</sub> 21	-145577.23	-1595.26	-8215.43	-55.65
	σ <sub>cls,Med</sub> 21	-145577.23	-1595.26	-8215.43	-29.45
241	Ft. 21	-142127.23	-1200.02	5382.88	-257.62
	σ <sub>s,c</sub> 21	-142127.23	-1200.02	5382.88	-605.06
	σ <sub>cls,Max</sub> 21	-142127.23	-1200.02	5382.88	-46.11
	σ <sub>cls,Med</sub> 21	-142127.23	-1200.02	5382.88	-28.76

Pilastro: **241/341** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 7f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
241	1	-176386.48	1977.39	-21424.44	0.39
341	3	-163054.36	-2687.75	37085.98	0.60

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
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**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3418.15	86297.23	17002.81	61956.98	ø 10 2br.x4br./15.0
1.13	2.33	3417.94	64722.92	17011.53	46467.73	ø 10 2br.x4br./20.0
2.33	3.33	3417.69	86297.23	17018.80	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
241	Ft. 17	-116957.84	1288.56	-14876.74	279.01
	σ <sub>s,c</sub> 15	-122855.94	1224.86	-14766.58	-853.28
	σ <sub>cls,Max</sub> 17	-116957.84	1288.56	-14876.74	-75.86
	σ <sub>cls,Med</sub> 17	-116957.84	1288.56	-14876.74	-36.89
341	Ft. 17	-113507.84	-1748.10	25322.35	1378.48
	σ <sub>s,c</sub> 15	-119405.94	-1577.01	24981.27	-1222.20
	σ <sub>cls,Max</sub> 17	-113507.84	-1748.10	25322.35	-126.99
	σ <sub>cls,Med</sub> 17	-113507.84	-1748.10	25322.35	-61.71
<b>Combinazioni Frequenti</b>					
241	Ft. 20	-117014.31	1202.57	-14543.26	250.12
	σ <sub>s,c</sub> 20	-117014.31	1202.57	-14543.26	-831.28
	σ <sub>cls,Max</sub> 20	-117014.31	1202.57	-14543.26	-74.20
	σ <sub>cls,Med</sub> 20	-117014.31	1202.57	-14543.26	-36.14
341	Ft. 20	-113564.31	-1642.50	25265.57	1368.57
	σ <sub>s,c</sub> 20	-113564.31	-1642.50	25265.57	-1217.56
	σ <sub>cls,Max</sub> 20	-113564.31	-1642.50	25265.57	-126.50
	σ <sub>cls,Med</sub> 20	-113564.31	-1642.50	25265.57	-61.57
<b>Combinazioni Quasi Permanenti</b>					
241	Ft. 22	-117033.14	1173.91	-14432.10	240.67
	σ <sub>s,c</sub> 22	-117033.14	1173.91	-14432.10	-826.59
	σ <sub>cls,Max</sub> 22	-117033.14	1173.91	-14432.10	-73.65
	σ <sub>cls,Med</sub> 22	-117033.14	1173.91	-14432.10	-35.89
341	Ft. 22	-113583.14	-1607.30	25246.65	1365.27
	σ <sub>s,c</sub> 22	-113583.14	-1607.30	25246.65	-1216.04
	σ <sub>cls,Max</sub> 22	-113583.14	-1607.30	25246.65	-126.33
	σ <sub>cls,Med</sub> 22	-113583.14	-1607.30	25246.65	-61.53

Pilastro: **42/142** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
42	1	-542401.81	5838.91	1388.11	0.64
142	1	-536746.81	1785.19	682.46	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2947.86	86297.23	533.35	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	2947.86	64722.92	533.35	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	2947.86	86297.23	533.35	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
42	Ft. 16	-365336.81	4231.14	894.94	-1102.64
	σ <sub>s,c</sub> 15	-376487.81	4237.67	948.65	-1336.45

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
*Parcheggio interrato - Tabulato di calcolo*

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Max</sub> 15	-376487.81	4237.67	948.65	-90.93
	σ <sub>cls,Med</sub> 15	-376487.81	4237.67	948.65	-82.46
142	Ft. 16	-360986.81	1121.53	495.73	-1151.91
	σ <sub>s,c</sub> 15	-372137.81	1245.94	509.02	-1259.24
	σ <sub>cls,Max</sub> 15	-372137.81	1245.94	509.02	-84.75
	σ <sub>cls,Med</sub> 15	-372137.81	1245.94	509.02	-81.51
<b>Combinazioni Frequenti</b>					
42	Ft. 19	-361590.16	4236.25	878.50	-1090.77
	σ <sub>s,c</sub> 18	-365306.06	4238.68	896.46	-1298.07
	σ <sub>cls,Max</sub> 18	-365306.06	4238.68	896.46	-88.31
	σ <sub>cls,Med</sub> 18	-365306.06	4238.68	896.46	-80.01
142	Ft. 19	-357240.16	1078.08	489.22	-1140.52
	σ <sub>s,c</sub> 18	-360956.06	1119.48	493.58	-1219.94
	σ <sub>cls,Max</sub> 18	-360956.06	1119.48	493.58	-82.09
	σ <sub>cls,Med</sub> 18	-360956.06	1119.48	493.58	-79.06
<b>Combinazioni Quasi Permanenti</b>					
42	Ft. 21	-361584.00	4237.75	878.81	-1090.72
	σ <sub>s,c</sub> 21	-361584.00	4237.75	878.81	-1285.27
	σ <sub>cls,Max</sub> 21	-361584.00	4237.75	878.81	-87.44
	σ <sub>cls,Med</sub> 22	-361742.09	4007.51	907.06	-79.23
142	Ft. 21	-357234.00	1077.66	488.79	-1140.52
	σ <sub>s,c</sub> 21	-357234.00	1077.66	488.79	-1206.88
	σ <sub>cls,Max</sub> 21	-357234.00	1077.66	488.79	-81.21
	σ <sub>cls,Med</sub> 22	-357392.09	1193.71	409.99	-78.28

Pilastro: **142/242** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
142	1	-461438.41	-10697.59	-2709.86	0.57
242	1	-456953.41	4167.85	2189.25	0.54

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4308.82	86297.23	1536.35	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	4308.82	64722.92	1536.35	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	4308.82	86297.23	1536.35	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
142	Ft. 17	-311272.97	-7318.17	-1989.84	-839.69
	σ <sub>s,c</sub> 15	-318556.50	-7428.08	-1964.01	-1230.60
	σ <sub>cls,Max</sub> 15	-318556.50	-7428.08	-1964.01	-85.60
	σ <sub>cls,Med</sub> 15	-318556.50	-7428.08	-1964.01	-69.77
242	Ft. 17	-307822.97	2536.02	1860.18	-910.70
	σ <sub>s,c</sub> 15	-315106.50	2923.43	1618.47	-1134.59
	σ <sub>cls,Max</sub> 15	-315106.50	2923.43	1618.47	-78.01
	σ <sub>cls,Med</sub> 15	-315106.50	2923.43	1618.47	-69.02
<b>Combinazioni Frequenti</b>					



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
142	Ft. 19	-307556.31	-7013.04	-1818.28	-837.93
	σ <sub>s,c</sub> 18	-310298.66	-7116.41	-1853.66	-1194.86
	σ <sub>cls,Max</sub> 18	-310298.66	-7116.41	-1853.66	-83.04
	σ <sub>cls,Med</sub> 18	-310298.66	-7116.41	-1853.66	-67.97
242	Ft. 19	-304106.31	2611.28	1460.41	-909.98
	σ <sub>s,c</sub> 18	-306848.66	2688.88	1499.04	-1099.83
	σ <sub>cls,Max</sub> 18	-306848.66	2688.88	1499.04	-75.51
	σ <sub>cls,Med</sub> 18	-306848.66	2688.88	1499.04	-67.21
<b>Combinazioni Quasi Permanenti</b>					
142	Ft. 21	-307550.66	-7012.76	-1817.51	-837.94
	σ <sub>s,c</sub> 22	-307986.19	-6976.79	-1837.68	-1184.48
	σ <sub>cls,Max</sub> 22	-307986.19	-6976.79	-1837.68	-82.30
	σ <sub>cls,Med</sub> 22	-307986.19	-6976.79	-1837.68	-67.46
242	Ft. 21	-304100.66	2610.96	1459.76	-909.98
	σ <sub>s,c</sub> 22	-304536.19	2173.48	1666.34	-1089.12
	σ <sub>cls,Max</sub> 22	-304536.19	2173.48	1666.34	-74.90
	σ <sub>cls,Med</sub> 22	-304536.19	2173.48	1666.34	-66.70

Pilastro: **242/342** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
242	1	-384415.38	-14282.04	-4852.21	0.50
342	1	-379930.38	47297.50	7896.79	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	18904.77	86297.23	3695.36	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	18904.77	64722.92	3695.36	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	18904.77	86297.23	3695.36	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
242	Ft. 17	-256283.61	-10307.95	-2917.11	-580.62
	σ <sub>s,c</sub> 15	-263359.13	-9890.70	-3432.48	-1136.25
	σ <sub>cls,Max</sub> 15	-263359.13	-9890.70	-3432.48	-81.43
	σ <sub>cls,Med</sub> 15	-263359.13	-9890.70	-3432.48	-57.68
342	Ft. 17	-252833.61	34337.95	3957.53	-143.12
	σ <sub>s,c</sub> 15	-259909.11	32327.26	5492.50	-1557.46
	σ <sub>cls,Max</sub> 15	-259909.11	32327.26	5492.50	-115.84
	σ <sub>cls,Med</sub> 15	-259909.11	32327.26	5492.50	-56.97
<b>Combinazioni Frequenti</b>					
242	Ft. 19	-256285.56	-9455.26	-3270.90	-583.32
	σ <sub>s,c</sub> 18	-258047.25	-9563.59	-3309.76	-1109.54
	σ <sub>cls,Max</sub> 18	-258047.25	-9563.59	-3309.76	-79.45
	σ <sub>cls,Med</sub> 18	-258047.25	-9563.59	-3309.76	-56.52
342	Ft. 20	-253416.30	34102.54	3991.96	-147.79
	σ <sub>s,c</sub> 18	-254597.25	31365.23	5386.91	-1520.91
	σ <sub>cls,Max</sub> 18	-254597.25	31365.23	5386.91	-113.11

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 18	-254597.25	31365.23	5386.91	-55.79
<b>Combinazioni Quasi Permanenti</b>					
242	Ft. 21	-256280.70	-9454.87	-3269.78	-583.34
	σ <sub>s,c</sub> 21	-256280.70	-9454.87	-3269.78	-1100.69
	σ <sub>cls,Max</sub> 21	-256280.70	-9454.87	-3269.78	-78.79
	σ <sub>cls,Med</sub> 22	-257060.53	-10094.62	-2813.29	-56.31
342	Ft. 22	-253610.53	34024.07	4003.44	-149.35
	σ <sub>s,c</sub> 22	-253610.53	34024.07	4003.44	-1517.13
	σ <sub>cls,Max</sub> 21	-252830.70	31046.04	5353.39	-112.21
	σ <sub>cls,Med</sub> 22	-253610.53	34024.07	4003.44	-55.55

Pilastro: **43/143** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
43	1	-510281.50	12035.80	382.84	0.62
143	1	-504626.50	-1225.27	-730.07	0.58

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5064.98	86297.23	345.17	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	5064.98	64722.92	345.17	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	5064.98	86297.23	345.17	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
43	Ft. 16	-343562.91	8474.64	203.24	-983.70
	σ <sub>s,c</sub> 15	-354128.88	8535.70	238.56	-1310.71
	σ <sub>cls,Max</sub> 15	-354128.88	8535.70	238.56	-89.17
	σ <sub>cls,Med</sub> 15	-354128.88	8535.70	238.56	-77.57
143	Ft. 16	-339212.91	-826.97	-457.18	-1086.42
	σ <sub>s,c</sub> 15	-349778.88	-725.79	-489.14	-1176.64
	σ <sub>cls,Max</sub> 15	-349778.88	-725.79	-489.14	-79.13
	σ <sub>cls,Med</sub> 15	-349778.88	-725.79	-489.14	-76.61
<b>Combinazioni Frequenti</b>					
43	Ft. 19	-340052.97	8458.68	191.40	-972.80
	σ <sub>s,c</sub> 18	-343575.41	8479.19	203.17	-1273.98
	σ <sub>cls,Max</sub> 18	-343575.41	8479.19	203.17	-86.67
	σ <sub>cls,Med</sub> 18	-343575.41	8479.19	203.17	-75.25
143	Ft. 19	-335702.97	-860.36	-446.36	-1074.69
	σ <sub>s,c</sub> 18	-339225.41	-826.62	-457.00	-1142.59
	σ <sub>cls,Max</sub> 18	-339225.41	-826.62	-457.00	-76.84
	σ <sub>cls,Med</sub> 18	-339225.41	-826.62	-457.00	-74.30
<b>Combinazioni Quasi Permanenti</b>					
43	Ft. 21	-340055.47	8459.59	191.38	-972.80
	σ <sub>s,c</sub> 21	-340055.47	8459.59	191.38	-1261.72
	σ <sub>cls,Max</sub> 21	-340055.47	8459.59	191.38	-85.84
	σ <sub>cls,Med</sub> 22	-341152.31	8141.30	155.13	-74.72
143	Ft. 21	-335705.47	-860.29	-446.32	-1074.70

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 21	-335705.47	-860.29	-446.32	-1131.24
	σ <sub>cls,Max</sub> 21	-335705.47	-860.29	-446.32	-76.08
	σ <sub>cls,Med</sub> 22	-336802.31	-643.37	-374.09	-73.77

Pilastro: **143/243** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
143	1	-430411.75	-17790.05	274.55	0.55
243	1	-425926.75	7926.53	418.55	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7454.08	86297.23	165.80	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	7454.08	64722.92	165.80	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	7454.08	86297.23	165.80	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
143	Ft. 16	-289278.16	-11700.00	198.75	-752.73
	σ <sub>s,c</sub> 15	-297053.72	-12239.55	208.91	-1182.82
	σ <sub>cls,Max</sub> 15	-297053.72	-12239.55	208.91	-81.27
	σ <sub>cls,Med</sub> 15	-297053.72	-12239.55	208.91	-65.07
243	Ft. 16	-285828.16	5072.75	267.07	-847.62
	σ <sub>s,c</sub> 15	-293603.72	5469.58	268.76	-1062.66
	σ <sub>cls,Max</sub> 15	-293603.72	5469.58	268.76	-72.12
	σ <sub>cls,Med</sub> 15	-293603.72	5469.58	268.76	-64.31
<b>Combinazioni Frequenti</b>					
143	Ft. 19	-286696.94	-11517.68	195.68	-747.33
	σ <sub>s,c</sub> 18	-289289.13	-11697.44	199.08	-1148.13
	σ <sub>cls,Max</sub> 18	-289289.13	-11697.44	199.08	-78.85
	σ <sub>cls,Med</sub> 18	-289289.13	-11697.44	199.08	-63.36
243	Ft. 19	-283246.94	4938.02	266.13	-841.38
	σ <sub>s,c</sub> 18	-285839.13	5070.21	266.68	-1030.55
	σ <sub>cls,Max</sub> 18	-285839.13	5070.21	266.68	-69.91
	σ <sub>cls,Med</sub> 18	-285839.13	5070.21	266.68	-62.61
<b>Combinazioni Quasi Permanenti</b>					
143	Ft. 21	-286699.13	-11517.17	195.75	-747.34
	σ <sub>s,c</sub> 22	-288154.47	-11418.82	212.80	-1140.29
	σ <sub>cls,Max</sub> 22	-288154.47	-11418.82	212.80	-78.29
	σ <sub>cls,Med</sub> 22	-288154.47	-11418.82	212.80	-63.12
243	Ft. 21	-283249.13	4937.51	266.05	-841.39
	σ <sub>s,c</sub> 21	-283249.13	4937.51	266.05	-1019.85
	σ <sub>cls,Max</sub> 21	-283249.13	4937.51	266.05	-69.17
	σ <sub>cls,Med</sub> 22	-284704.47	4463.72	89.26	-62.36

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **243/343** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
243	1	-362658.63	-17937.52	633.27	0.47
343	1	-358173.63	61207.48	-2405.59	0.63

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	23719.14	86297.23	880.83	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	23719.14	64722.92	880.83	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	23719.14	86297.23	880.83	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
243	Ft. 17	-243074.44	-12808.16	43.69	-587.73
	σ <sub>s,c</sub> 15	-248427.00	-12444.03	429.62	-1033.43
	σ <sub>cls,Max</sub> 15	-248427.00	-12444.03	429.62	-71.59
	σ <sub>cls,Med</sub> 15	-248427.00	-12444.03	429.62	-54.41
343	Ft. 17	-239624.44	43132.64	-482.28	-64.87
	σ <sub>s,c</sub> 15	-244977.00	41706.09	-1638.94	-1539.77
	σ <sub>cls,Max</sub> 15	-244977.00	41706.09	-1638.94	-111.94
	σ <sub>cls,Med</sub> 15	-244977.00	41706.09	-1638.94	-54.18
<b>Combinazioni Frequenti</b>					
243	Ft. 19	-241503.73	-11901.42	385.05	-586.54
	σ <sub>s,c</sub> 18	-243237.22	-12037.19	396.11	-1008.65
	σ <sub>cls,Max</sub> 18	-243237.22	-12037.19	396.11	-69.83
	σ <sub>cls,Med</sub> 20	-243242.20	-12582.02	14.23	-53.28
343	Ft. 20	-239792.20	42777.67	-430.78	-73.42
	σ <sub>s,c</sub> 20	-239792.20	42777.67	-430.78	-1501.80
	σ <sub>cls,Max</sub> 18	-239787.22	40477.52	-1559.97	-108.97
	σ <sub>cls,Med</sub> 20	-239792.20	42777.67	-430.78	-53.40
<b>Combinazioni Quasi Permanenti</b>					
243	Ft. 21	-241505.67	-11901.50	384.99	-586.55
	σ <sub>s,c</sub> 22	-243298.13	-12506.64	4.41	-1004.07
	σ <sub>cls,Max</sub> 21	-241505.67	-11901.50	384.99	-69.25
	σ <sub>cls,Med</sub> 22	-243298.13	-12506.64	4.41	-53.29
343	Ft. 22	-239848.13	42659.36	-413.62	-76.24
	σ <sub>s,c</sub> 22	-239848.13	42659.36	-413.62	-1499.42
	σ <sub>cls,Max</sub> 22	-239848.13	42659.36	-413.62	-108.02
	σ <sub>cls,Med</sub> 22	-239848.13	42659.36	-413.62	-53.33

Pilastro: **44/144** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 210.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
44	1	-535604.00	12544.57	795.16	0.65
144	1	-529948.94	-5305.34	-684.85	0.62

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**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6116.35	86297.23	438.27	61956.98	Ø 10 2br.x4br./15.0
1.13	3.23	6116.35	64722.92	438.27	46467.73	Ø 10 2br.x4br./20.0
3.23	4.23	6116.35	86297.23	438.27	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
44	Ft. 17	-354991.69	8680.72	527.75	-1007.55
	σ <sub>s,c</sub> 15	-371718.72	8737.71	529.74	-1381.06
	σ <sub>cls,Max</sub> 15	-371718.72	8737.71	529.74	-94.23
	σ <sub>cls,Med</sub> 15	-371718.72	8737.71	529.74	-81.42
144	Ft. 17	-350641.69	-3235.71	-460.06	-1084.48
	σ <sub>s,c</sub> 15	-367368.72	-3372.28	-463.21	-1276.89
	σ <sub>cls,Max</sub> 15	-367368.72	-3372.28	-463.21	-86.25
	σ <sub>cls,Med</sub> 15	-367368.72	-3372.28	-463.21	-80.47
<b>Combinazioni Frequenti</b>					
44	Ft. 20	-349374.94	8657.75	482.97	-990.90
	σ <sub>s,c</sub> 18	-360568.03	8680.25	484.66	-1342.05
	σ <sub>cls,Max</sub> 18	-360568.03	8680.25	484.66	-91.56
	σ <sub>cls,Med</sub> 18	-360568.03	8680.25	484.66	-78.98
144	Ft. 20	-345024.94	-3261.50	-425.60	-1066.70
	σ <sub>s,c</sub> 18	-356218.03	-3347.09	-427.86	-1238.72
	σ <sub>cls,Max</sub> 18	-356218.03	-3347.09	-427.86	-83.66
	σ <sub>cls,Med</sub> 18	-356218.03	-3347.09	-427.86	-78.02
<b>Combinazioni Quasi Permanenti</b>					
44	Ft. 22	-347502.69	8650.09	468.04	-985.35
	σ <sub>s,c</sub> 21	-356850.66	8660.70	469.60	-1329.04
	σ <sub>cls,Max</sub> 21	-356850.66	8660.70	469.60	-90.68
	σ <sub>cls,Med</sub> 21	-356850.66	8660.70	469.60	-78.16
144	Ft. 22	-343152.69	-3270.10	-414.12	-1060.77
	σ <sub>s,c</sub> 21	-352500.66	-3339.01	-416.11	-1226.00
	σ <sub>cls,Max</sub> 21	-352500.66	-3339.01	-416.11	-82.80
	σ <sub>cls,Med</sub> 21	-352500.66	-3339.01	-416.11	-77.21

Pilastro: **144/244** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
144	1	-453326.75	-20577.61	280.53	0.58
244	1	-448841.75	12137.27	-255.57	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	9482.57	86297.23	243.45	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	9482.57	64722.92	243.45	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	9482.57	86297.23	243.45	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
144	Ft. 17	-295931.03	-13693.76	199.15	-741.96

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Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-312913.47	-13971.16	209.82	-1263.29
	σ <sub>cls,Max</sub> 15	-312913.47	-13971.16	209.82	-86.94
	σ <sub>cls,Med</sub> 15	-312913.47	-13971.16	209.82	-68.54
244	Ft. 17	-292481.03	8153.67	-180.92	-821.83
	σ <sub>s,c</sub> 15	-309463.47	8232.52	-190.01	-1157.45
	σ <sub>cls,Max</sub> 15	-309463.47	8232.52	-190.01	-78.84
	σ <sub>cls,Med</sub> 15	-309463.47	8232.52	-190.01	-67.78
<b>Combinazioni Frequenti</b>					
144	Ft. 20	-293155.75	-13145.21	181.80	-742.37
	σ <sub>s,c</sub> 18	-304598.66	-13303.68	194.94	-1224.58
	σ <sub>cls,Max</sub> 18	-304598.66	-13303.68	194.94	-84.22
	σ <sub>cls,Med</sub> 18	-304598.66	-13303.68	194.94	-66.72
244	Ft. 20	-289705.75	7617.69	-164.91	-821.99
	σ <sub>s,c</sub> 18	-301148.66	7639.99	-178.05	-1120.06
	σ <sub>cls,Max</sub> 18	-301148.66	7639.99	-178.05	-76.23
	σ <sub>cls,Med</sub> 18	-301148.66	7639.99	-178.05	-65.96
<b>Combinazioni Quasi Permanenti</b>					
144	Ft. 22	-292230.63	-12962.36	176.02	-742.50
	σ <sub>s,c</sub> 21	-301826.72	-13082.00	190.04	-1211.69
	σ <sub>cls,Max</sub> 21	-301826.72	-13082.00	190.04	-83.32
	σ <sub>cls,Med</sub> 21	-301826.72	-13082.00	190.04	-66.11
244	Ft. 22	-288780.63	7439.03	-159.57	-822.04
	σ <sub>s,c</sub> 21	-298376.72	7443.20	-174.11	-1107.61
	σ <sub>cls,Max</sub> 21	-298376.72	7443.20	-174.11	-75.36
	σ <sub>cls,Med</sub> 21	-298376.72	7443.20	-174.11	-65.35

Pilastro: **244/344** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
244	1	-389153.50	-16404.42	559.66	0.50
344	1	-384668.50	56295.45	-1063.46	0.63

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	21072.43	86297.23	584.54	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	21072.43	64722.92	584.54	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	21072.43	86297.23	584.54	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
244	Ft. 17	-248823.91	-11057.18	356.61	-625.31
	σ <sub>s,c</sub> 15	-266666.84	-11494.45	387.02	-1076.47
	σ <sub>cls,Max</sub> 15	-266666.84	-11494.45	387.02	-74.25
	σ <sub>cls,Med</sub> 15	-266666.84	-11494.45	387.02	-58.41
344	Ft. 17	-245373.91	35896.71	-679.25	-197.41
	σ <sub>s,c</sub> 15	-263216.84	38363.37	-732.55	-1515.62
	σ <sub>cls,Max</sub> 15	-263216.84	38363.37	-732.55	-108.69
	σ <sub>cls,Med</sub> 15	-263216.84	38363.37	-732.55	-57.65

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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
244	Ft. 20	-248701.19	-10889.55	329.27	-628.52
	$\sigma_{s,c}18$	-260829.48	-11181.22	352.92	-1051.08
	$\sigma_{cls,Max}18$	-260829.48	-11181.22	352.92	-72.46
	$\sigma_{cls,Med}18$	-260829.48	-11181.22	352.92	-57.13
344	Ft. 20	-245251.19	35681.95	-636.39	-201.88
	$\sigma_{s,c}18$	-257379.48	37309.18	-674.48	-1477.35
	$\sigma_{cls,Max}18$	-257379.48	37309.18	-674.48	-105.88
	$\sigma_{cls,Med}18$	-257379.48	37309.18	-674.48	-56.38
<b>Combinazioni Quasi Permanenti</b>					
244	Ft. 22	-248660.28	-10833.67	320.16	-629.59
	$\sigma_{s,c}21$	-258883.53	-11076.60	341.67	-1042.62
	$\sigma_{cls,Max}21$	-258883.53	-11076.60	341.67	-71.86
	$\sigma_{cls,Med}21$	-258883.53	-11076.60	341.67	-56.70
344	Ft. 22	-245210.28	35610.37	-622.10	-203.37
	$\sigma_{s,c}21$	-255433.53	36958.71	-655.32	-1464.61
	$\sigma_{cls,Max}21$	-255433.53	36958.71	-655.32	-104.95
	$\sigma_{cls,Med}21$	-255433.53	36958.71	-655.32	-55.95

Pilastro: **45/145** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:**  $12 \varnothing 20 \text{ Af}=37.70 [\text{cm}^2] < 1f20 \times 4 V + 1f20 \times 2 B + 3f20 \times 2 H >$

**Staffe:**  $\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0/\varnothing 10 \text{ 2br.x4br./20.0} \times 210.0/\varnothing 10 \text{ 2br.x4br./15.0} \times 100.0$

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
45	1	-495233.84	14401.50	721.56	0.61
145	1	-489578.84	-7777.87	607.65	0.59

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7635.61	86297.23	336.27	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$
1.13	3.23	7635.61	64722.92	336.27	46467.73	$\varnothing 10 \text{ 2br.x4br./20.0}$
3.23	4.23	7635.61	86297.23	336.27	61956.98	$\varnothing 10 \text{ 2br.x4br./15.0}$

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	$\sigma$ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
45	Ft. 16	-334185.16	9741.36	456.85	-924.10
	$\sigma_{s,c}15$	-344502.34	9841.83	491.41	-1308.49
	$\sigma_{cls,Max}15$	-344502.34	9841.83	491.41	-89.54
	$\sigma_{cls,Med}15$	-344502.34	9841.83	491.41	-75.46
145	Ft. 16	-329835.16	-4904.25	419.55	-990.11
	$\sigma_{s,c}15$	-340152.34	-5007.46	431.95	-1213.23
	$\sigma_{cls,Max}15$	-340152.34	-5007.46	431.95	-82.26
	$\sigma_{cls,Med}15$	-340152.34	-5007.46	431.95	-74.51
<b>Combinazioni Frequenti</b>					
45	Ft. 20	-330983.84	9913.09	481.76	-909.98
	$\sigma_{s,c}18$	-334122.53	9763.17	455.15	-1271.94
	$\sigma_{cls,Max}18$	-334122.53	9763.17	455.15	-87.05
	$\sigma_{cls,Med}18$	-334122.53	9763.17	455.15	-73.18
145	Ft. 19	-326335.59	-4876.42	417.10	-979.15
	$\sigma_{s,c}18$	-329772.53	-4911.05	421.28	-1177.21
	$\sigma_{cls,Max}18$	-329772.53	-4911.05	421.28	-79.83
	$\sigma_{cls,Med}18$	-329772.53	-4911.05	421.28	-72.23
<b>Combinazioni Quasi Permanenti</b>					



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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
45	Ft. 22	-329258.72	9881.56	473.29	-905.10
	σ <sub>s,c</sub> 21	-330673.06	9733.31	443.34	-1259.74
	σ <sub>cls,Max</sub> 21	-330673.06	9733.31	443.34	-86.22
	σ <sub>cls,Med</sub> 21	-330673.06	9733.31	443.34	-72.43
145	Ft. 22	-324908.72	-5031.53	341.99	-974.31
	σ <sub>s,c</sub> 21	-326323.06	-4877.78	417.44	-1165.21
	σ <sub>cls,Max</sub> 21	-326323.06	-4877.78	417.44	-79.02
	σ <sub>cls,Med</sub> 21	-326323.06	-4877.78	417.44	-71.48

Pilastro: **145/245** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
145	1	-416046.06	-17711.03	-2118.03	0.54
245	1	-411561.06	11117.39	1435.72	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	8406.76	86297.23	1130.28	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	8406.76	64722.92	1130.28	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	8406.76	86297.23	1130.28	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
145	Ft. 17	-279694.81	-11888.25	-1509.12	-676.48
	σ <sub>s,c</sub> 15	-287831.13	-11966.61	-1479.20	-1188.47
	σ <sub>cls,Max</sub> 15	-287831.13	-11966.61	-1479.20	-83.04
	σ <sub>cls,Med</sub> 15	-287831.13	-11966.61	-1479.20	-63.05
245	Ft. 17	-276244.81	7699.96	1219.05	-742.88
	σ <sub>s,c</sub> 15	-284381.13	7505.01	1018.49	-1089.50
	σ <sub>cls,Max</sub> 15	-284381.13	7505.01	1018.49	-75.13
	σ <sub>cls,Med</sub> 15	-284381.13	7505.01	1018.49	-62.29
<b>Combinazioni Frequenti</b>					
145	Ft. 20	-277216.69	-11391.46	-1440.19	-678.66
	σ <sub>s,c</sub> 18	-280160.31	-11365.68	-1410.26	-1151.24
	σ <sub>cls,Max</sub> 18	-280160.31	-11365.68	-1410.26	-80.38
	σ <sub>cls,Med</sub> 18	-280160.31	-11365.68	-1410.26	-61.36
245	Ft. 20	-273766.69	7221.05	1157.11	-744.54
	σ <sub>s,c</sub> 20	-273766.69	7221.05	1157.11	-1054.39
	σ <sub>cls,Max</sub> 20	-273766.69	7221.05	1157.11	-72.90
	σ <sub>cls,Med</sub> 18	-276710.31	6953.25	961.98	-60.61
<b>Combinazioni Quasi Permanenti</b>					
145	Ft. 22	-276390.69	-11225.86	-1417.22	-679.38
	σ <sub>s,c</sub> 21	-277612.84	-11166.63	-1386.99	-1138.88
	σ <sub>cls,Max</sub> 21	-277612.84	-11166.63	-1386.99	-79.49
	σ <sub>cls,Med</sub> 21	-277612.84	-11166.63	-1386.99	-60.81
245	Ft. 22	-272940.69	7061.41	1136.46	-745.10
	σ <sub>s,c</sub> 22	-272940.69	7061.41	1136.46	-1048.41
	σ <sub>cls,Max</sub> 22	-272940.69	7061.41	1136.46	-72.45

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-274162.84	6770.00	942.95	-60.05

Pilastro: **245/345** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
245	1	-356230.91	-10000.52	-3217.69	0.45
345	1	-351745.88	34014.40	5468.77	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	12757.95	86297.23	2517.82	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	12757.95	64722.92	2517.82	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	12757.95	86297.23	2517.82	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
245	Ft. 16	-239303.17	-6971.89	-2149.73	-603.81
	σ <sub>s,c</sub> 15	-244610.28	-7139.33	-2214.29	-990.89
	σ <sub>cls,Max</sub> 15	-244610.28	-7139.33	-2214.29	-69.86
	σ <sub>cls,Med</sub> 15	-244610.28	-7139.33	-2214.29	-53.58
345	Ft. 16	-235853.17	22693.07	3638.84	-287.95
	σ <sub>s,c</sub> 15	-241160.28	23333.89	3719.88	-1292.35
	σ <sub>cls,Max</sub> 15	-241160.28	23333.89	3719.88	-94.55
	σ <sub>cls,Med</sub> 15	-241160.28	23333.89	3719.88	-52.82
<b>Combinazioni Frequenti</b>					
245	Ft. 19	-237484.28	-6904.58	-2130.91	-599.53
	σ <sub>s,c</sub> 18	-239251.58	-6960.00	-2152.53	-968.39
	σ <sub>cls,Max</sub> 18	-239251.58	-6960.00	-2152.53	-68.25
	σ <sub>cls,Med</sub> 18	-239251.58	-6960.00	-2152.53	-52.40
345	Ft. 19	-234034.28	22432.11	3617.19	-286.93
	σ <sub>s,c</sub> 18	-235801.58	22644.08	3644.39	-1261.06
	σ <sub>cls,Max</sub> 18	-235801.58	22644.08	3644.39	-92.25
	σ <sub>cls,Med</sub> 18	-235801.58	22644.08	3644.39	-51.65
<b>Combinazioni Quasi Permanenti</b>					
245	Ft. 21	-237473.97	-6902.20	-2131.47	-599.52
	σ <sub>s,c</sub> 21	-237473.97	-6902.20	-2131.47	-960.93
	σ <sub>cls,Max</sub> 21	-237473.97	-6902.20	-2131.47	-67.72
	σ <sub>cls,Med</sub> 21	-237473.97	-6902.20	-2131.47	-52.02
345	Ft. 21	-234023.97	22422.31	3618.30	-287.02
	σ <sub>s,c</sub> 21	-234023.97	22422.31	3618.30	-1250.76
	σ <sub>cls,Max</sub> 21	-234023.97	22422.31	3618.30	-91.50
	σ <sub>cls,Med</sub> 21	-234023.97	22422.31	3618.30	-51.26

Pilastro: **46/146** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
46	1	-478094.47	15039.61	874.26	0.60

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
146	1	-472439.47	-8785.56	-1391.71	0.57

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	8013.46	86297.23	553.24	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	8013.46	64722.92	553.24	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	8013.46	86297.23	553.24	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
46	Ft. 16	-323095.34	10043.70	525.40	-880.54
	σ <sub>s,c</sub> 15	-332885.69	10208.69	572.09	-1278.89
	σ <sub>cls,Max</sub> 15	-332885.69	10208.69	572.09	-87.72
	σ <sub>cls,Med</sub> 15	-332885.69	10208.69	572.09	-72.91
146	Ft. 16	-318745.34	-5513.80	-895.16	-928.58
	σ <sub>s,c</sub> 15	-328535.69	-5670.05	-949.66	-1202.37
	σ <sub>cls,Max</sub> 15	-328535.69	-5670.05	-949.66	-82.25
	σ <sub>cls,Med</sub> 15	-328535.69	-5670.05	-949.66	-71.96
<b>Combinazioni Frequenti</b>					
46	Ft. 19	-319747.25	10014.90	511.46	-870.45
	σ <sub>s,c</sub> 20	-324919.84	10332.04	524.34	-1253.21
	σ <sub>cls,Max</sub> 20	-324919.84	10332.04	524.34	-85.98
	σ <sub>cls,Med</sub> 20	-324919.84	10332.04	524.34	-71.17
146	Ft. 19	-315397.25	-5470.47	-878.34	-918.82
	σ <sub>s,c</sub> 20	-320569.84	-5815.86	-866.92	-1175.95
	σ <sub>cls,Max</sub> 20	-320569.84	-5815.86	-866.92	-80.42
	σ <sub>cls,Med</sub> 20	-320569.84	-5815.86	-866.92	-70.22
<b>Combinazioni Quasi Permanenti</b>					
46	Ft. 21	-319729.75	10020.32	511.79	-870.29
	σ <sub>s,c</sub> 22	-323309.94	10268.46	506.92	-1246.33
	σ <sub>cls,Max</sub> 22	-323309.94	10268.46	506.92	-85.49
	σ <sub>cls,Med</sub> 22	-323309.94	10268.46	506.92	-70.82
146	Ft. 21	-315379.75	-5472.28	-878.62	-918.73
	σ <sub>s,c</sub> 22	-318959.94	-5772.70	-847.93	-1169.35
	σ <sub>cls,Max</sub> 22	-318959.94	-5772.70	-847.93	-79.95
	σ <sub>cls,Med</sub> 22	-318959.94	-5772.70	-847.93	-69.86

Pilastro: **146/246** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
146	1	-399983.34	-16804.93	1786.90	0.51
246	1	-395498.34	9840.64	-1436.30	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7957.78	86297.23	1001.92	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	7957.78	64722.92	1001.92	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	7957.78	86297.23	1001.92	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
146	Ft. 16	-269802.56	-10750.06	1182.97	-672.97
	σ <sub>s,c</sub> 15	-276940.41	-11320.24	1251.35	-1134.87
	σ <sub>cls,Max</sub> 15	-276940.41	-11320.24	1251.35	-79.10
	σ <sub>cls,Med</sub> 15	-276940.41	-11320.24	1251.35	-60.66
246	Ft. 17	-270839.41	7091.05	-1139.28	-737.62
	σ <sub>s,c</sub> 17	-270839.41	7091.05	-1139.28	-1042.08
	σ <sub>cls,Max</sub> 17	-270839.41	7091.05	-1139.28	-72.03
	σ <sub>cls,Med</sub> 15	-273490.41	6632.99	-1011.80	-59.90
<b>Combinazioni Frequenti</b>					
146	Ft. 19	-267346.53	-10551.57	1160.97	-668.85
	σ <sub>s,c</sub> 20	-272103.72	-10911.66	1207.83	-1110.91
	σ <sub>cls,Max</sub> 20	-272103.72	-10911.66	1207.83	-77.38
	σ <sub>cls,Med</sub> 20	-272103.72	-10911.66	1207.83	-59.60
246	Ft. 20	-268653.72	6638.73	-1068.65	-740.08
	σ <sub>s,c</sub> 20	-268653.72	6638.73	-1068.65	-1025.25
	σ <sub>cls,Max</sub> 20	-268653.72	6638.73	-1068.65	-70.75
	σ <sub>cls,Med</sub> 20	-268653.72	6638.73	-1068.65	-58.84
<b>Combinazioni Quasi Permanenti</b>					
146	Ft. 21	-267330.66	-10549.83	1161.13	-668.82
	σ <sub>s,c</sub> 22	-271375.13	-10748.43	1183.94	-1105.08
	σ <sub>cls,Max</sub> 22	-271375.13	-10748.43	1183.94	-76.93
	σ <sub>cls,Med</sub> 22	-271375.13	-10748.43	1183.94	-59.44
246	Ft. 21	-263880.66	5939.80	-927.73	-740.31
	σ <sub>s,c</sub> 22	-267925.13	6487.95	-1045.11	-1019.64
	σ <sub>cls,Max</sub> 22	-267925.13	6487.95	-1045.11	-70.32
	σ <sub>cls,Med</sub> 22	-267925.13	6487.95	-1045.11	-58.68

Pilastro: **246/346** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
246	1	-342876.59	-8611.10	2436.41	0.43
346	1	-338391.59	26710.23	-4498.71	0.48

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	11141.29	86297.23	2010.18	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	11141.29	64722.92	2010.18	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	11141.29	86297.23	2010.18	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
246	Ft. 16	-230670.94	-6055.49	1601.64	-607.87
	σ <sub>s,c</sub> 15	-235582.13	-6163.05	1672.75	-928.03
	σ <sub>cls,Max</sub> 15	-235582.13	-6163.05	1672.75	-64.87
	σ <sub>cls,Med</sub> 15	-235582.13	-6163.05	1672.75	-51.60
346	Ft. 16	-227220.94	17922.52	-2947.14	-359.63
	σ <sub>s,c</sub> 15	-232132.13	18328.06	-3045.58	-1159.35
	σ <sub>cls,Max</sub> 15	-232132.13	18328.06	-3045.58	-84.02

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-232132.13	18328.06	-3045.58	-50.84
<b>Combinazioni Frequenti</b>					
246	Ft. 19	-228963.45	-6003.75	1579.95	-603.80
	σ <sub>s,c</sub> 18	-230598.06	-6039.05	1603.72	-907.43
	σ <sub>cls,Max</sub> 18	-230598.06	-6039.05	1603.72	-63.40
	σ <sub>cls,Med</sub> 20	-233572.73	-5363.28	1401.90	-51.16
346	Ft. 19	-225513.45	17725.74	-2917.86	-358.16
	σ <sub>s,c</sub> 18	-227148.06	17858.79	-2950.80	-1132.29
	σ <sub>cls,Max</sub> 18	-227148.06	17858.79	-2950.80	-82.03
	σ <sub>cls,Med</sub> 20	-230122.73	15654.94	-2311.73	-50.40
<b>Combinazioni Quasi Permanenti</b>					
246	Ft. 21	-228948.88	-6000.46	1580.37	-603.79
	σ <sub>s,c</sub> 21	-228948.88	-6000.46	1580.37	-900.64
	σ <sub>cls,Max</sub> 21	-228948.88	-6000.46	1580.37	-62.91
	σ <sub>cls,Med</sub> 22	-233653.00	-5350.20	1382.25	-51.18
346	Ft. 21	-225498.88	17712.99	-2918.60	-358.30
	σ <sub>s,c</sub> 21	-225498.88	17712.99	-2918.60	-1123.46
	σ <sub>cls,Max</sub> 21	-225498.88	17712.99	-2918.60	-81.37
	σ <sub>cls,Med</sub> 22	-230203.00	15684.27	-2292.39	-50.42

Pilastro: **47/147** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 210.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
47	1	-425899.25	13154.62	3700.70	0.54
147	1	-420244.25	-8372.20	1472.78	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6732.56	86297.23	609.96	61956.98	ø 10 2br.x4br./15.0
1.13	3.23	6732.56	64722.92	609.96	46467.73	ø 10 2br.x4br./20.0
3.23	4.23	6732.56	86297.23	609.96	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
47	Ft. 17	-285971.22	9237.07	2553.00	-707.26
	σ <sub>s,c</sub> 15	-296005.56	9088.31	2517.28	-1201.27
	σ <sub>cls,Max</sub> 15	-296005.56	9088.31	2517.28	-84.57
	σ <sub>cls,Med</sub> 15	-296005.56	9088.31	2517.28	-64.84
147	Ft. 17	-281621.22	-5513.38	1019.26	-802.67
	σ <sub>s,c</sub> 15	-291655.56	-5431.62	1094.81	-1081.91
	σ <sub>cls,Max</sub> 15	-291655.56	-5431.62	1094.81	-74.34
	σ <sub>cls,Med</sub> 15	-291655.56	-5431.62	1094.81	-63.88
<b>Combinazioni Frequenti</b>					
47	Ft. 20	-281663.13	9098.05	2518.49	-696.47
	σ <sub>s,c</sub> 18	-287414.84	8933.01	2440.98	-1168.08
	σ <sub>cls,Max</sub> 18	-287414.84	8933.01	2440.98	-82.25
	σ <sub>cls,Med</sub> 18	-287414.84	8933.01	2440.98	-62.95
147	Ft. 20	-277313.13	-5385.20	944.22	-792.99

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-283064.84	-5259.26	1028.67	-1048.77
	σ <sub>cls,Max</sub> 18	-283064.84	-5259.26	1028.67	-72.03
	σ <sub>cls,Med</sub> 18	-283064.84	-5259.26	1028.67	-62.00
<b>Combinazioni Quasi Permanenti</b>					
47	Ft. 22	-280227.13	9051.72	2506.99	-692.88
	σ <sub>s,c</sub> 21	-284556.03	8880.03	2415.53	-1157.01
	σ <sub>cls,Max</sub> 21	-284556.03	8880.03	2415.53	-81.47
	σ <sub>cls,Med</sub> 21	-284556.03	8880.03	2415.53	-62.33
147	Ft. 22	-275877.13	-5342.47	919.21	-789.77
	σ <sub>s,c</sub> 21	-280206.03	-5201.92	1006.71	-1037.74
	σ <sub>cls,Max</sub> 21	-280206.03	-5201.92	1006.71	-71.26
	σ <sub>cls,Med</sub> 21	-280206.03	-5201.92	1006.71	-61.37

Pilastro: **147/247** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
147	1	-361046.97	-17847.05	-5777.01	0.49
247	1	-356561.97	7509.65	3072.01	0.44

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7395.59	86297.23	2564.93	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	7395.59	64722.92	2564.93	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	7395.59	86297.23	2564.93	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
147	Ft. 17	-239234.73	-11935.09	-4066.08	-461.44
	σ <sub>s,c</sub> 15	-249532.58	-11932.78	-4122.79	-1146.18
	σ <sub>cls,Max</sub> 15	-249532.58	-11932.78	-4122.79	-83.24
	σ <sub>cls,Med</sub> 15	-249532.58	-11932.78	-4122.79	-54.66
247	Ft. 17	-235784.73	5111.05	2290.08	-618.22
	σ <sub>s,c</sub> 15	-246082.58	5007.98	2262.39	-962.40
	σ <sub>cls,Max</sub> 15	-246082.58	5007.98	2262.39	-67.63
	σ <sub>cls,Med</sub> 15	-246082.58	5007.98	2262.39	-53.90
<b>Combinazioni Frequenti</b>					
147	Ft. 20	-237120.45	-11423.04	-3852.64	-469.66
	σ <sub>s,c</sub> 18	-243121.72	-11334.69	-3911.97	-1108.63
	σ <sub>cls,Max</sub> 18	-243121.72	-11334.69	-3911.97	-80.39
	σ <sub>cls,Med</sub> 18	-243121.72	-11334.69	-3911.97	-53.25
247	Ft. 20	-233670.45	4698.38	2098.39	-624.12
	σ <sub>s,c</sub> 18	-239671.72	4528.11	2103.10	-928.42
	σ <sub>cls,Max</sub> 18	-239671.72	4528.11	2103.10	-65.10
	σ <sub>cls,Med</sub> 18	-239671.72	4528.11	2103.10	-52.50
<b>Combinazioni Quasi Permanenti</b>					
147	Ft. 22	-236415.69	-11252.36	-3781.50	-472.40
	σ <sub>s,c</sub> 21	-240989.02	-11136.71	-3841.77	-1096.15
	σ <sub>cls,Max</sub> 21	-240989.02	-11136.71	-3841.77	-79.44

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-240989.02	-11136.71	-3841.77	-52.78
247	Ft. 22	-232965.69	4560.82	2034.49	-626.09
	σ <sub>s,c</sub> 21	-237539.02	4369.25	2050.03	-917.12
	σ <sub>cls,Max</sub> 21	-237539.02	4369.25	2050.03	-64.26
	σ <sub>cls,Med</sub> 21	-237539.02	4369.25	2050.03	-52.03

Pilastro: **247/347** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
247	1	-309948.53	-14651.14	-5489.55	0.42
347	1	-305463.53	45001.19	9595.50	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	17290.53	86297.23	4372.48	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	17290.53	64722.92	4372.48	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	17290.53	86297.23	4372.48	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
247	Ft. 17	-201688.23	-9757.16	-3559.53	-389.82
	σ <sub>s,c</sub> 15	-212618.22	-10165.37	-3854.24	-987.45
	σ <sub>cls,Max</sub> 15	-212618.22	-10165.37	-3854.24	-72.04
	σ <sub>cls,Med</sub> 15	-212618.22	-10165.37	-3854.24	-46.57
347	Ft. 15	-209168.22	30384.39	6626.93	31.59
	σ <sub>s,c</sub> 15	-209168.22	30384.39	6626.93	-1401.50
	σ <sub>cls,Max</sub> 15	-209168.22	30384.39	6626.93	-106.58
	σ <sub>cls,Med</sub> 15	-209168.22	30384.39	6626.93	-47.45
<b>Combinazioni Frequenti</b>					
247	Ft. 20	-201587.95	-9632.13	-3454.53	-394.87
	σ <sub>s,c</sub> 18	-208095.75	-9968.15	-3713.07	-964.87
	σ <sub>cls,Max</sub> 18	-208095.75	-9968.15	-3713.07	-70.33
	σ <sub>cls,Med</sub> 18	-208095.75	-9968.15	-3713.07	-45.58
347	Ft. 18	-204645.75	29670.56	6478.99	29.65
	σ <sub>s,c</sub> 18	-204645.75	29670.56	6478.99	-1370.02
	σ <sub>cls,Max</sub> 18	-204645.75	29670.56	6478.99	-104.18
	σ <sub>cls,Med</sub> 18	-204645.75	29670.56	6478.99	-46.40
<b>Combinazioni Quasi Permanenti</b>					
247	Ft. 22	-201554.56	-9590.45	-3419.53	-396.56
	σ <sub>s,c</sub> 21	-206592.19	-9902.71	-3666.25	-957.37
	σ <sub>cls,Max</sub> 21	-206592.19	-9902.71	-3666.25	-69.77
	σ <sub>cls,Med</sub> 21	-206592.19	-9902.71	-3666.25	-45.25
347	Ft. 21	-203142.19	29435.82	6430.13	29.06
	σ <sub>s,c</sub> 21	-203142.19	29435.82	6430.13	-1359.61
	σ <sub>cls,Max</sub> 21	-203142.19	29435.82	6430.13	-103.39
	σ <sub>cls,Med</sub> 21	-203142.19	29435.82	6430.13	-46.06



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **48/148** / L 4.10[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 210.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
48	1	-222696.30	18571.83	-100.95	0.31
148	1	-217041.30	-10981.62	3757.55	0.29

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6860.19	86297.23	1533.51	61956.98	Ø 10 2br.x4br./15.0
1.13	3.23	6860.19	64722.92	1533.51	46467.73	Ø 10 2br.x4br./20.0
3.23	4.23	6860.19	86297.23	1533.51	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
48	Ft. 17	-152582.66	12668.77	-188.16	-288.10
	σ <sub>s,c</sub> 15	-157786.58	12721.84	-70.94	-728.76
	σ <sub>cls,Max</sub> 15	-157786.58	12721.84	-70.94	-50.92
	σ <sub>cls,Med</sub> 15	-157786.58	12721.84	-70.94	-34.56
148	Ft. 17	-148232.66	-7205.76	2736.01	-282.12
	σ <sub>s,c</sub> 15	-153436.58	-7148.32	2648.39	-705.30
	σ <sub>cls,Max</sub> 15	-153436.58	-7148.32	2648.39	-51.31
	σ <sub>cls,Med</sub> 15	-153436.58	-7148.32	2648.39	-33.61
<b>Combinazioni Frequenti</b>					
48	Ft. 20	-151015.75	12374.43	-177.01	-288.13
	σ <sub>s,c</sub> 18	-153176.33	12386.28	-53.36	-707.56
	σ <sub>cls,Max</sub> 18	-153176.33	12386.28	-53.36	-49.43
	σ <sub>cls,Med</sub> 18	-153176.33	12386.28	-53.36	-33.55
148	Ft. 20	-146665.75	-7005.34	2633.89	-283.50
	σ <sub>s,c</sub> 18	-148826.33	-6903.29	2527.33	-682.29
	σ <sub>cls,Max</sub> 20	-146665.75	-7005.34	2633.89	-49.60
	σ <sub>cls,Med</sub> 18	-148826.33	-6903.29	2527.33	-32.60
<b>Combinazioni Quasi Permanenti</b>					
48	Ft. 22	-150493.47	12276.32	-173.29	-288.13
	σ <sub>s,c</sub> 22	-150493.47	12276.32	-173.29	-700.77
	σ <sub>cls,Max</sub> 22	-150493.47	12276.32	-173.29	-49.09
	σ <sub>cls,Med</sub> 21	-151645.58	12274.53	-47.23	-33.22
148	Ft. 22	-146143.47	-6938.53	2599.85	-283.96
	σ <sub>s,c</sub> 22	-146143.47	-6938.53	2599.85	-676.36
	σ <sub>cls,Max</sub> 22	-146143.47	-6938.53	2599.85	-49.29
	σ <sub>cls,Med</sub> 21	-147295.58	-6822.31	2486.80	-32.26

Pilastro: **148/248** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
148	1	-184555.64	-14555.27	-8587.53	0.31
248	1	-180070.64	-780.95	5561.75	0.25

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4082.04	86297.23	4101.24	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	4082.04	64722.92	4101.24	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	4082.04	86297.23	4101.24	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
148	Ft. 17	-125125.91	-9705.13	-6006.59	-60.16
	σ <sub>s,c</sub> 15	-130366.01	-9628.89	-5981.58	-776.35
	σ <sub>cls,Max</sub> 15	-130366.01	-9628.89	-5981.58	-60.30
	σ <sub>cls,Med</sub> 15	-130366.01	-9628.89	-5981.58	-28.71
248	Ft. 17	-121675.91	-506.19	3879.23	-268.08
	σ <sub>s,c</sub> 15	-126916.02	-635.75	3928.43	-552.36
	σ <sub>cls,Max</sub> 15	-126916.02	-635.75	3928.43	-41.42
	σ <sub>cls,Med</sub> 15	-126916.02	-635.75	3928.43	-27.80
<b>Combinazioni Frequenti</b>					
148	Ft. 20	-124615.45	-9337.26	-5661.38	-76.23
	σ <sub>s,c</sub> 18	-126824.21	-9202.87	-5636.72	-746.63
	σ <sub>cls,Max</sub> 18	-126824.21	-9202.87	-5636.72	-57.85
	σ <sub>cls,Med</sub> 18	-126824.21	-9202.87	-5636.72	-27.86
248	Ft. 20	-121165.45	-635.08	3521.32	-275.68
	σ <sub>s,c</sub> 18	-123374.21	-788.33	3604.38	-532.91
	σ <sub>cls,Max</sub> 18	-123374.21	-788.33	3604.38	-39.78
	σ <sub>cls,Med</sub> 18	-123374.21	-788.33	3604.38	-27.02
<b>Combinazioni Quasi Permanenti</b>					
148	Ft. 22	-124445.28	-9214.63	-5546.31	-81.48
	σ <sub>s,c</sub> 21	-125649.39	-9061.77	-5521.50	-736.77
	σ <sub>cls,Max</sub> 22	-124445.28	-9214.63	-5546.31	-57.05
	σ <sub>cls,Med</sub> 21	-125649.39	-9061.77	-5521.50	-27.59
248	Ft. 21	-122199.39	-838.02	3496.14	-276.56
	σ <sub>s,c</sub> 21	-122199.39	-838.02	3496.14	-526.42
	σ <sub>cls,Max</sub> 21	-122199.39	-838.02	3496.14	-39.24
	σ <sub>cls,Med</sub> 21	-122199.39	-838.02	3496.14	-26.77

Pilastro: **248/348** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
248	1	-155001.63	-8970.30	-14229.21	0.34
348	3	-142460.00	27364.57	24661.68	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.12	1.13	10655.17	86297.23	11363.51	61956.98	Ø 10 2br.x4br./15.0
1.13	2.33	10656.11	64722.92	11388.37	46467.73	Ø 10 2br.x4br./20.0
2.33	3.33	10656.89	86297.23	11409.09	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
248	Ft. 17	-103576.06	-6103.93	-10010.11	163.94

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-108947.16	-6256.06	-9769.38	-798.35
	σ <sub>cls,Max</sub> 17	-103576.06	-6103.93	-10010.11	-67.19
	σ <sub>cls,Med</sub> 17	-103576.06	-6103.93	-10010.11	-29.13
348	Ft. 17	-100126.06	18360.22	16805.74	1518.15
	σ <sub>s,c</sub> 17	-100126.06	18360.22	16805.74	-1465.65
	σ <sub>cls,Max</sub> 17	-100126.06	18360.22	16805.74	-138.07
	σ <sub>cls,Med</sub> 17	-100126.06	18360.22	16805.74	-51.47
<b>Combinazioni Frequenti</b>					
248	Ft. 20	-103975.77	-6006.14	-9814.58	144.03
	σ <sub>s,c</sub> 20	-103975.77	-6006.14	-9814.58	-785.00
	σ <sub>cls,Max</sub> 20	-103975.77	-6006.14	-9814.58	-66.05
	σ <sub>cls,Med</sub> 20	-103975.77	-6006.14	-9814.58	-28.69
348	Ft. 20	-100525.77	18075.68	16803.12	1497.78
	σ <sub>s,c</sub> 20	-100525.77	18075.68	16803.12	-1457.58
	σ <sub>cls,Max</sub> 20	-100525.77	18075.68	16803.12	-137.26
	σ <sub>cls,Med</sub> 20	-100525.77	18075.68	16803.12	-51.34
<b>Combinazioni Quasi Permanenti</b>					
248	Ft. 22	-104108.98	-5973.54	-9749.41	137.59
	σ <sub>s,c</sub> 22	-104108.98	-5973.54	-9749.41	-781.60
	σ <sub>cls,Max</sub> 22	-104108.98	-5973.54	-9749.41	-65.68
	σ <sub>cls,Med</sub> 22	-104108.98	-5973.54	-9749.41	-28.55
348	Ft. 22	-100658.98	17980.82	16802.24	1491.02
	σ <sub>s,c</sub> 22	-100658.98	17980.82	16802.24	-1454.90
	σ <sub>cls,Max</sub> 22	-100658.98	17980.82	16802.24	-137.00
	σ <sub>cls,Med</sub> 22	-100658.98	17980.82	16802.24	-51.30

Pilastro: **49/149** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
49	1	-425012.75	510.46	-7229.76	0.51
149	1	-419357.75	-1150.14	1195.99	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	447.39	61956.98	3410.46	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	447.39	46467.73	3410.46	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	447.39	61956.98	3410.46	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
49	Ft. 17	-286909.63	359.96	-5290.00	-844.67
	σ <sub>s,c</sub> 15	-297599.88	344.10	-5006.36	-1070.61
	σ <sub>cls,Max</sub> 15	-297599.88	344.10	-5006.36	-72.66
	σ <sub>cls,Med</sub> 15	-297599.88	344.10	-5006.36	-65.18
149	Ft. 17	-282559.63	-767.77	758.11	-891.53
	σ <sub>s,c</sub> 15	-293249.88	-796.81	560.31	-997.99
	σ <sub>cls,Max</sub> 15	-293249.88	-796.81	560.31	-67.54
	σ <sub>cls,Med</sub> 15	-293249.88	-796.81	560.31	-64.23

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
49	Ft. 20	-281943.47	344.36	-5451.98	-826.20
	$\sigma_{s,c}18$	-287550.91	335.62	-5163.06	-1039.88
	$\sigma_{cls,Max}18$	-287550.91	335.62	-5163.06	-70.63
	$\sigma_{cls,Med}18$	-287550.91	335.62	-5163.06	-62.98
149	Ft. 20	-277593.47	-732.00	980.65	-872.71
	$\sigma_{s,c}18$	-283200.91	-764.51	752.80	-967.10
	$\sigma_{cls,Max}18$	-283200.91	-764.51	752.80	-65.48
	$\sigma_{cls,Med}18$	-283200.91	-764.51	752.80	-62.03
<b>Combinazioni Quasi Permanenti</b>					
49	Ft. 22	-280288.09	339.16	-5505.97	-820.04
	$\sigma_{s,c}21$	-284216.03	332.56	-5213.70	-1029.66
	$\sigma_{cls,Max}21$	-284216.03	332.56	-5213.70	-69.95
	$\sigma_{cls,Med}21$	-284216.03	332.56	-5213.70	-62.25
149	Ft. 22	-275938.09	-720.07	1054.83	-866.44
	$\sigma_{s,c}21$	-279866.03	-753.54	815.71	-956.82
	$\sigma_{cls,Max}21$	-279866.03	-753.54	815.71	-64.79
	$\sigma_{cls,Med}21$	-279866.03	-753.54	815.71	-61.30

Pilastro: **149/249** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:**  $12 \varnothing 20$  Af=37.70 [cm<sup>2</sup>] <  $1f20 \times 4 V + 3f20 \times 2 B + 1f20 \times 2 H$  >

**Staffe:**  $\varnothing 10$  4br.x2br./15.0 x 100.0/ $\varnothing 10$  4br.x2br./20.0 x 120.0/ $\varnothing 10$  4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
149	1	-344084.63	2112.47	14445.23	0.44
249	1	-339599.63	-2056.98	-10010.12	0.42

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	1307.12	61956.98	7113.62	86297.23	$\varnothing 10$ 4br.x2br./15.0
1.13	2.32	1307.12	46467.73	7113.62	64722.92	$\varnothing 10$ 4br.x2br./20.0
2.32	3.32	1307.12	61956.98	7113.62	86297.23	$\varnothing 10$ 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
149	Ft. 17	-229047.27	1518.18	9744.74	-544.85
	$\sigma_{s,c}15$	-239759.47	1475.26	9823.66	-995.35
	$\sigma_{cls,Max}15$	-239759.47	1475.26	9823.66	-69.79
	$\sigma_{cls,Med}15$	-239759.47	1475.26	9823.66	-52.52
249	Ft. 17	-225597.27	-1624.66	-6955.65	-575.75
	$\sigma_{s,c}15$	-236309.47	-1440.83	-6818.95	-933.77
	$\sigma_{cls,Max}15$	-236309.47	-1440.83	-6818.95	-65.11
	$\sigma_{cls,Med}15$	-236309.47	-1440.83	-6818.95	-51.76
<b>Combinazioni Frequenti</b>					
149	Ft. 20	-226811.45	1455.24	9456.73	-544.22
	$\sigma_{s,c}18$	-232444.23	1408.43	9430.11	-962.75
	$\sigma_{cls,Max}18$	-232444.23	1408.43	9430.11	-67.47
	$\sigma_{cls,Med}18$	-232444.23	1408.43	9430.11	-50.91
249	Ft. 20	-223361.45	-1563.57	-6691.07	-574.67
	$\sigma_{s,c}18$	-228994.23	-1375.52	-6475.22	-902.04
	$\sigma_{cls,Max}18$	-228994.23	-1375.52	-6475.22	-62.86
	$\sigma_{cls,Med}18$	-228994.23	-1375.52	-6475.22	-50.16
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
149	Ft. 22	-226066.19	1434.25	9360.73	-544.00
	σ <sub>s,c</sub> 21	-230018.88	1385.95	9298.84	-951.92
	σ <sub>cls,Max</sub> 21	-230018.88	1385.95	9298.84	-66.69
	σ <sub>cls,Med</sub> 21	-230018.88	1385.95	9298.84	-50.38
249	Ft. 22	-222616.19	-1543.21	-6602.88	-574.31
	σ <sub>s,c</sub> 21	-226568.88	-1353.56	-6360.14	-891.49
	σ <sub>cls,Max</sub> 22	-222616.19	-1543.21	-6602.88	-62.17
	σ <sub>cls,Med</sub> 21	-226568.88	-1353.56	-6360.14	-49.63

Pilastro: **249/349** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
249	1	-279726.78	2718.25	10958.40	0.36
349	1	-275241.78	-3970.95	-32068.00	0.43

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1938.90	61956.98	12471.42	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1938.90	46467.73	12471.42	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1938.90	61956.98	12471.42	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
249	Ft. 17	-182422.34	1580.12	7208.28	-431.18
	σ <sub>s,c</sub> 15	-193509.47	1877.08	7801.10	-823.10
	σ <sub>cls,Max</sub> 15	-193509.47	1877.08	7801.10	-58.40
	σ <sub>cls,Med</sub> 15	-193509.47	1877.08	7801.10	-42.39
349	Ft. 15	-190059.47	-2710.80	-22102.07	-176.68
	σ <sub>s,c</sub> 15	-190059.47	-2710.80	-22102.07	-1072.21
	σ <sub>cls,Max</sub> 15	-190059.47	-2710.80	-22102.07	-78.50
	σ <sub>cls,Med</sub> 15	-190059.47	-2710.80	-22102.07	-41.63
<b>Combinazioni Frequenti</b>					
249	Ft. 19	-187039.59	1779.62	7306.32	-438.40
	σ <sub>s,c</sub> 18	-188638.13	1804.46	7426.37	-798.65
	σ <sub>cls,Max</sub> 18	-188638.13	1804.46	7426.37	-56.62
	σ <sub>cls,Med</sub> 18	-188638.13	1804.46	7426.37	-41.32
349	Ft. 18	-185188.13	-2627.31	-21153.05	-178.86
	σ <sub>s,c</sub> 18	-185188.13	-2627.31	-21153.05	-1038.02
	σ <sub>cls,Max</sub> 18	-185188.13	-2627.31	-21153.05	-75.96
	σ <sub>cls,Med</sub> 18	-185188.13	-2627.31	-21153.05	-40.56
<b>Combinazioni Quasi Permanenti</b>					
249	Ft. 21	-187025.81	1779.97	7303.67	-438.39
	σ <sub>s,c</sub> 21	-187025.81	1779.97	7303.67	-790.57
	σ <sub>cls,Max</sub> 21	-187025.81	1779.97	7303.67	-56.03
	σ <sub>cls,Med</sub> 21	-187025.81	1779.97	7303.67	-40.97
349	Ft. 21	-183575.81	-2598.98	-20842.42	-179.54
	σ <sub>s,c</sub> 21	-183575.81	-2598.98	-20842.42	-1026.74
	σ <sub>cls,Max</sub> 21	-183575.81	-2598.98	-20842.42	-75.12

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-183575.81	-2598.98	-20842.42	-40.21

Pilastro: **52/152** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
52	1	-467297.75	362.82	-6604.49	0.56
152	1	-461642.72	-390.56	603.57	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	338.68	61956.98	3404.03	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	338.68	46467.73	3404.03	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	338.68	61956.98	3404.03	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
52	Ft. 16	-315457.16	239.84	-4911.98	-948.47
	σ <sub>s,c</sub> 15	-326310.94	240.38	-4692.31	-1156.50
	σ <sub>cls,Max</sub> 15	-326310.94	240.38	-4692.31	-78.21
	σ <sub>cls,Med</sub> 15	-326310.94	240.38	-4692.31	-71.47
152	Ft. 16	-311107.16	-255.42	402.04	-1007.45
	σ <sub>s,c</sub> 15	-321960.94	-259.48	170.01	-1068.84
	σ <sub>cls,Max</sub> 15	-321960.94	-259.48	170.01	-71.58
	σ <sub>cls,Med</sub> 15	-321960.94	-259.48	170.01	-70.52
<b>Combinazioni Frequenti</b>					
52	Ft. 19	-311821.53	240.24	-4981.20	-935.38
	σ <sub>s,c</sub> 20	-316155.59	285.18	-4902.84	-1128.00
	σ <sub>cls,Max</sub> 20	-316155.59	285.18	-4902.84	-76.40
	σ <sub>cls,Med</sub> 20	-316155.59	285.18	-4902.84	-69.25
152	Ft. 19	-307471.53	-254.86	479.31	-994.26
	σ <sub>s,c</sub> 20	-311805.59	-338.30	449.57	-1042.56
	σ <sub>cls,Max</sub> 20	-311805.59	-338.30	449.57	-69.97
	σ <sub>cls,Med</sub> 20	-311805.59	-338.30	449.57	-68.30
<b>Combinazioni Quasi Permanenti</b>					
52	Ft. 21	-311817.88	240.36	-4980.38	-935.37
	σ <sub>s,c</sub> 22	-314376.53	283.95	-4987.09	-1123.50
	σ <sub>cls,Max</sub> 22	-314376.53	283.95	-4987.09	-76.11
	σ <sub>cls,Med</sub> 22	-314376.53	283.95	-4987.09	-68.86
152	Ft. 21	-307467.88	-255.03	479.29	-994.24
	σ <sub>s,c</sub> 22	-310026.53	-336.56	544.48	-1038.21
	σ <sub>cls,Max</sub> 22	-310026.53	-336.56	544.48	-69.70
	σ <sub>cls,Med</sub> 22	-310026.53	-336.56	544.48	-67.91

Pilastro: **152/252** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
152	1	-383210.03	548.48	17809.37	0.50

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
252	1	-378725.03	-523.87	-11137.08	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	310.83	61956.98	8390.27	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	310.83	46467.73	8390.27	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	310.83	61956.98	8390.27	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
152	Ft. 16	-258252.77	359.28	11619.16	-647.01
	σ <sub>s,c</sub> 15	-266259.59	371.01	12109.07	-1084.67
	σ <sub>cls,Max</sub> 15	-266259.59	371.01	12109.07	-74.88
	σ <sub>cls,Med</sub> 15	-266259.59	371.01	12109.07	-58.32
252	Ft. 16	-254802.77	-347.08	-7164.94	-708.92
	σ <sub>s,c</sub> 15	-262809.63	-358.76	-7580.47	-998.87
	σ <sub>cls,Max</sub> 15	-262809.63	-358.76	-7580.47	-68.35
	σ <sub>cls,Med</sub> 15	-262809.63	-358.76	-7580.47	-57.56
<b>Combinazioni Frequenti</b>					
152	Ft. 19	-255568.70	356.27	11457.36	-640.93
	σ <sub>s,c</sub> 20	-259298.28	334.17	11658.74	-1053.26
	σ <sub>cls,Max</sub> 20	-259298.28	334.17	11658.74	-72.67
	σ <sub>cls,Med</sub> 20	-259298.28	334.17	11658.74	-56.80
252	Ft. 19	-252118.70	-343.73	-7028.02	-702.45
	σ <sub>s,c</sub> 18	-254787.14	-347.64	-7166.58	-965.39
	σ <sub>cls,Max</sub> 18	-254787.14	-347.64	-7166.58	-66.03
	σ <sub>cls,Med</sub> 20	-255848.28	-145.70	-7172.47	-56.04
<b>Combinazioni Quasi Permanenti</b>					
152	Ft. 21	-255565.58	356.46	11457.67	-640.91
	σ <sub>s,c</sub> 22	-258475.89	331.86	11539.43	-1048.54
	σ <sub>cls,Max</sub> 22	-258475.89	331.86	11539.43	-72.33
	σ <sub>cls,Med</sub> 22	-258475.89	331.86	11539.43	-56.62
252	Ft. 21	-252115.58	-343.84	-7028.35	-702.43
	σ <sub>s,c</sub> 22	-255025.89	-143.12	-7062.74	-957.97
	σ <sub>cls,Max</sub> 22	-255025.89	-143.12	-7062.74	-65.28
	σ <sub>cls,Med</sub> 22	-255025.89	-143.12	-7062.74	-55.86

Pilastro: **252/352** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
252	1	-313423.00	831.77	16661.66	0.41
352	1	-308938.00	-1678.20	-53154.73	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1429.39	61956.98	20236.64	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1429.39	46467.73	20236.64	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1429.39	61956.98	20236.64	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
252	Ft. 17	-211887.77	970.43	11496.08	-477.25
	σ <sub>s,c</sub> 15	-216225.52	562.76	11686.12	-919.47
	σ <sub>cls,Max</sub> 17	-211887.77	970.43	11496.08	-64.15
	σ <sub>cls,Med</sub> 15	-216225.52	562.76	11686.12	-47.36
352	Ft. 17	-208437.77	-2332.19	-35514.26	-26.83
	σ <sub>s,c</sub> 17	-208437.77	-2332.19	-35514.26	-1341.63
	σ <sub>cls,Max</sub> 17	-208437.77	-2332.19	-35514.26	-98.46
	σ <sub>cls,Med</sub> 15	-212775.52	-1125.58	-36320.41	-46.95
<b>Combinazioni Frequenti</b>					
252	Ft. 20	-212216.66	954.21	11125.22	-484.91
	σ <sub>s,c</sub> 20	-212216.66	954.21	11125.22	-909.57
	σ <sub>cls,Max</sub> 20	-212216.66	954.21	11125.22	-63.70
	σ <sub>cls,Med</sub> 20	-212216.66	954.21	11125.22	-46.48
352	Ft. 20	-208766.66	-2314.42	-34967.43	-38.29
	σ <sub>s,c</sub> 20	-208766.66	-2314.42	-34967.43	-1332.70
	σ <sub>cls,Max</sub> 20	-208766.66	-2314.42	-34967.43	-97.73
	σ <sub>cls,Med</sub> 20	-208766.66	-2314.42	-34967.43	-46.42
<b>Combinazioni Quasi Permanenti</b>					
252	Ft. 22	-212326.30	948.80	11001.60	-487.47
	σ <sub>s,c</sub> 22	-212326.30	948.80	11001.60	-907.74
	σ <sub>cls,Max</sub> 22	-212326.30	948.80	11001.60	-63.55
	σ <sub>cls,Med</sub> 22	-212326.30	948.80	11001.60	-46.51
352	Ft. 22	-208876.30	-2308.50	-34785.15	-42.07
	σ <sub>s,c</sub> 22	-208876.30	-2308.50	-34785.15	-1329.75
	σ <sub>cls,Max</sub> 22	-208876.30	-2308.50	-34785.15	-97.49
	σ <sub>cls,Med</sub> 22	-208876.30	-2308.50	-34785.15	-46.38

Pilastro: **53/153** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
53	1	-487052.28	-689.10	17846.66	0.62
153	1	-481397.28	-34.75	2939.85	0.56

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	516.01	61956.98	4902.80	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	516.01	46467.73	4902.80	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	516.01	61956.98	4902.80	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
53	Ft. 16	-327701.94	-505.47	11995.81	-864.38
	σ <sub>s,c</sub> 15	-339375.69	-527.38	12615.68	-1338.16
	σ <sub>cls,Max</sub> 15	-339375.69	-527.38	12615.68	-92.05
	σ <sub>cls,Med</sub> 15	-339375.69	-527.38	12615.68	-74.34
153	Ft. 17	-321587.97	-108.98	2121.52	-1018.42
	σ <sub>s,c</sub> 15	-335025.69	10.15	1855.76	-1131.41
	σ <sub>cls,Max</sub> 15	-335025.69	10.15	1855.76	-75.77

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-335025.69	10.15	1855.76	-73.38
<b>Combinazioni Frequenti</b>					
53	Ft. 20	-320170.09	-396.85	11404.02	-852.76
	σ <sub>s,c</sub> 18	-327672.84	-500.60	11987.51	-1288.58
	σ <sub>cls,Max</sub> 18	-327672.84	-500.60	11987.51	-88.61
	σ <sub>cls,Med</sub> 18	-327672.84	-500.60	11987.51	-71.77
153	Ft. 20	-315820.09	-99.53	2104.80	-1000.04
	σ <sub>s,c</sub> 18	-323322.84	4.45	1838.12	-1092.49
	σ <sub>cls,Max</sub> 18	-323322.84	4.45	1838.12	-73.16
	σ <sub>cls,Med</sub> 18	-323322.84	4.45	1838.12	-70.82
<b>Combinazioni Quasi Permanenti</b>					
53	Ft. 22	-318247.47	-396.70	11269.40	-848.65
	σ <sub>s,c</sub> 21	-323776.78	-492.48	11779.50	-1272.12
	σ <sub>cls,Max</sub> 21	-323776.78	-492.48	11779.50	-87.46
	σ <sub>cls,Med</sub> 21	-323776.78	-492.48	11779.50	-70.92
153	Ft. 22	-313897.47	-96.37	2099.23	-993.91
	σ <sub>s,c</sub> 21	-319426.78	3.14	1831.62	-1079.54
	σ <sub>cls,Max</sub> 21	-319426.78	3.14	1831.62	-72.30
	σ <sub>cls,Med</sub> 21	-319426.78	3.14	1831.62	-69.97

Pilastro: **153/253** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
153	1	-402401.94	601.20	-7261.28	0.48
253	1	-397916.94	-544.10	-1177.69	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	393.36	61956.98	1940.35	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	393.36	46467.73	1940.35	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	393.36	61956.98	1940.35	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
153	Ft. 17	-265442.38	399.33	-5332.31	-772.19
	σ <sub>s,c</sub> 15	-279044.09	400.94	-5404.15	-1017.96
	σ <sub>cls,Max</sub> 15	-279044.09	400.94	-5404.15	-69.28
	σ <sub>cls,Med</sub> 15	-279044.09	400.94	-5404.15	-61.12
253	Ft. 17	-261992.38	-239.88	-458.75	-845.65
	σ <sub>s,c</sub> 15	-275594.09	-367.32	-464.66	-924.76
	σ <sub>cls,Max</sub> 15	-275594.09	-367.32	-464.66	-62.15
	σ <sub>cls,Med</sub> 15	-275594.09	-367.32	-464.66	-60.36
<b>Combinazioni Frequenti</b>					
153	Ft. 20	-262669.88	392.68	-4970.23	-769.22
	σ <sub>s,c</sub> 18	-270318.69	390.80	-5072.63	-983.54
	σ <sub>cls,Max</sub> 18	-270318.69	390.80	-5072.63	-66.92
	σ <sub>cls,Med</sub> 18	-270318.69	390.80	-5072.63	-59.21
253	Ft. 20	-259219.89	-237.75	-739.18	-832.02

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-266868.69	-358.86	-555.52	-897.31
	σ <sub>cls,Max</sub> 18	-266868.69	-358.86	-555.52	-60.33
	σ <sub>cls,Med</sub> 18	-266868.69	-358.86	-555.52	-58.45
<b>Combinazioni Quasi Permanenti</b>					
153	Ft. 22	-261745.73	390.46	-4849.53	-768.23
	σ <sub>s,c</sub> 21	-267414.53	387.04	-4962.51	-972.08
	σ <sub>cls,Max</sub> 21	-267414.53	387.04	-4962.51	-66.13
	σ <sub>cls,Med</sub> 21	-267414.53	387.04	-4962.51	-58.57
253	Ft. 22	-258295.73	-237.04	-832.66	-827.48
	σ <sub>s,c</sub> 21	-263964.53	-355.78	-585.50	-888.16
	σ <sub>cls,Max</sub> 21	-263964.53	-355.78	-585.50	-59.72
	σ <sub>cls,Med</sub> 21	-263964.53	-355.78	-585.50	-57.82

Pilastro: **253/353** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
253	1	-319775.44	1562.90	-14684.98	0.41
353	1	-315290.44	-3364.69	31377.13	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1888.97	61956.98	13702.72	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1888.97	46467.73	13702.72	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1888.97	61956.98	13702.72	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
253	Ft. 17	-206320.45	1308.53	-10180.57	-469.72
	σ <sub>s,c</sub> 15	-220188.84	1033.93	-10023.22	-920.28
	σ <sub>cls,Max</sub> 15	-220188.84	1033.93	-10023.22	-64.31
	σ <sub>cls,Med</sub> 15	-220188.84	1033.93	-10023.22	-48.23
353	Ft. 17	-202870.45	-3011.28	22141.96	-208.56
	σ <sub>s,c</sub> 15	-216738.84	-2226.31	21491.14	-1134.46
	σ <sub>cls,Max</sub> 17	-202870.45	-3011.28	22141.96	-82.34
	σ <sub>cls,Med</sub> 15	-216738.84	-2226.31	21491.14	-47.47
<b>Combinazioni Frequenti</b>					
253	Ft. 20	-206536.16	1282.91	-10054.99	-473.30
	σ <sub>s,c</sub> 18	-214416.11	1003.32	-9680.37	-894.73
	σ <sub>cls,Max</sub> 18	-214416.11	1003.32	-9680.37	-62.51
	σ <sub>cls,Med</sub> 18	-214416.11	1003.32	-9680.37	-46.96
353	Ft. 20	-203086.16	-2969.72	22276.24	-208.40
	σ <sub>s,c</sub> 20	-203086.16	-2969.72	22276.24	-1126.09
	σ <sub>cls,Max</sub> 20	-203086.16	-2969.72	22276.24	-82.42
	σ <sub>cls,Med</sub> 18	-210966.11	-2170.78	21026.26	-46.21
<b>Combinazioni Quasi Permanenti</b>					
253	Ft. 22	-206608.08	1274.37	-10013.12	-474.49
	σ <sub>s,c</sub> 21	-212495.55	992.19	-9565.55	-886.19
	σ <sub>cls,Max</sub> 22	-206608.08	1274.37	-10013.12	-62.11

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-212495.55	992.19	-9565.55	-46.54
353	Ft. 22	-203158.08	-2955.87	22320.99	-208.34
	σ <sub>s,c</sub> 22	-203158.08	-2955.87	22320.99	-1126.62
	σ <sub>cls,Max</sub> 22	-203158.08	-2955.87	22320.99	-82.45
	σ <sub>cls,Med</sub> 21	-209045.55	-2150.39	20870.20	-45.79

Pilastro: **54/154** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
54	1	-423642.78	-1406.48	-6024.50	0.51
154	1	-417987.78	-158.80	1178.54	0.48

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	724.65	61956.98	3584.28	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	724.65	46467.73	3584.28	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	724.65	61956.98	3584.28	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
54	Ft. 16	-285166.47	-1015.10	-4220.72	-835.59
	σ <sub>s,c</sub> 15	-295226.13	-1050.83	-4182.85	-1071.82
	σ <sub>cls,Max</sub> 15	-295226.13	-1050.83	-4182.85	-73.40
	σ <sub>cls,Med</sub> 15	-295226.13	-1050.83	-4182.85	-64.66
154	Ft. 17	-279531.50	-232.90	447.57	-903.68
	σ <sub>s,c</sub> 15	-290876.13	-66.90	690.65	-969.10
	σ <sub>cls,Max</sub> 15	-290876.13	-66.90	690.65	-64.81
	σ <sub>cls,Med</sub> 15	-290876.13	-66.90	690.65	-63.71
<b>Combinazioni Frequenti</b>					
54	Ft. 19	-281787.69	-995.72	-4232.55	-824.91
	σ <sub>s,c</sub> 18	-285139.97	-1007.37	-4219.90	-1037.91
	σ <sub>cls,Max</sub> 18	-285139.97	-1007.37	-4219.90	-71.09
	σ <sub>cls,Med</sub> 18	-285139.97	-1007.37	-4219.90	-62.46
154	Ft. 20	-274616.47	-208.67	596.78	-885.86
	σ <sub>s,c</sub> 18	-280789.97	-65.51	770.81	-937.23
	σ <sub>cls,Max</sub> 18	-280789.97	-65.51	770.81	-62.69
	σ <sub>cls,Med</sub> 18	-280789.97	-65.51	770.81	-61.50
<b>Combinazioni Quasi Permanenti</b>					
54	Ft. 22	-277328.16	-846.74	-3866.96	-820.98
	σ <sub>s,c</sub> 21	-281782.38	-994.18	-4232.39	-1026.66
	σ <sub>cls,Max</sub> 21	-281782.38	-994.18	-4232.39	-70.33
	σ <sub>cls,Med</sub> 21	-281782.38	-994.18	-4232.39	-61.72
154	Ft. 22	-272978.16	-200.59	646.52	-879.92
	σ <sub>s,c</sub> 21	-277432.38	-64.21	797.41	-926.60
	σ <sub>cls,Max</sub> 21	-277432.38	-64.21	797.41	-61.99
	σ <sub>cls,Med</sub> 21	-277432.38	-64.21	797.41	-60.77

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **154/254** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
154	1	-351276.22	1557.49	7221.41	0.43
254	1	-346791.22	-1337.34	-5336.97	0.42

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	839.08	61956.98	3640.11	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	839.08	46467.73	3640.11	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	839.08	61956.98	3640.11	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
154	Ft. 17	-232303.06	1060.96	4814.40	-650.74
	σ <sub>s,c</sub> 15	-243660.53	1080.46	4913.19	-915.29
	σ <sub>cls,Max</sub> 15	-243660.53	1080.46	4913.19	-63.13
	σ <sub>cls,Med</sub> 15	-243660.53	1080.46	4913.19	-53.37
254	Ft. 17	-228853.06	-744.12	-3396.74	-672.67
	σ <sub>s,c</sub> 15	-240210.53	-931.32	-3601.31	-877.75
	σ <sub>cls,Max</sub> 15	-240210.53	-931.32	-3601.31	-60.22
	σ <sub>cls,Med</sub> 15	-240210.53	-931.32	-3601.31	-52.61
<b>Combinazioni Frequenti</b>					
154	Ft. 20	-229825.30	1020.85	4718.27	-645.44
	σ <sub>s,c</sub> 18	-236028.11	1036.30	4748.20	-886.11
	σ <sub>cls,Max</sub> 18	-236028.11	1036.30	4748.20	-61.10
	σ <sub>cls,Med</sub> 18	-236028.11	1036.30	4748.20	-51.70
254	Ft. 20	-226375.30	-711.11	-3278.37	-667.51
	σ <sub>s,c</sub> 18	-232578.11	-893.46	-3428.65	-848.65
	σ <sub>cls,Max</sub> 18	-232578.11	-893.46	-3428.65	-58.21
	σ <sub>cls,Med</sub> 18	-232578.11	-893.46	-3428.65	-50.94
<b>Combinazioni Quasi Permanenti</b>					
154	Ft. 22	-228999.38	1007.48	4686.22	-643.68
	σ <sub>s,c</sub> 21	-233487.95	1021.15	4693.12	-876.38
	σ <sub>cls,Max</sub> 21	-233487.95	1021.15	4693.12	-60.42
	σ <sub>cls,Med</sub> 21	-233487.95	1021.15	4693.12	-51.14
254	Ft. 22	-225549.38	-700.10	-3238.91	-665.80
	σ <sub>s,c</sub> 21	-230037.95	-880.53	-3370.90	-838.94
	σ <sub>cls,Max</sub> 21	-230037.95	-880.53	-3370.90	-57.53
	σ <sub>cls,Med</sub> 21	-230037.95	-880.53	-3370.90	-50.39

Pilastro: **254/354** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
254	1	-280374.88	2766.39	1309.22	0.34
354	1	-275889.88	-5130.16	-10286.97	0.37

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2973.76	61956.98	4044.27	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	2973.76	46467.73	4044.27	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	2973.76	61956.98	4044.27	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
254	Ft. 17	-181748.31	2268.98	1445.97	-501.30
	σ <sub>s,c</sub> 15	-193194.66	1859.35	1037.82	-710.87
	σ <sub>cls,Max</sub> 15	-193194.66	1859.35	1037.82	-49.70
	σ <sub>cls,Med</sub> 15	-193194.66	1859.35	1037.82	-42.32
354	Ft. 17	-178298.31	-4588.35	-8262.15	-304.69
	σ <sub>s,c</sub> 17	-178298.31	-4588.35	-8262.15	-866.91
	σ <sub>cls,Max</sub> 17	-178298.31	-4588.35	-8262.15	-64.50
	σ <sub>cls,Med</sub> 15	-189744.66	-3422.69	-7099.26	-41.56
<b>Combinazioni Frequenti</b>					
254	Ft. 20	-181705.25	2214.63	1328.41	-504.82
	σ <sub>s,c</sub> 18	-188004.17	1794.32	972.71	-690.68
	σ <sub>cls,Max</sub> 20	-181705.25	2214.63	1328.41	-48.71
	σ <sub>cls,Med</sub> 18	-188004.17	1794.32	972.71	-41.18
354	Ft. 20	-178255.25	-4521.53	-8081.56	-309.63
	σ <sub>s,c</sub> 20	-178255.25	-4521.53	-8081.56	-861.69
	σ <sub>cls,Max</sub> 20	-178255.25	-4521.53	-8081.56	-64.04
	σ <sub>cls,Med</sub> 18	-184554.17	-3328.19	-6826.12	-40.42
<b>Combinazioni Quasi Permanenti</b>					
254	Ft. 22	-181690.86	2196.52	1289.22	-505.99
	σ <sub>s,c</sub> 22	-181690.86	2196.52	1289.22	-687.91
	σ <sub>cls,Max</sub> 22	-181690.86	2196.52	1289.22	-48.60
	σ <sub>cls,Med</sub> 21	-186277.39	1771.44	951.33	-40.80
354	Ft. 22	-178240.86	-4499.26	-8021.36	-311.28
	σ <sub>s,c</sub> 22	-178240.86	-4499.26	-8021.36	-859.95
	σ <sub>cls,Max</sub> 22	-178240.86	-4499.26	-8021.36	-63.89
	σ <sub>cls,Med</sub> 21	-182827.39	-3294.33	-6735.65	-40.05

Pilastro: **55/155** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 210.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
55	1	-570150.31	368.82	-5157.67	0.67
155	1	-564495.31	-481.85	-2178.06	0.65

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	553.43	61956.98	3194.85	86297.23	Ø 10 4br.x2br./15.0
1.13	3.23	553.43	46467.73	3194.85	64722.92	Ø 10 4br.x2br./20.0
3.23	4.23	553.43	61956.98	3194.85	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
55	Ft. 16	-383493.25	212.41	-3745.26	-1191.96

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-396188.84	203.91	-3690.94	-1368.55
	σ <sub>cls,Max</sub> 15	-396188.84	203.91	-3690.94	-92.12
	σ <sub>cls,Med</sub> 15	-396188.84	203.91	-3690.94	-86.78
155	Ft. 17	-382082.66	-442.43	-1676.12	-1213.85
	σ <sub>s,c</sub> 15	-391838.84	-283.73	-1539.18	-1321.60
	σ <sub>cls,Max</sub> 15	-391838.84	-283.73	-1539.18	-88.70
	σ <sub>cls,Med</sub> 15	-391838.84	-283.73	-1539.18	-85.83
<b>Combinazioni Frequenti</b>					
55	Ft. 19	-379223.28	219.45	-3758.92	-1177.48
	σ <sub>s,c</sub> 18	-383453.75	216.76	-3740.66	-1327.93
	σ <sub>cls,Max</sub> 18	-383453.75	216.76	-3740.66	-89.44
	σ <sub>cls,Med</sub> 18	-383453.75	216.76	-3740.66	-83.99
155	Ft. 20	-375865.78	-439.68	-1463.67	-1196.99
	σ <sub>s,c</sub> 18	-379103.75	-289.04	-1385.21	-1277.41
	σ <sub>cls,Max</sub> 18	-379103.75	-289.04	-1385.21	-85.74
	σ <sub>cls,Med</sub> 18	-379103.75	-289.04	-1385.21	-83.04
<b>Combinazioni Quasi Permanenti</b>					
55	Ft. 22	-378143.59	335.02	-3574.77	-1173.27
	σ <sub>s,c</sub> 21	-379215.38	220.32	-3758.00	-1314.40
	σ <sub>cls,Max</sub> 21	-379215.38	220.32	-3758.00	-88.55
	σ <sub>cls,Med</sub> 21	-379215.38	220.32	-3758.00	-83.06
155	Ft. 22	-373793.59	-438.76	-1392.85	-1191.37
	σ <sub>s,c</sub> 22	-373793.59	-438.76	-1392.85	-1264.85
	σ <sub>cls,Max</sub> 22	-373793.59	-438.76	-1392.85	-85.07
	σ <sub>cls,Med</sub> 21	-374865.38	-290.19	-1333.71	-82.11

Pilastro: **155/255** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
155	1	-477160.38	134.42	7622.07	0.57
255	1	-472675.38	-138.01	-1940.68	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	362.67	61956.98	2771.81	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	362.67	46467.73	2771.81	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	362.67	61956.98	2771.81	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
155	Ft. 17	-320327.88	21.21	5230.16	-966.22
	σ <sub>s,c</sub> 15	-329918.25	65.78	5307.61	-1172.86
	σ <sub>cls,Max</sub> 15	-329918.25	65.78	5307.61	-79.21
	σ <sub>cls,Med</sub> 15	-329918.25	65.78	5307.61	-72.26
255	Ft. 17	-316877.88	239.19	-1441.48	-1009.92
	σ <sub>s,c</sub> 15	-326468.25	-75.93	-1401.75	-1097.96
	σ <sub>cls,Max</sub> 15	-326468.25	-75.93	-1401.75	-73.53
	σ <sub>cls,Med</sub> 15	-326468.25	-75.93	-1401.75	-71.51



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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
155	Ft. 19	-317318.06	78.25	5034.87	-957.71
	$\sigma_{s,c}18$	-320458.53	76.02	5103.14	-1138.76
	$\sigma_{cls,Max}18$	-320458.53	76.02	5103.14	-76.91
	$\sigma_{cls,Med}18$	-320458.53	76.02	5103.14	-70.19
255	Ft. 20	-313948.56	221.87	-1266.80	-1003.71
	$\sigma_{s,c}18$	-317008.53	-89.56	-1229.10	-1064.49
	$\sigma_{cls,Max}18$	-317008.53	-89.56	-1229.10	-71.29
	$\sigma_{cls,Med}18$	-317008.53	-89.56	-1229.10	-69.44

<b>Combinazioni Quasi Permanenti</b>					
155	Ft. 22	-316422.06	37.36	5031.25	-956.13
	$\sigma_{s,c}21$	-317311.06	78.90	5034.93	-1127.40
	$\sigma_{cls,Max}21$	-317311.06	78.90	5034.93	-76.14
	$\sigma_{cls,Med}21$	-317311.06	78.90	5034.93	-69.50
255	Ft. 22	-312972.06	216.09	-1208.57	-1001.63
	$\sigma_{s,c}22$	-312972.06	216.09	-1208.57	-1054.92
	$\sigma_{cls,Max}22$	-312972.06	216.09	-1208.57	-70.79
	$\sigma_{cls,Med}21$	-313861.06	-93.73	-1171.35	-68.75

Pilastro: **255/355** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:**  $12 \varnothing 20$  Af=37.70 [cm<sup>2</sup>] <  $1f20 \times 4 V + 3f20 \times 2 B + 1f20 \times 2 H$  >

**Staffe:**  $\varnothing 10$  4br.x2br./15.0 x 100.0/ $\varnothing 10$  4br.x2br./20.0 x 120.0/ $\varnothing 10$  4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
255	1	-387764.53	2067.10	9912.32	0.48
355	1	-383279.53	-4464.72	-39694.25	0.58

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	3101.82	61956.98	14378.72	86297.23	$\varnothing 10$ 4br.x2br./15.0
1.13	2.32	3101.82	46467.73	14378.72	64722.92	$\varnothing 10$ 4br.x2br./20.0
2.32	3.32	3101.82	61956.98	14378.72	86297.23	$\varnothing 10$ 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
255	Ft. 17	-256775.83	2077.49	6835.23	-665.75
	$\sigma_{s,c}15$	-266214.66	1356.12	6853.33	-1029.90
	$\sigma_{cls,Max}17$	-256775.83	2077.49	6835.23	-71.69
	$\sigma_{cls,Med}15$	-266214.66	1356.12	6853.33	-58.31
355	Ft. 17	-253325.83	-5013.11	-26466.63	-239.91
	$\sigma_{s,c}17$	-253325.83	-5013.11	-26466.63	-1424.70
	$\sigma_{cls,Max}17$	-253325.83	-5013.11	-26466.63	-105.40
	$\sigma_{cls,Med}15$	-262764.66	-2954.84	-26943.27	-57.55

<b>Combinazioni Frequenti</b>					
255	Ft. 20	-257114.66	2048.10	6657.70	-670.70
	$\sigma_{s,c}20$	-257114.66	2048.10	6657.70	-1018.81
	$\sigma_{cls,Max}20$	-257114.66	2048.10	6657.70	-71.44
	$\sigma_{cls,Med}18$	-259978.55	1317.95	6655.84	-56.94
355	Ft. 20	-253664.66	-4949.58	-26246.73	-246.64
	$\sigma_{s,c}20$	-253664.66	-4949.58	-26246.73	-1420.20
	$\sigma_{cls,Max}20$	-253664.66	-4949.58	-26246.73	-104.99
	$\sigma_{cls,Med}18$	-256528.55	-2874.56	-26400.36	-56.19

<b>Combinazioni Quasi Permanenti</b>					
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**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
255	Ft. 22	-257227.59	2038.30	6598.52	-672.35
	σ <sub>s,c</sub> 22	-257227.59	2038.30	6598.52	-1017.90
	σ <sub>cls,Max</sub> 22	-257227.59	2038.30	6598.52	-71.36
	σ <sub>cls,Med</sub> 21	-257904.80	1304.09	6590.01	-56.49
355	Ft. 22	-253777.59	-4928.40	-26173.44	-248.89
	σ <sub>s,c</sub> 22	-253777.59	-4928.40	-26173.44	-1418.69
	σ <sub>cls,Max</sub> 22	-253777.59	-4928.40	-26173.44	-104.85
	σ <sub>cls,Med</sub> 21	-254454.80	-2845.58	-26219.02	-55.73

Pilastro: **56/156** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
56	1	-543372.06	938.98	6583.07	0.64
156	1	-537717.06	-1008.46	5112.30	0.63

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	716.59	61956.98	3255.37	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	716.59	46467.73	3255.37	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	716.59	61956.98	3255.37	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
56	Ft. 17	-364711.00	643.60	3980.25	-1112.69
	σ <sub>s,c</sub> 15	-376853.59	600.40	4585.58	-1332.27
	σ <sub>cls,Max</sub> 15	-376853.59	600.40	4585.58	-90.32
	σ <sub>cls,Med</sub> 15	-376853.59	600.40	4585.58	-82.54
156	Ft. 17	-360361.00	-710.46	3749.62	-1100.04
	σ <sub>s,c</sub> 15	-372503.59	-647.66	3578.75	-1303.01
	σ <sub>cls,Max</sub> 15	-372503.59	-647.66	3578.75	-88.24
	σ <sub>cls,Med</sub> 15	-372503.59	-647.66	3578.75	-81.59

**Combinazioni Frequenti**

56	Ft. 20	-359294.47	650.71	3678.52	-1099.60
	σ <sub>s,c</sub> 18	-365615.94	604.87	4203.32	-1289.23
	σ <sub>cls,Max</sub> 18	-365615.94	604.87	4203.32	-87.39
	σ <sub>cls,Med</sub> 18	-365615.94	604.87	4203.32	-80.08
156	Ft. 20	-354944.47	-712.66	3746.70	-1082.22
	σ <sub>s,c</sub> 18	-361265.94	-643.62	3540.35	-1265.33
	σ <sub>cls,Max</sub> 18	-361265.94	-643.62	3540.35	-85.72
	σ <sub>cls,Med</sub> 18	-361265.94	-643.62	3540.35	-79.13

**Combinazioni Quasi Permanenti**

56	Ft. 22	-357488.97	653.08	3577.94	-1095.24
	σ <sub>s,c</sub> 21	-361871.16	606.16	4075.90	-1274.89
	σ <sub>cls,Max</sub> 21	-361871.16	606.16	4075.90	-86.41
	σ <sub>cls,Med</sub> 21	-361871.16	606.16	4075.90	-79.26
156	Ft. 22	-353138.97	-713.40	3745.72	-1076.28
	σ <sub>s,c</sub> 21	-357521.16	-642.06	3527.56	-1252.77
	σ <sub>cls,Max</sub> 21	-357521.16	-642.06	3527.56	-84.88

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-357521.16	-642.06	3527.56	-78.31

Pilastro: **156/256** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
156	1	-459995.75	377.21	-10807.56	0.56
256	1	-455510.75	-542.63	-3011.63	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	489.07	61956.98	2259.69	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	489.07	46467.73	2259.69	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	489.07	61956.98	2259.69	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
156	Ft. 17	-305089.44	169.99	-7546.38	-873.53
	σ <sub>s,c</sub> 15	-317301.03	237.88	-7608.97	-1174.53
	σ <sub>cls,Max</sub> 15	-317301.03	237.88	-7608.97	-79.92
	σ <sub>cls,Med</sub> 15	-317301.03	237.88	-7608.97	-69.50
256	Ft. 17	-301639.44	-130.41	-1823.35	-957.07
	σ <sub>s,c</sub> 15	-313851.03	-358.14	-1815.30	-1072.25
	σ <sub>cls,Max</sub> 15	-313851.03	-358.14	-1815.30	-72.21
	σ <sub>cls,Med</sub> 15	-313851.03	-358.14	-1815.30	-68.74
<b>Combinazioni Frequenti</b>					
156	Ft. 20	-302745.88	184.63	-7134.75	-872.10
	σ <sub>s,c</sub> 18	-309094.09	242.82	-7193.09	-1140.92
	σ <sub>cls,Max</sub> 18	-309094.09	242.82	-7193.09	-77.62
	σ <sub>cls,Med</sub> 18	-309094.09	242.82	-7193.09	-67.70
256	Ft. 20	-299295.88	-148.51	-2085.17	-944.51
	σ <sub>s,c</sub> 18	-305644.09	-365.43	-1943.34	-1047.61
	σ <sub>cls,Max</sub> 18	-305644.09	-365.43	-1943.34	-70.60
	σ <sub>cls,Med</sub> 18	-305644.09	-365.43	-1943.34	-66.95
<b>Combinazioni Quasi Permanenti</b>					
156	Ft. 22	-301964.69	189.51	-6997.54	-871.62
	σ <sub>s,c</sub> 21	-306359.44	244.23	-7054.73	-1129.71
	σ <sub>cls,Max</sub> 21	-306359.44	244.23	-7054.73	-76.85
	σ <sub>cls,Med</sub> 21	-306359.44	244.23	-7054.73	-67.10
256	Ft. 22	-298514.69	-154.55	-2172.45	-940.32
	σ <sub>s,c</sub> 21	-302909.44	-367.71	-1985.78	-1039.39
	σ <sub>cls,Max</sub> 21	-302909.44	-367.71	-1985.78	-70.07
	σ <sub>cls,Med</sub> 21	-302909.44	-367.71	-1985.78	-66.35

Pilastro: **256/356** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
256	1	-380698.66	1616.59	-24250.65	0.51

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
356	1	-376213.66	-2081.23	67865.18	0.68

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1725.43	61956.98	26936.95	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1725.43	46467.73	26936.95	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1725.43	61956.98	26936.95	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
256	Ft. 17	-248321.55	1420.17	-16736.66	-496.92
	σ <sub>s,c</sub> 15	-260629.47	1053.84	-16628.47	-1161.82
	σ <sub>cls,Max</sub> 15	-260629.47	1053.84	-16628.47	-81.61
	σ <sub>cls,Med</sub> 15	-260629.47	1053.84	-16628.47	-57.09
356	Ft. 17	-244871.55	-2481.10	46782.02	55.92
	σ <sub>s,c</sub> 17	-244871.55	-2481.10	46782.02	-1657.58
	σ <sub>cls,Max</sub> 17	-244871.55	-2481.10	46782.02	-121.88
	σ <sub>cls,Med</sub> 15	-257179.45	-1344.15	46345.79	-57.72
<b>Combinazioni Frequenti</b>					
256	Ft. 20	-249035.94	1405.75	-16537.80	-502.98
	σ <sub>s,c</sub> 18	-255413.63	1019.47	-16203.48	-1136.64
	σ <sub>cls,Max</sub> 20	-249035.94	1405.75	-16537.80	-80.10
	σ <sub>cls,Med</sub> 18	-255413.63	1019.47	-16203.48	-55.94
356	Ft. 20	-245585.94	-2457.11	46568.54	47.73
	σ <sub>s,c</sub> 20	-245585.94	-2457.11	46568.54	-1654.85
	σ <sub>cls,Max</sub> 20	-245585.94	-2457.11	46568.54	-121.61
	σ <sub>cls,Med</sub> 20	-245585.94	-2457.11	46568.54	-56.79
<b>Combinazioni Quasi Permanenti</b>					
256	Ft. 22	-249274.06	1400.94	-16471.52	-505.00
	σ <sub>s,c</sub> 22	-249274.06	1400.94	-16471.52	-1132.99
	σ <sub>cls,Max</sub> 22	-249274.06	1400.94	-16471.52	-80.06
	σ <sub>cls,Med</sub> 21	-253675.91	1007.60	-16061.90	-55.56
356	Ft. 22	-245824.06	-2449.11	46497.38	45.02
	σ <sub>s,c</sub> 22	-245824.06	-2449.11	46497.38	-1653.95
	σ <sub>cls,Max</sub> 22	-245824.06	-2449.11	46497.38	-121.52
	σ <sub>cls,Med</sub> 22	-245824.06	-2449.11	46497.38	-56.78

Pilastro: **57/157** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
57	1	-260474.80	-411.16	-7189.01	0.32
157	1	-254819.83	-1282.14	4243.57	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	497.22	61956.98	6839.48	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	497.22	46467.73	6839.48	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	497.22	61956.98	6839.48	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
57	Ft. 17	-170524.08	-292.85	-4757.04	-473.13
	σ <sub>s,c</sub> 15	-182680.00	-337.38	-5000.56	-692.73
	σ <sub>cls,Max</sub> 15	-182680.00	-337.38	-5000.56	-47.45
	σ <sub>cls,Med</sub> 15	-182680.00	-337.38	-5000.56	-40.01
157	Ft. 17	-166174.09	-874.95	2917.99	-470.40
	σ <sub>s,c</sub> 15	-178330.02	-867.51	3056.43	-663.50
	σ <sub>cls,Max</sub> 15	-178330.02	-867.51	3056.43	-45.77
	σ <sub>cls,Med</sub> 15	-178330.02	-867.51	3056.43	-39.06
<b>Combinazioni Frequenti</b>					
57	Ft. 20	-168055.00	-281.92	-5020.28	-461.06
	σ <sub>s,c</sub> 18	-176380.25	-314.00	-5077.88	-672.55
	σ <sub>cls,Max</sub> 18	-176380.25	-314.00	-5077.88	-46.10
	σ <sub>cls,Med</sub> 18	-176380.25	-314.00	-5077.88	-38.63
157	Ft. 20	-163705.00	-844.79	3074.94	-460.68
	σ <sub>s,c</sub> 18	-172030.25	-834.32	3111.21	-642.64
	σ <sub>cls,Max</sub> 18	-172030.25	-834.32	3111.21	-44.35
	σ <sub>cls,Med</sub> 18	-172030.25	-834.32	3111.21	-37.68
<b>Combinazioni Quasi Permanenti</b>					
57	Ft. 22	-167231.98	-278.28	-5108.03	-457.04
	σ <sub>s,c</sub> 21	-174278.27	-306.34	-5103.59	-665.82
	σ <sub>cls,Max</sub> 21	-174278.27	-306.34	-5103.59	-45.64
	σ <sub>cls,Med</sub> 21	-174278.27	-306.34	-5103.59	-38.17
157	Ft. 22	-162881.98	-834.73	3127.25	-457.44
	σ <sub>s,c</sub> 21	-169928.27	-823.20	3129.34	-635.68
	σ <sub>cls,Max</sub> 21	-169928.27	-823.20	3129.34	-43.87
	σ <sub>cls,Med</sub> 21	-169928.27	-823.20	3129.34	-37.22

Pilastro: **157/257** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
157	1	-226174.41	2105.60	-8650.18	0.29
257	1	-221689.41	-1408.28	-3143.74	0.27

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1018.52	61956.98	1747.83	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1018.52	46467.73	1747.83	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1018.52	61956.98	1747.83	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
157	Ft. 17	-145849.48	1472.24	-5976.46	-334.60
	σ <sub>s,c</sub> 15	-158054.41	1507.59	-5874.55	-663.34
	σ <sub>cls,Max</sub> 15	-158054.41	1507.59	-5874.55	-46.99
	σ <sub>cls,Med</sub> 15	-158054.41	1507.59	-5874.55	-34.62
257	Ft. 17	-142399.48	-1021.81	-1803.59	-405.85
	σ <sub>s,c</sub> 15	-154604.41	-1029.94	-2050.72	-574.26
	σ <sub>cls,Max</sub> 15	-154604.41	-1029.94	-2050.72	-39.82

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
*Parcheggio interrato - Tabulato di calcolo*

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-154604.41	-1029.94	-2050.72	-33.86
<b>Combinazioni Frequenti</b>					
157	Ft. 20	-144291.19	1398.71	-5483.35	-339.88
	σ <sub>s,c</sub> 18	-152682.08	1429.02	-5429.70	-635.91
	σ <sub>cls,Max</sub> 18	-152682.08	1429.02	-5429.70	-44.99
	σ <sub>cls,Med</sub> 18	-152682.08	1429.02	-5429.70	-33.44
257	Ft. 20	-140841.19	-961.39	-2253.40	-395.29
	σ <sub>s,c</sub> 18	-149232.08	-978.20	-2383.95	-560.42
	σ <sub>cls,Max</sub> 18	-149232.08	-978.20	-2383.95	-38.90
	σ <sub>cls,Med</sub> 18	-149232.08	-978.20	-2383.95	-32.69
<b>Combinazioni Quasi Permanenti</b>					
157	Ft. 22	-143771.75	1374.20	-5318.98	-341.65
	σ <sub>s,c</sub> 21	-150889.36	1402.81	-5281.53	-626.77
	σ <sub>cls,Max</sub> 21	-150889.36	1402.81	-5281.53	-44.32
	σ <sub>cls,Med</sub> 21	-150889.36	1402.81	-5281.53	-33.05
257	Ft. 22	-140321.75	-941.25	-2403.34	-391.78
	σ <sub>s,c</sub> 21	-147439.36	-960.95	-2494.78	-555.79
	σ <sub>cls,Max</sub> 21	-147439.36	-960.95	-2494.78	-38.59
	σ <sub>cls,Med</sub> 21	-147439.36	-960.95	-2494.78	-32.29

Pilastro: **257/357** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
257	1	-194965.16	2249.20	-26561.38	0.32
357	1	-190480.16	-2458.83	65902.23	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1364.63	61956.98	26802.28	86297.23	ø 10 4br.x2br./15.0
1.13	2.33	1364.66	46467.73	26801.51	64722.92	ø 10 4br.x2br./20.0
2.33	3.33	1364.69	61956.98	26800.58	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
257	Ft. 17	-123352.41	1458.67	-17732.34	-68.82
	σ <sub>s,c</sub> 15	-135651.25	1531.04	-18143.11	-791.16
	σ <sub>cls,Max</sub> 15	-135651.25	1531.04	-18143.11	-57.71
	σ <sub>cls,Med</sub> 15	-135651.25	1531.04	-18143.11	-29.71
357	Ft. 17	-119902.41	-1459.89	43473.19	882.78
	σ <sub>s,c</sub> 15	-132201.27	-1627.91	44906.84	-1371.75
	σ <sub>cls,Max</sub> 15	-132201.27	-1627.91	44906.84	-105.15
	σ <sub>cls,Med</sub> 15	-132201.27	-1627.91	44906.84	-48.73
<b>Combinazioni Frequenti</b>					
257	Ft. 20	-122591.18	1403.29	-17640.16	-69.59
	σ <sub>s,c</sub> 18	-131089.00	1446.98	-17819.09	-768.19
	σ <sub>cls,Max</sub> 18	-131089.00	1446.98	-17819.09	-56.03
	σ <sub>cls,Med</sub> 18	-131089.00	1446.98	-17819.09	-28.71
357	Ft. 20	-119141.18	-1429.43	43785.25	911.97

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-127638.99	-1536.47	44464.02	-1352.98
	σ <sub>cls,Max</sub> 18	-127638.99	-1536.47	44464.02	-103.90
	σ <sub>cls,Med</sub> 18	-127638.99	-1536.47	44464.02	-48.26
<b>Combinazioni Quasi Permanenti</b>					
257	Ft. 22	-122337.44	1384.83	-17609.44	-69.85
	σ <sub>s,c</sub> 21	-129566.42	1418.89	-17710.80	-760.53
	σ <sub>cls,Max</sub> 21	-129566.42	1418.89	-17710.80	-55.47
	σ <sub>cls,Med</sub> 21	-129566.42	1418.89	-17710.80	-28.38
357	Ft. 22	-118887.44	-1419.27	43889.26	921.82
	σ <sub>s,c</sub> 21	-126116.42	-1505.77	44316.24	-1346.73
	σ <sub>cls,Max</sub> 21	-126116.42	-1505.77	44316.24	-103.49
	σ <sub>cls,Med</sub> 21	-126116.42	-1505.77	44316.24	-48.10

Pilastro: **58/158** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
58	1	-434726.22	9.80	-6468.53	0.52
158	1	-429071.22	989.04	2449.96	0.50

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	483.01	61956.98	4242.84	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	483.01	46467.73	4242.84	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	483.01	61956.98	4242.84	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
58	Ft. 16	-293916.56	19.58	-4751.60	-887.32
	σ <sub>s,c</sub> 15	-303964.78	3.71	-4516.36	-1072.68
	σ <sub>cls,Max</sub> 15	-303964.78	3.71	-4516.36	-72.32
	σ <sub>cls,Med</sub> 15	-303964.78	3.71	-4516.36	-66.58
158	Ft. 16	-289566.56	652.06	1613.84	-904.24
	σ <sub>s,c</sub> 15	-299614.78	695.43	1442.53	-1030.11
	σ <sub>cls,Max</sub> 15	-299614.78	695.43	1442.53	-69.72
	σ <sub>cls,Med</sub> 15	-299614.78	695.43	1442.53	-65.63
<b>Combinazioni Frequenti</b>					
58	Ft. 19	-290526.06	23.30	-4838.63	-874.64
	σ <sub>s,c</sub> 20	-295232.38	-35.26	-4755.12	-1048.89
	σ <sub>cls,Max</sub> 20	-295232.38	-35.26	-4755.12	-70.81
	σ <sub>cls,Med</sub> 20	-295232.38	-35.26	-4755.12	-64.67
158	Ft. 19	-286176.06	639.36	1675.05	-892.50
	σ <sub>s,c</sub> 20	-290882.38	741.70	1642.06	-1006.15
	σ <sub>cls,Max</sub> 20	-290882.38	741.70	1642.06	-68.22
	σ <sub>cls,Med</sub> 20	-290882.38	741.70	1642.06	-63.71
<b>Combinazioni Quasi Permanenti</b>					
58	Ft. 21	-290517.56	22.97	-4840.41	-874.60
	σ <sub>s,c</sub> 22	-293586.00	-30.75	-4845.41	-1044.82
	σ <sub>cls,Max</sub> 22	-293586.00	-30.75	-4845.41	-70.55



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-293586.00	-30.75	-4845.41	-64.31
158	Ft. 21	-286167.56	639.73	1675.90	-892.45
	σ <sub>s,c</sub> 22	-289236.00	728.72	1718.52	-1001.58
	σ <sub>cls,Max</sub> 22	-289236.00	728.72	1718.52	-67.91
	σ <sub>cls,Med</sub> 22	-289236.00	728.72	1718.52	-63.35

Pilastro: **158/258** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
158	1	-354901.31	-2061.59	14528.29	0.46
258	1	-350416.31	1617.72	-9765.92	0.43

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1066.47	61956.98	7041.80	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1066.47	46467.73	7041.80	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1066.47	61956.98	7041.80	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
158	Ft. 16	-239535.67	-1369.33	9426.70	-589.25
	σ <sub>s,c</sub> 15	-246912.45	-1445.09	9819.05	-1017.82
	σ <sub>cls,Max</sub> 15	-246912.45	-1445.09	9819.05	-71.25
	σ <sub>cls,Med</sub> 15	-246912.45	-1445.09	9819.05	-54.08
258	Ft. 16	-236085.67	1077.50	-6237.60	-639.36
	σ <sub>s,c</sub> 15	-243462.45	1144.98	-6605.44	-944.37
	σ <sub>cls,Max</sub> 15	-243462.45	1144.98	-6605.44	-65.44
	σ <sub>cls,Med</sub> 15	-243462.45	1144.98	-6605.44	-53.33
<b>Combinazioni Frequenti</b>					
158	Ft. 19	-237041.16	-1345.98	9294.53	-583.95
	σ <sub>s,c</sub> 20	-241300.81	-1372.62	9456.87	-991.15
	σ <sub>cls,Max</sub> 20	-241300.81	-1372.62	9456.87	-69.32
	σ <sub>cls,Med</sub> 20	-241300.81	-1372.62	9456.87	-52.85
258	Ft. 19	-233591.16	1056.22	-6114.17	-633.86
	σ <sub>s,c</sub> 18	-236048.83	1078.76	-6236.76	-911.88
	σ <sub>cls,Max</sub> 18	-236048.83	1078.76	-6236.76	-63.13
	σ <sub>cls,Med</sub> 20	-237850.81	928.75	-6107.94	-52.10
<b>Combinazioni Quasi Permanenti</b>					
158	Ft. 21	-237033.78	-1346.37	9294.24	-583.92
	σ <sub>s,c</sub> 22	-240547.44	-1348.06	9362.43	-986.35
	σ <sub>cls,Max</sub> 22	-240547.44	-1348.06	9362.43	-68.96
	σ <sub>cls,Med</sub> 22	-240547.44	-1348.06	9362.43	-52.69
258	Ft. 21	-233583.78	1056.47	-6114.00	-633.83
	σ <sub>s,c</sub> 22	-237097.44	905.52	-6016.25	-906.20
	σ <sub>cls,Max</sub> 22	-237097.44	905.52	-6016.25	-62.52
	σ <sub>cls,Med</sub> 22	-237097.44	905.52	-6016.25	-51.93

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **258/358** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
258	1	-290911.28	-3184.87	11276.37	0.38
358	3	-281766.69	6538.78	-37543.45	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2966.15	61956.98	14177.94	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	2966.15	46467.73	14177.94	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	2966.15	61956.98	14177.94	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
258	Ft. 17	-197844.91	-2534.74	8036.79	-437.93
	σ <sub>s,c</sub> 17	-197844.91	-2534.74	8036.79	-862.12
	σ <sub>cls,Max</sub> 17	-197844.91	-2534.74	8036.79	-61.80
	σ <sub>cls,Med</sub> 15	-200951.30	-2195.03	7974.08	-44.02
358	Ft. 17	-194394.91	4435.43	-25649.30	-77.51
	σ <sub>s,c</sub> 17	-194394.91	4435.43	-25649.30	-1199.66
	σ <sub>cls,Max</sub> 17	-194394.91	4435.43	-25649.30	-89.61
	σ <sub>cls,Med</sub> 15	-197501.30	3436.78	-25408.60	-43.26
<b>Combinazioni Frequenti</b>					
258	Ft. 20	-198181.52	-2485.37	7755.94	-445.20
	σ <sub>s,c</sub> 20	-198181.52	-2485.37	7755.94	-857.06
	σ <sub>cls,Max</sub> 20	-198181.52	-2485.37	7755.94	-61.35
	σ <sub>cls,Med</sub> 20	-198181.52	-2485.37	7755.94	-43.41
358	Ft. 20	-194731.52	4402.36	-25185.01	-87.48
	σ <sub>s,c</sub> 20	-194731.52	4402.36	-25185.01	-1191.99
	σ <sub>cls,Max</sub> 20	-194731.52	4402.36	-25185.01	-88.97
	σ <sub>cls,Med</sub> 20	-194731.52	4402.36	-25185.01	-42.81
<b>Combinazioni Quasi Permanenti</b>					
258	Ft. 22	-198293.72	-2468.91	7662.33	-447.62
	σ <sub>s,c</sub> 22	-198293.72	-2468.91	7662.33	-855.37
	σ <sub>cls,Max</sub> 22	-198293.72	-2468.91	7662.33	-61.20
	σ <sub>cls,Med</sub> 22	-198293.72	-2468.91	7662.33	-43.43
358	Ft. 22	-194843.72	4391.34	-25030.24	-90.79
	σ <sub>s,c</sub> 22	-194843.72	4391.34	-25030.24	-1189.44
	σ <sub>cls,Max</sub> 22	-194843.72	4391.34	-25030.24	-88.76
	σ <sub>cls,Med</sub> 22	-194843.72	4391.34	-25030.24	-42.81

Pilastro: **59/159** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
59	1	-375124.16	2301.30	8957.90	0.46
159	1	-369469.13	4320.43	4512.29	0.46

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	959.55	61956.98	3234.41	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	959.55	46467.73	3234.41	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	959.55	61956.98	3234.41	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
59	Ft. 16	-253234.28	1691.98	6017.86	-679.75
	σ <sub>s,c</sub> 15	-262072.41	1691.43	6422.79	-1019.91
	σ <sub>cls,Max</sub> 15	-262072.41	1691.43	6422.79	-71.07
	σ <sub>cls,Med</sub> 15	-262072.41	1691.43	6422.79	-57.40
159	Ft. 17	-248610.45	3132.63	3060.46	-667.10
	σ <sub>s,c</sub> 15	-257722.41	2987.55	2946.03	-989.98
	σ <sub>cls,Max</sub> 15	-257722.41	2987.55	2946.03	-69.93
	σ <sub>cls,Med</sub> 15	-257722.41	2987.55	2946.03	-56.45
<b>Combinazioni Frequenti</b>					
59	Ft. 19	-250209.09	1677.50	5878.45	-672.55
	σ <sub>s,c</sub> 18	-253152.45	1676.81	6013.27	-983.44
	σ <sub>cls,Max</sub> 18	-253152.45	1676.81	6013.27	-68.55
	σ <sub>cls,Med</sub> 18	-253152.45	1676.81	6013.27	-55.45
159	Ft. 20	-244246.13	2947.24	3046.52	-658.89
	σ <sub>s,c</sub> 18	-248802.44	2813.12	2894.60	-954.28
	σ <sub>cls,Max</sub> 18	-248802.44	2813.12	2894.60	-67.35
	σ <sub>cls,Med</sub> 18	-248802.44	2813.12	2894.60	-54.50
<b>Combinazioni Quasi Permanenti</b>					
59	Ft. 21	-250192.73	1674.47	5877.53	-672.61
	σ <sub>s,c</sub> 21	-250192.73	1674.47	5877.53	-971.42
	σ <sub>cls,Max</sub> 21	-250192.73	1674.47	5877.53	-67.72
	σ <sub>cls,Med</sub> 21	-250192.73	1674.47	5877.53	-54.80
159	Ft. 22	-242791.31	2885.44	3041.87	-656.15
	σ <sub>s,c</sub> 21	-245842.72	2753.24	2877.31	-942.37
	σ <sub>cls,Max</sub> 21	-245842.72	2753.24	2877.31	-66.48
	σ <sub>cls,Med</sub> 21	-245842.72	2753.24	2877.31	-53.85

Pilastro: **159/259** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
159	1	-308207.28	-11115.82	-2139.85	0.45
259	1	-303722.28	8676.23	-3550.34	0.42

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5776.86	61956.98	554.45	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	5776.86	46467.73	554.45	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	5776.86	61956.98	554.45	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
159	Ft. 17	-205152.61	-7846.94	-1742.43	-395.90

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-214243.23	-7806.57	-1790.46	-981.53
	σ <sub>cls,Max</sub> 15	-214243.23	-7806.57	-1790.46	-74.67
	σ <sub>cls,Med</sub> 15	-214243.23	-7806.57	-1790.46	-46.93
259	Ft. 17	-201702.61	6179.38	-2182.52	-430.42
	σ <sub>s,c</sub> 15	-210793.23	6127.67	-2172.31	-923.03
	σ <sub>cls,Max</sub> 15	-210793.23	6127.67	-2172.31	-68.92
	σ <sub>cls,Med</sub> 15	-210793.23	6127.67	-2172.31	-46.17
<b>Combinazioni Frequenti</b>					
159	Ft. 20	-203098.70	-7465.78	-1544.05	-404.53
	σ <sub>s,c</sub> 18	-207631.09	-7413.29	-1634.30	-944.74
	σ <sub>cls,Max</sub> 18	-207631.09	-7413.29	-1634.30	-71.74
	σ <sub>cls,Med</sub> 18	-207631.09	-7413.29	-1634.30	-45.48
259	Ft. 20	-199648.70	5819.72	-2314.93	-432.95
	σ <sub>s,c</sub> 18	-204181.09	5787.36	-2137.40	-889.91
	σ <sub>cls,Max</sub> 18	-204181.09	5787.36	-2137.40	-66.32
	σ <sub>cls,Med</sub> 18	-204181.09	5787.36	-2137.40	-44.72
<b>Combinazioni Quasi Permanenti</b>					
159	Ft. 22	-202414.06	-7338.72	-1477.92	-407.40
	σ <sub>s,c</sub> 21	-205438.72	-7281.18	-1582.54	-932.49
	σ <sub>cls,Max</sub> 21	-205438.72	-7281.18	-1582.54	-70.76
	σ <sub>cls,Med</sub> 21	-205438.72	-7281.18	-1582.54	-45.00
259	Ft. 22	-198964.06	5699.83	-2359.07	-433.79
	σ <sub>s,c</sub> 21	-201988.72	5673.11	-2125.71	-878.88
	σ <sub>cls,Max</sub> 21	-201988.72	5673.11	-2125.71	-65.45
	σ <sub>cls,Med</sub> 21	-201988.72	5673.11	-2125.71	-44.24

Pilastro: **259/359** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
259	1	-245352.75	-13997.20	-11313.68	0.42
359	1	-240867.75	21694.31	24116.25	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	10345.37	61956.98	10560.89	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	10345.37	46467.73	10560.89	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	10345.37	61956.98	10560.89	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
259	Ft. 17	-160173.56	-9654.77	-7775.43	-89.60
	σ <sub>s,c</sub> 15	-169307.28	-9653.41	-7682.96	-989.44
	σ <sub>cls,Max</sub> 15	-169307.28	-9653.41	-7682.96	-78.36
	σ <sub>cls,Med</sub> 15	-169307.28	-9653.41	-7682.96	-37.35
359	Ft. 17	-156723.56	14759.85	17109.92	425.14
	σ <sub>s,c</sub> 15	-165857.28	14808.23	16532.29	-1357.92
	σ <sub>cls,Max</sub> 17	-156723.56	14759.85	17109.92	-113.56
	σ <sub>cls,Med</sub> 15	-165857.28	14808.23	16532.29	-45.31

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
259	Ft. 20	-160406.36	-9393.13	-7687.12	-101.05
	$\sigma_{s,c}18$	-164937.36	-9272.75	-7405.47	-958.29
	$\sigma_{cls,Max}18$	-164937.36	-9272.75	-7405.47	-75.80
	$\sigma_{cls,Med}18$	-164937.36	-9272.75	-7405.47	-36.33
359	Ft. 20	-156956.36	14575.59	17194.04	410.91
	$\sigma_{s,c}20$	-156956.36	14575.59	17194.04	-1346.84
	$\sigma_{cls,Max}20$	-156956.36	14575.59	17194.04	-112.72
	$\sigma_{cls,Med}20$	-156956.36	14575.59	17194.04	-44.45
<b>Combinazioni Quasi Permanenti</b>					
259	Ft. 22	-160483.97	-9305.92	-7657.69	-104.80
	$\sigma_{s,c}22$	-160483.97	-9305.92	-7657.69	-949.28
	$\sigma_{cls,Max}22$	-160483.97	-9305.92	-7657.69	-75.29
	$\sigma_{cls,Med}21$	-163490.42	-9143.58	-7313.13	-35.99
359	Ft. 22	-157033.97	14514.17	17222.08	406.24
	$\sigma_{s,c}22$	-157033.97	14514.17	17222.08	-1344.46
	$\sigma_{cls,Max}22$	-157033.97	14514.17	17222.08	-112.45
	$\sigma_{cls,Med}22$	-157033.97	14514.17	17222.08	-44.33

Pilastro: **60/160** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:**  $12 \varnothing 20 \text{ Af}=37.70 \text{ [cm}^2\text{]} < 1f20 \times 4 V + 3f20 \times 2 B + 1f20 \times 2 H >$

**Staffe:**  $\varnothing 10 \text{ 4br.x2br./15.0} \times 100.0/\varnothing 10 \text{ 4br.x2br./20.0} \times 210.0/\varnothing 10 \text{ 4br.x2br./15.0} \times 100.0$

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
60	1	-321813.69	2488.57	1752.44	0.39
160	1	-316158.69	3934.26	1433.67	0.40

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	732.20	61956.98	1971.08	86297.23	$\varnothing 10 \text{ 4br.x2br./15.0}$
1.13	3.23	732.20	46467.73	1971.08	64722.92	$\varnothing 10 \text{ 4br.x2br./20.0}$
3.23	4.23	732.20	61956.98	1971.08	86297.23	$\varnothing 10 \text{ 4br.x2br./15.0}$

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
60	Ft. 16	-217570.75	1833.89	1070.17	-638.99
	$\sigma_{s,c}15$	-224962.38	1817.55	1248.22	-817.36
	$\sigma_{cls,Max}15$	-224962.38	1817.55	1248.22	-56.79
	$\sigma_{cls,Med}15$	-224962.38	1817.55	1248.22	-49.27
160	Ft. 17	-214073.67	2871.39	700.89	-600.53
	$\sigma_{s,c}15$	-220612.38	2718.55	888.59	-825.84
	$\sigma_{cls,Max}15$	-220612.38	2718.55	888.59	-58.32
	$\sigma_{cls,Med}15$	-220612.38	2718.55	888.59	-48.32
<b>Combinazioni Frequenti</b>					
60	Ft. 19	-215042.31	1827.26	1009.68	-631.88
	$\sigma_{s,c}18$	-217503.94	1821.40	1068.98	-790.04
	$\sigma_{cls,Max}18$	-217503.94	1821.40	1068.98	-54.94
	$\sigma_{cls,Med}18$	-217503.94	1821.40	1068.98	-47.64
160	Ft. 20	-210503.42	2687.27	775.00	-593.45
	$\sigma_{s,c}18$	-213153.94	2543.29	921.30	-796.30
	$\sigma_{cls,Max}18$	-213153.94	2543.29	921.30	-56.15
	$\sigma_{cls,Med}18$	-213153.94	2543.29	921.30	-46.69
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
60	Ft. 22	-213663.36	1617.29	1284.58	-629.53
	σ <sub>s,c</sub> 21	-215028.94	1824.76	1009.44	-781.04
	σ <sub>cls,Max</sub> 21	-215028.94	1824.76	1009.44	-54.33
	σ <sub>cls,Med</sub> 21	-215028.94	1824.76	1009.44	-47.10
160	Ft. 22	-209313.36	2625.89	799.70	-591.09
	σ <sub>s,c</sub> 21	-210678.94	2483.45	932.05	-786.44
	σ <sub>cls,Max</sub> 21	-210678.94	2483.45	932.05	-55.43
	σ <sub>cls,Med</sub> 21	-210678.94	2483.45	932.05	-46.15

Pilastro: **160/260** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
160	1	-264676.50	-10451.49	3108.47	0.39
260	1	-260191.41	7858.44	-3875.73	0.36

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5321.91	61956.98	2024.41	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	5321.91	46467.73	2024.41	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	5321.91	61956.98	2024.41	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
160	Ft. 17	-177710.55	-7360.98	1965.68	-317.55
	σ <sub>s,c</sub> 15	-184117.59	-7331.46	2022.82	-871.24
	σ <sub>cls,Max</sub> 15	-184117.59	-7331.46	2022.82	-66.81
	σ <sub>cls,Med</sub> 15	-184117.59	-7331.46	2022.82	-40.33
260	Ft. 17	-174260.55	5550.87	-2227.01	-359.52
	σ <sub>s,c</sub> 15	-180667.59	5546.62	-2537.91	-811.55
	σ <sub>cls,Max</sub> 15	-180667.59	5546.62	-2537.91	-60.89
	σ <sub>cls,Med</sub> 15	-180667.59	5546.62	-2537.91	-39.57
<b>Combinazioni Frequenti</b>					
160	Ft. 20	-176018.52	-7003.72	1974.58	-323.21
	σ <sub>s,c</sub> 18	-178550.00	-6958.81	1983.22	-840.44
	σ <sub>cls,Max</sub> 18	-178550.00	-6958.81	1983.22	-64.33
	σ <sub>cls,Med</sub> 18	-178550.00	-6958.81	1983.22	-39.11
260	Ft. 20	-172568.52	5217.77	-2194.05	-365.10
	σ <sub>s,c</sub> 18	-175100.00	5229.89	-2433.77	-781.48
	σ <sub>cls,Max</sub> 18	-175100.00	5229.89	-2433.77	-58.50
	σ <sub>cls,Med</sub> 18	-175100.00	5229.89	-2433.77	-38.35
<b>Combinazioni Quasi Permanenti</b>					
160	Ft. 22	-175454.52	-6884.63	1977.54	-325.10
	σ <sub>s,c</sub> 21	-176703.91	-6833.84	1969.89	-830.19
	σ <sub>cls,Max</sub> 21	-176703.91	-6833.84	1969.89	-63.50
	σ <sub>cls,Med</sub> 21	-176703.91	-6833.84	1969.89	-38.70
260	Ft. 22	-172004.52	5106.74	-2183.06	-366.96
	σ <sub>s,c</sub> 21	-173253.91	5123.72	-2399.03	-771.47
	σ <sub>cls,Max</sub> 21	-173253.91	5123.72	-2399.03	-57.71

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-173253.91	5123.72	-2399.03	-37.95

Pilastro: **260/360** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
260	1	-209565.53	-13219.00	-2206.13	0.36
360	3	-195720.41	21572.44	-5057.19	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>rd13</sub> [kg]	Staffe
0.13	1.13	10139.44	61956.98	1063.35	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	10139.44	46467.73	1063.35	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	10139.44	61956.98	1063.35	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
260	Ft. 17	-138518.16	-9233.03	-862.00	-147.23
	σ <sub>s,c</sub> 15	-144758.25	-9106.62	-1407.00	-788.32
	σ <sub>cls,Max</sub> 15	-144758.25	-9106.62	-1407.00	-63.20
	σ <sub>cls,Med</sub> 15	-144758.25	-9106.62	-1407.00	-31.71
360	Ft. 17	-135068.16	14709.93	-3434.64	246.27
	σ <sub>s,c</sub> 17	-135068.16	14709.93	-3434.64	-1018.12
	σ <sub>cls,Max</sub> 17	-135068.16	14709.93	-3434.64	-88.73
	σ <sub>cls,Med</sub> 17	-135068.16	14709.93	-3434.64	-41.59
<b>Combinazioni Frequenti</b>					
260	Ft. 20	-138693.39	-8973.16	-884.12	-155.76
	σ <sub>s,c</sub> 18	-141060.86	-8734.48	-1356.68	-763.51
	σ <sub>cls,Max</sub> 18	-141060.86	-8734.48	-1356.68	-61.12
	σ <sub>cls,Med</sub> 18	-141060.86	-8734.48	-1356.68	-30.90
360	Ft. 20	-135243.39	14494.25	-3329.51	222.84
	σ <sub>s,c</sub> 20	-135243.39	14494.25	-3329.51	-1006.46
	σ <sub>cls,Max</sub> 20	-135243.39	14494.25	-3329.51	-87.40
	σ <sub>cls,Med</sub> 20	-135243.39	14494.25	-3329.51	-41.04
<b>Combinazioni Quasi Permanenti</b>					
260	Ft. 22	-138751.80	-8886.54	-891.49	-158.59
	σ <sub>s,c</sub> 21	-139836.53	-8608.48	-1339.93	-755.21
	σ <sub>cls,Max</sub> 22	-138751.80	-8886.54	-891.49	-60.52
	σ <sub>cls,Med</sub> 21	-139836.53	-8608.48	-1339.93	-30.63
360	Ft. 22	-135301.80	14422.35	-3294.47	215.18
	σ <sub>s,c</sub> 22	-135301.80	14422.35	-3294.47	-1002.59
	σ <sub>cls,Max</sub> 22	-135301.80	14422.35	-3294.47	-86.96
	σ <sub>cls,Med</sub> 22	-135301.80	14422.35	-3294.47	-40.85

Pilastro: **61/161** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
61	1	-397877.00	2040.99	-5465.51	0.48



**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
161	1	-392222.00	4620.33	-2099.71	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1153.44	61956.98	3299.03	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1153.44	46467.73	3299.03	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1153.44	61956.98	3299.03	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
61	Ft. 16	-268682.00	1570.90	-4024.63	-766.96
	σ <sub>s,c</sub> 15	-277250.06	1511.72	-3948.70	-1023.59
	σ <sub>cls,Max</sub> 15	-277250.06	1511.72	-3948.70	-70.67
	σ <sub>cls,Med</sub> 15	-277250.06	1511.72	-3948.70	-60.73
161	Ft. 17	-268971.28	3424.15	-1523.69	-749.86
	σ <sub>s,c</sub> 15	-272900.06	3187.96	-1468.53	-1022.06
	σ <sub>cls,Max</sub> 15	-272900.06	3187.96	-1468.53	-72.04
	σ <sub>cls,Med</sub> 15	-272900.06	3187.96	-1468.53	-59.77
<b>Combinazioni Frequenti</b>					
61	Ft. 19	-265751.50	1576.46	-4046.48	-756.79
	σ <sub>s,c</sub> 18	-268605.00	1556.24	-4021.05	-997.79
	σ <sub>cls,Max</sub> 18	-268605.00	1556.24	-4021.05	-69.01
	σ <sub>cls,Med</sub> 20	-269278.63	1261.14	-3907.30	-58.98
161	Ft. 19	-261401.56	2900.86	-1257.41	-745.99
	σ <sub>s,c</sub> 20	-264928.63	3198.39	-1318.41	-993.74
	σ <sub>cls,Max</sub> 20	-264928.63	3198.39	-1318.41	-70.14
	σ <sub>cls,Med</sub> 20	-264928.63	3198.39	-1318.41	-58.03
<b>Combinazioni Quasi Permanenti</b>					
61	Ft. 21	-265736.09	1573.52	-4045.76	-756.85
	σ <sub>s,c</sub> 21	-265736.09	1573.52	-4045.76	-989.32
	σ <sub>cls,Max</sub> 21	-265736.09	1573.52	-4045.76	-68.47
	σ <sub>cls,Med</sub> 22	-267931.06	1297.59	-3977.87	-58.69
161	Ft. 21	-261386.16	2902.93	-1257.25	-745.88
	σ <sub>s,c</sub> 22	-263581.06	3123.13	-1249.99	-985.80
	σ <sub>cls,Max</sub> 22	-263581.06	3123.13	-1249.99	-69.51
	σ <sub>cls,Med</sub> 22	-263581.06	3123.13	-1249.99	-57.73

Pilastro: **161/261** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
161	1	-331636.50	-11819.45	8448.59	0.48
261	1	-327151.50	8975.78	-2343.92	0.45

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6031.41	61956.98	3128.26	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	6031.41	46467.73	3128.26	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	6031.41	61956.98	3128.26	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
161	Ft. 17	-226443.48	-8319.08	5787.01	-384.68
	σ <sub>s,c</sub> 15	-229868.92	-8257.53	5892.85	-1114.32
	σ <sub>cls,Max</sub> 15	-229868.92	-8257.53	5892.85	-84.76
	σ <sub>cls,Med</sub> 15	-229868.92	-8257.53	5892.85	-50.35
261	Ft. 17	-222993.48	6254.82	-1607.07	-507.38
	σ <sub>s,c</sub> 15	-226418.92	6307.61	-1657.59	-971.68
	σ <sub>cls,Max</sub> 15	-226418.92	6307.61	-1657.59	-72.28
	σ <sub>cls,Med</sub> 15	-226418.92	6307.61	-1657.59	-49.59
<b>Combinazioni Frequenti</b>					
161	Ft. 19	-221358.42	-7697.97	5602.21	-390.75
	σ <sub>s,c</sub> 20	-224640.33	-7916.73	5634.69	-1082.08
	σ <sub>cls,Max</sub> 20	-224640.33	-7916.73	5634.69	-82.18
	σ <sub>cls,Med</sub> 20	-224640.33	-7916.73	5634.69	-49.20
261	Ft. 19	-217908.42	5826.55	-1436.42	-507.09
	σ <sub>s,c</sub> 20	-221190.33	5879.75	-1430.85	-937.18
	σ <sub>cls,Max</sub> 18	-220018.20	5948.27	-1492.47	-69.49
	σ <sub>cls,Med</sub> 20	-221190.33	5879.75	-1430.85	-48.45
<b>Combinazioni Quasi Permanenti</b>					
161	Ft. 21	-221345.45	-7699.24	5602.37	-390.67
	σ <sub>s,c</sub> 22	-224039.30	-7782.62	5583.92	-1075.00
	σ <sub>cls,Max</sub> 22	-224039.30	-7782.62	5583.92	-81.55
	σ <sub>cls,Med</sub> 22	-224039.30	-7782.62	5583.92	-49.07
261	Ft. 21	-217895.45	5827.61	-1436.97	-507.01
	σ <sub>s,c</sub> 22	-220589.30	5754.73	-1372.11	-930.26
	σ <sub>cls,Max</sub> 22	-220589.30	5754.73	-1372.11	-68.83
	σ <sub>cls,Med</sub> 22	-220589.30	5754.73	-1372.11	-48.32

Pilastro: **261/361** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
261	3	-266237.09	-15958.87	9786.19	0.41
361	3	-261752.09	26378.24	-40794.16	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	12271.63	61956.98	14770.25	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	12271.63	46467.73	14770.25	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	12271.63	61956.98	14770.25	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
261	Ft. 17	-183248.19	-10955.17	6793.77	-134.72
	σ <sub>s,c</sub> 17	-183248.19	-10955.17	6793.77	-977.40
	σ <sub>cls,Max</sub> 17	-183248.19	-10955.17	6793.77	-77.64
	σ <sub>cls,Med</sub> 15	-186051.33	-10496.24	6788.30	-37.69
361	Ft. 17	-179798.19	17936.89	-27769.11	697.84
	σ <sub>s,c</sub> 17	-179798.19	17936.89	-27769.11	-1631.69
	σ <sub>cls,Max</sub> 17	-179798.19	17936.89	-27769.11	-137.02

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 17	-179798.19	17936.89	-27769.11	-50.85
<b>Combinazioni Frequenti</b>					
261	Ft. 20	-183662.81	-10649.39	6613.04	-147.89
	σ <sub>s,c</sub> 20	-183662.81	-10649.39	6613.04	-966.87
	σ <sub>cls,Max</sub> 20	-183662.81	-10649.39	6613.04	-76.59
	σ <sub>cls,Med</sub> 20	-183662.81	-10649.39	6613.04	-37.26
361	Ft. 20	-180212.81	17665.23	-27515.11	668.04
	σ <sub>s,c</sub> 20	-180212.81	17665.23	-27515.11	-1614.37
	σ <sub>cls,Max</sub> 20	-180212.81	17665.23	-27515.11	-135.25
	σ <sub>cls,Med</sub> 20	-180212.81	17665.23	-27515.11	-50.33
<b>Combinazioni Quasi Permanenti</b>					
261	Ft. 22	-183801.03	-10547.47	6552.80	-152.23
	σ <sub>s,c</sub> 22	-183801.03	-10547.47	6552.80	-963.38
	σ <sub>cls,Max</sub> 22	-183801.03	-10547.47	6552.80	-76.24
	σ <sub>cls,Med</sub> 22	-183801.03	-10547.47	6552.80	-37.25
361	Ft. 22	-180351.03	17574.68	-27430.45	658.21
	σ <sub>s,c</sub> 22	-180351.03	17574.68	-27430.45	-1608.63
	σ <sub>cls,Max</sub> 22	-180351.03	17574.68	-27430.45	-134.67
	σ <sub>cls,Med</sub> 22	-180351.03	17574.68	-27430.45	-50.17

Pilastro: **62/162** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
62	1	-509900.78	312.31	9568.36	0.61
162	1	-504245.78	919.90	368.57	0.59

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	671.67	61956.98	3686.53	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	671.67	46467.73	3686.53	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	671.67	61956.98	3686.53	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
62	Ft. 16	-343372.00	229.27	5844.58	-1025.26
	σ <sub>s,c</sub> 15	-353773.84	200.18	6422.19	-1273.75
	σ <sub>cls,Max</sub> 15	-353773.84	200.18	6422.19	-86.29
	σ <sub>cls,Med</sub> 15	-353773.84	200.18	6422.19	-77.49
162	Ft. 17	-337783.34	728.02	620.07	-1076.49
	σ <sub>s,c</sub> 15	-349423.84	656.78	379.00	-1175.13
	σ <sub>cls,Max</sub> 15	-349423.84	656.78	379.00	-79.16
	σ <sub>cls,Med</sub> 15	-349423.84	656.78	379.00	-76.54
<b>Combinazioni Frequenti</b>					
62	Ft. 20	-337306.03	176.85	5292.58	-1016.03
	σ <sub>s,c</sub> 18	-343336.75	228.29	5854.82	-1231.07
	σ <sub>cls,Max</sub> 18	-343336.75	228.29	5854.82	-83.37
	σ <sub>cls,Med</sub> 18	-343336.75	228.29	5854.82	-75.20
162	Ft. 20	-332956.03	674.79	773.85	-1059.81

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-338986.75	601.43	526.37	-1141.49
	σ <sub>cls,Max</sub> 18	-338986.75	601.43	526.37	-76.88
	σ <sub>cls,Med</sub> 18	-338986.75	601.43	526.37	-74.25
<b>Combinazioni Quasi Permanenti</b>					
62	Ft. 22	-335696.91	186.52	5138.89	-1012.95
	σ <sub>s,c</sub> 21	-339863.59	237.82	5663.98	-1216.84
	σ <sub>cls,Max</sub> 21	-339863.59	237.82	5663.98	-82.40
	σ <sub>cls,Med</sub> 21	-339863.59	237.82	5663.98	-74.44
162	Ft. 22	-331346.91	657.04	825.11	-1054.25
	σ <sub>s,c</sub> 21	-335513.59	582.72	576.11	-1130.30
	σ <sub>cls,Max</sub> 21	-335513.59	582.72	576.11	-76.12
	σ <sub>cls,Med</sub> 21	-335513.59	582.72	576.11	-73.49

Pilastro: **162/262** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
162	1	-430452.91	-3249.56	-7586.86	0.53
262	1	-425967.91	2416.76	-3696.04	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1642.41	61956.98	1127.77	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1642.41	46467.73	1127.77	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1642.41	61956.98	1127.77	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
162	Ft. 17	-285474.06	-2246.52	-5241.13	-780.73
	σ <sub>s,c</sub> 15	-297024.66	-2242.82	-5301.44	-1133.95
	σ <sub>cls,Max</sub> 15	-297024.66	-2242.82	-5301.44	-79.10
	σ <sub>cls,Med</sub> 15	-297024.66	-2242.82	-5301.44	-65.06
262	Ft. 17	-282024.06	1553.52	-2475.62	-836.68
	σ <sub>s,c</sub> 15	-293574.66	1681.92	-2361.48	-1056.68
	σ <sub>cls,Max</sub> 15	-293574.66	1681.92	-2361.48	-72.79
	σ <sub>cls,Med</sub> 15	-293574.66	1681.92	-2361.48	-64.30
<b>Combinazioni Frequenti</b>					
162	Ft. 20	-283508.38	-2142.46	-4933.51	-782.62
	σ <sub>s,c</sub> 18	-289434.69	-2132.14	-4993.51	-1100.45
	σ <sub>cls,Max</sub> 18	-289434.69	-2132.14	-4993.51	-76.68
	σ <sub>cls,Med</sub> 18	-289434.69	-2132.14	-4993.51	-63.40
262	Ft. 20	-280058.38	1458.44	-2642.24	-830.52
	σ <sub>s,c</sub> 18	-285984.69	1584.21	-2438.23	-1029.89
	σ <sub>cls,Max</sub> 18	-285984.69	1584.21	-2438.23	-70.90
	σ <sub>cls,Med</sub> 18	-285984.69	1584.21	-2438.23	-62.64
<b>Combinazioni Quasi Permanenti</b>					
162	Ft. 22	-282853.19	-2107.77	-4830.97	-783.25
	σ <sub>s,c</sub> 21	-286909.94	-2094.99	-4891.40	-1089.30
	σ <sub>cls,Max</sub> 21	-286909.94	-2094.99	-4891.40	-75.88

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-286909.94	-2094.99	-4891.40	-62.84
262	Ft. 22	-279403.19	1426.75	-2697.78	-828.47
	σ <sub>s,c</sub> 21	-283459.94	1551.49	-2463.30	-1020.96
	σ <sub>cls,Max</sub> 21	-283459.94	1551.49	-2463.30	-70.27
	σ <sub>cls,Med</sub> 21	-283459.94	1551.49	-2463.30	-62.09

Pilastro: **262/362** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
262	1	-355230.59	-4201.93	-14602.01	0.46
362	3	-333547.84	8784.94	42294.96	0.56

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3916.83	61956.98	16656.98	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3916.83	46467.73	16656.98	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3916.83	61956.98	16656.98	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
262	Ft. 17	-231795.70	-3242.79	-10413.30	-488.08
	σ <sub>s,c</sub> 15	-243260.88	-2892.00	-10033.58	-1055.36
	σ <sub>cls,Max</sub> 15	-243260.88	-2892.00	-10033.58	-75.44
	σ <sub>cls,Med</sub> 15	-243260.88	-2892.00	-10033.58	-53.28
362	Ft. 17	-228345.70	5962.02	28994.40	-85.33
	σ <sub>s,c</sub> 17	-228345.70	5962.02	28994.40	-1414.76
	σ <sub>cls,Max</sub> 17	-228345.70	5962.02	28994.40	-106.29
	σ <sub>cls,Med</sub> 15	-239810.88	4957.40	27495.94	-52.53
<b>Combinazioni Frequenti</b>					
262	Ft. 20	-232686.36	-3169.35	-10392.34	-493.68
	σ <sub>s,c</sub> 20	-232686.36	-3169.35	-10392.34	-1035.31
	σ <sub>cls,Max</sub> 20	-232686.36	-3169.35	-10392.34	-74.48
	σ <sub>cls,Med</sub> 18	-238486.38	-2790.83	-9902.75	-52.24
362	Ft. 20	-229236.36	5881.25	29055.76	-89.98
	σ <sub>s,c</sub> 20	-229236.36	5881.25	29055.76	-1416.02
	σ <sub>cls,Max</sub> 20	-229236.36	5881.25	29055.76	-106.29
	σ <sub>cls,Med</sub> 18	-235036.38	4807.26	27192.72	-51.48
<b>Combinazioni Quasi Permanenti</b>					
262	Ft. 22	-232983.22	-3144.88	-10385.35	-495.55
	σ <sub>s,c</sub> 22	-232983.22	-3144.88	-10385.35	-1035.39
	σ <sub>cls,Max</sub> 22	-232983.22	-3144.88	-10385.35	-74.46
	σ <sub>cls,Med</sub> 21	-236899.39	-2756.62	-9859.84	-51.89
362	Ft. 22	-229533.22	5854.32	29076.22	-91.53
	σ <sub>s,c</sub> 22	-229533.22	5854.32	29076.22	-1416.45
	σ <sub>cls,Max</sub> 22	-229533.22	5854.32	29076.22	-106.29
	σ <sub>cls,Med</sub> 21	-233449.39	4756.28	27095.32	-51.13

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **63/163** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
63	1	-298902.75	705.76	-6804.38	0.36
163	1	-293247.75	-477.60	3927.17	0.35

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	549.91	61956.98	7285.39	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	549.91	46467.73	7285.39	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	549.91	61956.98	7285.39	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
63	Ft. 17	-192892.52	460.20	-4505.59	-545.41
	σ <sub>s,c</sub> 15	-208717.89	459.52	-4746.80	-778.01
	σ <sub>cls,Max</sub> 15	-208717.89	459.52	-4746.80	-53.23
	σ <sub>cls,Med</sub> 15	-208717.89	459.52	-4746.80	-45.72
163	Ft. 17	-188542.52	-298.88	2741.69	-565.11
	σ <sub>s,c</sub> 15	-204367.89	-306.08	2871.83	-728.17
	σ <sub>cls,Max</sub> 15	-204367.89	-306.08	2871.83	-49.40
	σ <sub>cls,Med</sub> 15	-204367.89	-306.08	2871.83	-44.76
<b>Combinazioni Frequenti</b>					
63	Ft. 20	-190083.91	466.77	-4838.44	-530.53
	σ <sub>s,c</sub> 18	-201125.08	467.70	-4889.24	-755.65
	σ <sub>cls,Max</sub> 18	-201125.08	467.70	-4889.24	-51.78
	σ <sub>cls,Med</sub> 18	-201125.08	467.70	-4889.24	-44.05
163	Ft. 20	-185733.91	-303.94	2953.14	-552.26
	σ <sub>s,c</sub> 18	-196775.08	-309.84	2984.56	-705.18
	σ <sub>cls,Max</sub> 18	-196775.08	-309.84	2984.56	-47.90
	σ <sub>cls,Med</sub> 18	-196775.08	-309.84	2984.56	-43.10
<b>Combinazioni Quasi Permanenti</b>					
63	Ft. 22	-189147.70	468.95	-4949.38	-525.57
	σ <sub>s,c</sub> 21	-198592.20	470.24	-4936.67	-748.19
	σ <sub>cls,Max</sub> 21	-198592.20	470.24	-4936.67	-51.29
	σ <sub>cls,Med</sub> 21	-198592.20	470.24	-4936.67	-43.50
163	Ft. 22	-184797.70	-305.62	3023.63	-547.98
	σ <sub>s,c</sub> 21	-194242.20	-311.00	3021.92	-697.51
	σ <sub>cls,Max</sub> 21	-194242.20	-311.00	3021.92	-47.39
	σ <sub>cls,Med</sub> 21	-194242.20	-311.00	3021.92	-42.55

Pilastro: **163/263** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
163	1	-260403.17	-891.75	-11395.73	0.34
263	1	-255918.17	754.54	-1350.01	0.30

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	477.28	61956.98	3046.33	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	477.28	46467.73	3046.33	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	477.28	61956.98	3046.33	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
163	Ft. 17	-165108.16	-607.91	-7833.50	-394.99
	σ <sub>s,c</sub> 15	-181070.13	-596.36	-7740.83	-740.50
	σ <sub>cls,Max</sub> 15	-181070.13	-596.36	-7740.83	-51.42
	σ <sub>cls,Med</sub> 15	-181070.13	-596.36	-7740.83	-39.66
263	Ft. 17	-161658.16	495.05	-598.19	-505.60
	σ <sub>s,c</sub> 15	-177620.13	506.38	-814.95	-613.01
	σ <sub>cls,Max</sub> 15	-177620.13	506.38	-814.95	-41.59
	σ <sub>cls,Med</sub> 15	-177620.13	506.38	-814.95	-38.90
<b>Combinazioni Frequenti</b>					
163	Ft. 20	-163405.19	-583.53	-7222.29	-400.17
	σ <sub>s,c</sub> 18	-174576.84	-570.77	-7170.24	-709.02
	σ <sub>cls,Max</sub> 18	-174576.84	-570.77	-7170.24	-49.19
	σ <sub>cls,Med</sub> 18	-174576.84	-570.77	-7170.24	-38.24
263	Ft. 20	-159955.19	468.51	-1189.03	-491.18
	σ <sub>s,c</sub> 18	-171126.84	474.96	-1305.96	-598.71
	σ <sub>cls,Max</sub> 18	-171126.84	474.96	-1305.96	-40.69
	σ <sub>cls,Med</sub> 18	-171126.84	474.96	-1305.96	-37.48
<b>Combinazioni Quasi Permanenti</b>					
163	Ft. 22	-162837.55	-575.41	-7018.55	-401.90
	σ <sub>s,c</sub> 21	-172410.56	-562.25	-6980.34	-698.52
	σ <sub>cls,Max</sub> 21	-172410.56	-562.25	-6980.34	-48.45
	σ <sub>cls,Med</sub> 21	-172410.56	-562.25	-6980.34	-37.76
263	Ft. 22	-159387.55	459.67	-1385.97	-486.38
	σ <sub>s,c</sub> 21	-168960.56	464.49	-1469.11	-593.93
	σ <sub>cls,Max</sub> 21	-168960.56	464.49	-1469.11	-40.39
	σ <sub>cls,Med</sub> 21	-168960.56	464.49	-1469.11	-37.01

Pilastro: **263/363** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
263	1	-225294.52	-77.98	-27257.41	0.35
363	1	-220809.52	-60.46	65329.07	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	352.31	61956.98	26836.66	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	352.31	46467.73	26836.66	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	352.31	61956.98	26836.66	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
263	Ft. 17	-139678.56	-102.26	-18263.95	-156.92



**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-155845.73	-73.95	-18634.45	-819.19
	σ <sub>cls,Max</sub> 15	-155845.73	-73.95	-18634.45	-58.01
	σ <sub>cls,Med</sub> 15	-155845.73	-73.95	-18634.45	-34.14
363	Ft. 17	-136228.56	79.83	43329.51	584.09
	σ <sub>s,c</sub> 15	-152395.73	-14.03	44546.78	-1308.49
	σ <sub>cls,Max</sub> 15	-152395.73	-14.03	44546.78	-96.87
	σ <sub>cls,Med</sub> 15	-152395.73	-14.03	44546.78	-48.40
<b>Combinazioni Frequenti</b>					
263	Ft. 20	-138951.30	-101.87	-18231.78	-155.07
	σ <sub>s,c</sub> 18	-150314.89	-78.19	-18386.20	-797.09
	σ <sub>cls,Max</sub> 18	-150314.89	-78.19	-18386.20	-56.49
	σ <sub>cls,Med</sub> 18	-150314.89	-78.19	-18386.20	-32.92
363	Ft. 20	-135501.30	82.91	43836.21	618.87
	σ <sub>s,c</sub> 18	-146864.89	-2.17	44357.28	-1295.81
	σ <sub>cls,Max</sub> 18	-146864.89	-2.17	44357.28	-96.20
	σ <sub>cls,Med</sub> 18	-146864.89	-2.17	44357.28	-48.09
<b>Combinazioni Quasi Permanenti</b>					
263	Ft. 22	-138708.89	-101.74	-18221.05	-154.45
	σ <sub>s,c</sub> 21	-148469.42	-79.72	-18303.00	-789.72
	σ <sub>cls,Max</sub> 21	-148469.42	-79.72	-18303.00	-55.99
	σ <sub>cls,Med</sub> 21	-148469.42	-79.72	-18303.00	-32.52
363	Ft. 22	-135258.89	83.93	44005.12	630.67
	σ <sub>s,c</sub> 21	-145019.42	2.00	44294.38	-1291.90
	σ <sub>cls,Max</sub> 21	-145019.42	2.00	44294.38	-96.01
	σ <sub>cls,Med</sub> 21	-145019.42	2.00	44294.38	-48.00

Pilastro: **64/164** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
64	1	-382053.59	475.46	-428.09	0.44
164	1	-376398.59	-319.87	1745.71	0.44

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	314.15	61956.98	3888.20	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	314.15	46467.73	3888.20	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	314.15	61956.98	3888.20	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
64	Ft. 17	-253615.89	309.16	-614.82	-813.37
	σ <sub>s,c</sub> 15	-267938.69	311.05	-186.96	-893.27
	σ <sub>cls,Max</sub> 15	-267938.69	311.05	-186.96	-59.94
	σ <sub>cls,Med</sub> 15	-267938.69	311.05	-186.96	-58.69
164	Ft. 17	-249265.89	-198.51	1047.15	-795.53
	σ <sub>s,c</sub> 15	-263588.72	-206.85	972.76	-888.52
	σ <sub>cls,Max</sub> 15	-263588.72	-206.85	972.76	-59.64
	σ <sub>cls,Med</sub> 15	-263588.72	-206.85	972.76	-57.74

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
64	Ft. 20	-249192.78	306.79	-947.70	-793.47
	$\sigma_{s,c}18$	-258964.00	312.19	-592.11	-870.45
	$\sigma_{cls,Max}18$	-258964.00	312.19	-592.11	-58.49
	$\sigma_{cls,Med}18$	-258964.00	312.19	-592.11	-56.72
164	Ft. 20	-244842.78	-195.17	1226.44	-778.17
	$\sigma_{s,c}18$	-254614.00	-206.60	1140.30	-861.76
	$\sigma_{cls,Max}18$	-254614.00	-206.60	1140.30	-57.89
	$\sigma_{cls,Med}18$	-254614.00	-206.60	1140.30	-55.77
<b>Combinazioni Quasi Permanenti</b>					
64	Ft. 22	-247718.41	306.01	-1058.65	-786.83
	$\sigma_{s,c}21$	-255987.28	312.51	-721.94	-862.80
	$\sigma_{cls,Max}21$	-255987.28	312.51	-721.94	-58.01
	$\sigma_{cls,Med}21$	-255987.28	312.51	-721.94	-56.07
164	Ft. 22	-243368.41	-194.05	1286.21	-772.38
	$\sigma_{s,c}21$	-251637.28	-206.48	1194.06	-852.86
	$\sigma_{cls,Max}21$	-251637.28	-206.48	1194.06	-57.31
	$\sigma_{cls,Med}21$	-251637.28	-206.48	1194.06	-55.12

Pilastro: **164/264** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:**  $\varnothing$  10 4br.x2br./15.0 x 100.0/ $\varnothing$  10 4br.x2br./20.0 x 120.0/ $\varnothing$  10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
164	1	-307621.88	151.18	7866.68	0.38
264	1	-303136.88	-425.13	-7396.60	0.37

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	167.05	61956.98	4424.14	86297.23	$\varnothing$ 10 4br.x2br./15.0
1.13	2.32	167.05	46467.73	4424.14	64722.92	$\varnothing$ 10 4br.x2br./20.0
2.32	3.32	167.05	61956.98	4424.14	86297.23	$\varnothing$ 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
164	Ft. 17	-200309.69	97.40	5076.67	-571.98
	$\sigma_{s,c}15$	-214689.28	109.29	5230.12	-794.39
	$\sigma_{cls,Max}15$	-214689.28	109.29	5230.12	-54.01
	$\sigma_{cls,Med}15$	-214689.28	109.29	5230.12	-47.02
264	Ft. 17	-196859.69	-293.83	-4763.78	-559.52
	$\sigma_{s,c}15$	-211239.28	-297.21	-4958.60	-784.59
	$\sigma_{cls,Max}15$	-211239.28	-297.21	-4958.60	-53.53
	$\sigma_{cls,Med}15$	-211239.28	-297.21	-4958.60	-46.27
<b>Combinazioni Frequenti</b>					
164	Ft. 20	-198318.11	90.23	4928.23	-568.10
	$\sigma_{s,c}18$	-208180.52	103.00	5018.06	-769.34
	$\sigma_{cls,Max}18$	-208180.52	103.00	5018.06	-52.30
	$\sigma_{cls,Med}18$	-208180.52	103.00	5018.06	-45.60
264	Ft. 20	-194868.11	-284.37	-4591.81	-556.09
	$\sigma_{s,c}18$	-204730.52	-286.72	-4694.31	-758.55
	$\sigma_{cls,Max}18$	-204730.52	-286.72	-4694.31	-51.73
	$\sigma_{cls,Med}18$	-204730.52	-286.72	-4694.31	-44.84
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
164	Ft. 22	-197654.27	87.84	4878.75	-566.80
	σ <sub>s,c</sub> 21	-206024.16	100.85	4947.96	-761.04
	σ <sub>cls,Max</sub> 21	-206024.16	100.85	4947.96	-51.73
	σ <sub>cls,Med</sub> 21	-206024.16	100.85	4947.96	-45.13
264	Ft. 22	-194204.27	-281.21	-4534.49	-554.95
	σ <sub>s,c</sub> 21	-202574.16	-283.17	-4606.35	-749.92
	σ <sub>cls,Max</sub> 21	-202574.16	-283.17	-4606.35	-51.14
	σ <sub>cls,Med</sub> 21	-202574.16	-283.17	-4606.35	-44.37

Pilastro: **264/364** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
264	1	-250445.05	427.61	4376.04	0.30
364	1	-245960.05	-253.90	-12535.08	0.32

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	256.74	61956.98	5242.89	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	256.74	46467.73	5242.89	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	256.74	61956.98	5242.89	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
264	Ft. 17	-158408.25	228.38	3005.28	-464.03
	σ <sub>s,c</sub> 15	-173548.61	295.92	3215.58	-632.21
	σ <sub>cls,Max</sub> 15	-173548.61	295.92	3215.58	-43.06
	σ <sub>cls,Med</sub> 15	-173548.61	295.92	3215.58	-38.01
364	Ft. 17	-154958.25	-38.23	-7500.09	-385.22
	σ <sub>s,c</sub> 15	-170098.61	-174.06	-8679.21	-706.37
	σ <sub>cls,Max</sub> 15	-170098.61	-174.06	-8679.21	-48.83
	σ <sub>cls,Med</sub> 15	-170098.61	-174.06	-8679.21	-37.26

**Combinazioni Frequenti**

264	Ft. 20	-158752.11	219.81	2829.31	-468.31
	σ <sub>s,c</sub> 18	-169195.22	282.53	3024.69	-614.36
	σ <sub>cls,Max</sub> 18	-169195.22	282.53	3024.69	-41.82
	σ <sub>cls,Med</sub> 18	-169195.22	282.53	3024.69	-37.06
364	Ft. 20	-155302.11	-31.48	-7145.72	-392.36
	σ <sub>s,c</sub> 18	-165745.22	-164.92	-8068.50	-681.78
	σ <sub>cls,Max</sub> 18	-165745.22	-164.92	-8068.50	-47.07
	σ <sub>cls,Med</sub> 18	-165745.22	-164.92	-8068.50	-36.30

**Combinazioni Quasi Permanenti**

264	Ft. 22	-158866.72	216.95	2770.66	-469.74
	σ <sub>s,c</sub> 21	-167755.89	278.10	2963.95	-608.49
	σ <sub>cls,Max</sub> 21	-167755.89	278.10	2963.95	-41.41
	σ <sub>cls,Med</sub> 21	-167755.89	278.10	2963.95	-36.74
364	Ft. 22	-155416.72	-29.23	-7027.59	-394.74
	σ <sub>s,c</sub> 21	-164305.89	-161.95	-7874.32	-673.78
	σ <sub>cls,Max</sub> 21	-164305.89	-161.95	-7874.32	-46.50

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-164305.89	-161.95	-7874.32	-35.99

Pilastro: **65/165** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
65	1	-448117.13	1221.26	8743.97	0.54
165	1	-442462.13	-1129.58	-3155.99	0.52

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	727.15	61956.98	4241.71	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	727.15	46467.73	4241.71	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	727.15	61956.98	4241.71	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
65	Ft. 17	-294485.34	818.27	5408.75	-853.04
	σ <sub>s,c</sub> 15	-311635.44	802.33	5565.74	-1140.45
	σ <sub>cls,Max</sub> 15	-311635.44	802.33	5565.74	-77.93
	σ <sub>cls,Med</sub> 15	-311635.44	802.33	5565.74	-68.26
165	Ft. 17	-290135.34	-752.56	-1941.66	-897.55
	σ <sub>s,c</sub> 15	-307285.44	-744.06	-1942.77	-1065.04
	σ <sub>cls,Max</sub> 15	-307285.44	-744.06	-1942.77	-72.20
	σ <sub>cls,Med</sub> 15	-307285.44	-744.06	-1942.77	-67.31
<b>Combinazioni Frequenti</b>					
65	Ft. 20	-290450.66	809.80	4842.99	-849.30
	σ <sub>s,c</sub> 18	-302520.41	796.79	4973.73	-1100.64
	σ <sub>cls,Max</sub> 18	-302520.41	796.79	4973.73	-75.17
	σ <sub>cls,Med</sub> 18	-302520.41	796.79	4973.73	-66.26
165	Ft. 20	-286100.66	-741.90	-1677.78	-888.94
	σ <sub>s,c</sub> 18	-298170.41	-732.83	-1688.66	-1030.58
	σ <sub>cls,Max</sub> 18	-298170.41	-732.83	-1688.66	-69.84
	σ <sub>cls,Med</sub> 18	-298170.41	-732.83	-1688.66	-65.31
<b>Combinazioni Quasi Permanenti</b>					
65	Ft. 22	-289105.78	806.98	4654.40	-848.06
	σ <sub>s,c</sub> 21	-299496.53	794.82	4770.88	-1087.32
	σ <sub>cls,Max</sub> 21	-299496.53	794.82	4770.88	-74.24
	σ <sub>cls,Med</sub> 21	-299496.53	794.82	4770.88	-65.60
165	Ft. 22	-284755.78	-738.35	-1589.82	-886.08
	σ <sub>s,c</sub> 21	-295146.53	-729.03	-1601.93	-1019.10
	σ <sub>cls,Max</sub> 21	-295146.53	-729.03	-1601.93	-69.06
	σ <sub>cls,Med</sub> 21	-295146.53	-729.03	-1601.93	-64.65

Pilastro: **165/265** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
165	1	-374895.16	-591.82	-4500.55	0.44

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
265	1	-370410.16	226.08	-2451.00	0.43

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	237.07	61956.98	649.38	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	237.07	46467.73	649.38	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	237.07	61956.98	649.38	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
165	Ft. 17	-242032.28	-376.38	-3067.80	-733.05
	σ <sub>s,c</sub> 15	-259249.73	-378.32	-3081.45	-914.21
	σ <sub>cls,Max</sub> 15	-259249.73	-378.32	-3081.45	-61.93
	σ <sub>cls,Med</sub> 15	-259249.73	-378.32	-3081.45	-56.78
265	Ft. 17	-238582.28	135.52	-1509.10	-754.87
	σ <sub>s,c</sub> 15	-255799.75	137.18	-1610.63	-871.14
	σ <sub>cls,Max</sub> 15	-255799.75	137.18	-1610.63	-58.52
	σ <sub>cls,Med</sub> 15	-255799.75	137.18	-1610.63	-56.03
<b>Combinazioni Frequenti</b>					
165	Ft. 20	-240576.78	-370.53	-2884.59	-731.45
	σ <sub>s,c</sub> 18	-252725.19	-366.49	-2895.74	-889.36
	σ <sub>cls,Max</sub> 18	-252725.19	-366.49	-2895.74	-60.22
	σ <sub>cls,Med</sub> 18	-252725.19	-366.49	-2895.74	-55.36
265	Ft. 20	-237126.78	132.08	-1587.76	-748.91
	σ <sub>s,c</sub> 18	-249275.19	125.77	-1660.49	-850.16
	σ <sub>cls,Max</sub> 18	-249275.19	125.77	-1660.49	-57.12
	σ <sub>cls,Med</sub> 18	-249275.19	125.77	-1660.49	-54.60
<b>Combinazioni Quasi Permanenti</b>					
165	Ft. 22	-240091.63	-368.58	-2823.52	-730.92
	σ <sub>s,c</sub> 21	-250563.11	-362.67	-2834.65	-881.13
	σ <sub>cls,Max</sub> 21	-250563.11	-362.67	-2834.65	-59.66
	σ <sub>cls,Med</sub> 21	-250563.11	-362.67	-2834.65	-54.88
265	Ft. 22	-236641.63	130.94	-1613.98	-746.93
	σ <sub>s,c</sub> 21	-247113.11	122.09	-1676.38	-843.20
	σ <sub>cls,Max</sub> 21	-247113.11	122.09	-1676.38	-56.65
	σ <sub>cls,Med</sub> 21	-247113.11	122.09	-1676.38	-54.13

Pilastro: **265/365** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
265	1	-307654.53	582.66	-3579.64	0.36
365	1	-303169.53	-675.08	8306.50	0.37

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	591.45	61956.98	5007.09	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	591.45	46467.73	5007.09	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	591.45	61956.98	5007.09	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
265	Ft. 17	-193561.80	381.72	-2546.21	-582.16
	σ <sub>s,c</sub> 15	-211083.89	386.89	-2552.94	-747.59
	σ <sub>cls,Max</sub> 15	-211083.89	386.89	-2552.94	-50.73
	σ <sub>cls,Med</sub> 15	-211083.89	386.89	-2552.94	-46.23
365	Ft. 17	-190111.80	-455.39	5986.05	-512.22
	σ <sub>s,c</sub> 15	-207633.89	-450.37	6059.79	-795.63
	σ <sub>cls,Max</sub> 15	-207633.89	-450.37	6059.79	-54.63
	σ <sub>cls,Med</sub> 15	-207633.89	-450.37	6059.79	-45.48
<b>Combinazioni Frequenti</b>					
265	Ft. 20	-194683.34	368.83	-2684.85	-583.99
	σ <sub>s,c</sub> 18	-207090.09	364.74	-2684.98	-735.92
	σ <sub>cls,Max</sub> 18	-207090.09	364.74	-2684.98	-49.95
	σ <sub>cls,Med</sub> 18	-207090.09	364.74	-2684.98	-45.36
365	Ft. 20	-191233.34	-442.58	6355.32	-510.27
	σ <sub>s,c</sub> 18	-203640.09	-428.06	6397.66	-787.33
	σ <sub>cls,Max</sub> 18	-203640.09	-428.06	6397.66	-54.11
	σ <sub>cls,Med</sub> 18	-203640.09	-428.06	6397.66	-44.60
<b>Combinazioni Quasi Permanenti</b>					
265	Ft. 22	-195057.20	364.54	-2731.07	-584.60
	σ <sub>s,c</sub> 21	-205770.00	357.27	-2731.25	-732.10
	σ <sub>cls,Max</sub> 21	-205770.00	357.27	-2731.25	-49.70
	σ <sub>cls,Med</sub> 21	-205770.00	357.27	-2731.25	-45.07
365	Ft. 22	-191607.20	-438.30	6478.41	-509.62
	σ <sub>s,c</sub> 21	-202320.00	-420.42	6519.38	-784.74
	σ <sub>cls,Max</sub> 21	-202320.00	-420.42	6519.38	-53.95
	σ <sub>cls,Med</sub> 21	-202320.00	-420.42	6519.38	-44.32

Pilastro: **66/166** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
66	1	-308173.97	1219.07	-3642.91	0.37
166	1	-302518.97	-952.18	2283.31	0.36

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	716.12	61956.98	6417.33	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	716.12	46467.73	6417.33	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	716.12	61956.98	6417.33	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
66	Ft. 17	-198520.77	816.78	-1980.91	-593.86
	σ <sub>s,c</sub> 15	-215028.95	801.96	-2586.39	-774.30
	σ <sub>cls,Max</sub> 15	-215028.95	801.96	-2586.39	-52.99
	σ <sub>cls,Med</sub> 15	-215028.95	801.96	-2586.39	-47.10
166	Ft. 17	-194170.77	-629.99	1481.42	-593.68
	σ <sub>s,c</sub> 15	-210678.95	-623.37	1764.84	-740.89
	σ <sub>cls,Max</sub> 15	-210678.95	-623.37	1764.84	-50.42

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-210678.95	-623.37	1764.84	-46.15
<b>Combinazioni Frequenti</b>					
66	Ft. 20	-195682.47	812.48	-2313.83	-579.22
	σ <sub>s,c</sub> 18	-207228.73	800.36	-2757.59	-751.42
	σ <sub>cls,Max</sub> 18	-207228.73	800.36	-2757.59	-51.50
	σ <sub>cls,Med</sub> 18	-207228.73	800.36	-2757.59	-45.39
166	Ft. 20	-191332.47	-626.89	1683.09	-581.15
	σ <sub>s,c</sub> 18	-202878.73	-618.98	1886.59	-717.11
	σ <sub>cls,Max</sub> 18	-202878.73	-618.98	1886.59	-48.85
	σ <sub>cls,Med</sub> 18	-202878.73	-618.98	1886.59	-44.44
<b>Combinazioni Quasi Permanenti</b>					
66	Ft. 22	-194736.39	811.05	-2424.80	-574.35
	σ <sub>s,c</sub> 21	-204627.45	799.70	-2815.02	-743.79
	σ <sub>cls,Max</sub> 21	-204627.45	799.70	-2815.02	-51.00
	σ <sub>cls,Med</sub> 21	-204627.45	799.70	-2815.02	-44.82
166	Ft. 22	-190386.39	-625.85	1750.31	-576.98
	σ <sub>s,c</sub> 21	-200277.45	-617.48	1926.97	-709.18
	σ <sub>cls,Max</sub> 21	-200277.45	-617.48	1926.97	-48.33
	σ <sub>cls,Med</sub> 21	-200277.45	-617.48	1926.97	-43.87

Pilastro: **166/266** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
166	1	-270244.03	-1151.91	-12955.61	0.35
266	1	-265759.03	751.88	-24.86	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	551.82	61956.98	3891.83	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	551.82	46467.73	3891.83	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	551.82	61956.98	3891.83	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
166	Ft. 17	-171193.88	-760.67	-8867.99	-393.21
	σ <sub>s,c</sub> 15	-187742.20	-761.11	-8801.62	-785.01
	σ <sub>cls,Max</sub> 15	-187742.20	-761.11	-8801.62	-54.77
	σ <sub>cls,Med</sub> 15	-187742.20	-761.11	-8801.62	-41.12
266	Ft. 17	-167743.88	495.00	352.84	-529.61
	σ <sub>s,c</sub> 15	-184292.20	499.86	88.51	-622.85
	σ <sub>cls,Max</sub> 15	-184292.20	499.86	88.51	-42.11
	σ <sub>cls,Med</sub> 15	-184292.20	499.86	88.51	-40.37
<b>Combinazioni Frequenti</b>					
166	Ft. 20	-169468.02	-734.49	-8243.94	-398.58
	σ <sub>s,c</sub> 18	-181035.73	-730.01	-8202.28	-752.18
	σ <sub>cls,Max</sub> 18	-181035.73	-730.01	-8202.28	-52.44
	σ <sub>cls,Med</sub> 18	-181035.73	-730.01	-8202.28	-39.65
266	Ft. 20	-166018.02	470.89	-255.80	-526.29



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-177585.73	467.51	-441.59	-605.56
	σ <sub>cls,Max</sub> 18	-177585.73	467.51	-441.59	-40.98
	σ <sub>cls,Med</sub> 18	-177585.73	467.51	-441.59	-38.90
<b>Combinazioni Quasi Permanenti</b>					
166	Ft. 22	-168892.73	-725.76	-8035.92	-400.37
	σ <sub>s,c</sub> 21	-178799.00	-719.71	-8003.10	-741.25
	σ <sub>cls,Max</sub> 21	-178799.00	-719.71	-8003.10	-51.66
	σ <sub>cls,Med</sub> 21	-178799.00	-719.71	-8003.10	-39.16
266	Ft. 22	-165442.73	462.85	-458.69	-521.34
	σ <sub>s,c</sub> 21	-175349.00	456.81	-617.51	-600.75
	σ <sub>cls,Max</sub> 21	-175349.00	456.81	-617.51	-40.68
	σ <sub>cls,Med</sub> 21	-175349.00	456.81	-617.51	-38.41

Pilastro: **266/366** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
266	1	-235894.92	-132.55	-25505.45	0.35
366	1	-231409.92	326.11	60226.18	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	393.27	61956.98	24849.75	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	393.27	46467.73	24849.75	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	393.27	61956.98	24849.75	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
266	Ft. 17	-146394.39	-89.05	-16801.96	-203.32
	σ <sub>s,c</sub> 15	-163003.56	-102.15	-17452.90	-824.28
	σ <sub>cls,Max</sub> 15	-163003.56	-102.15	-17452.90	-58.17
	σ <sub>cls,Med</sub> 15	-163003.56	-102.15	-17452.90	-35.70
366	Ft. 17	-142944.39	190.37	38817.94	319.80
	σ <sub>s,c</sub> 15	-159553.56	224.15	41101.88	-1247.73
	σ <sub>cls,Max</sub> 15	-159553.56	224.15	41101.88	-91.67
	σ <sub>cls,Med</sub> 15	-159553.56	224.15	41101.88	-45.38
<b>Combinazioni Frequenti</b>					
266	Ft. 20	-145652.86	-87.76	-16780.04	-201.28
	σ <sub>s,c</sub> 18	-157254.83	-103.29	-17244.41	-802.02
	σ <sub>cls,Max</sub> 18	-157254.83	-103.29	-17244.41	-56.65
	σ <sub>cls,Med</sub> 18	-157254.83	-103.29	-17244.41	-34.44
366	Ft. 20	-142202.86	189.80	39380.02	348.36
	σ <sub>s,c</sub> 18	-153804.83	220.32	41019.12	-1235.03
	σ <sub>cls,Max</sub> 18	-153804.83	220.32	41019.12	-90.97
	σ <sub>cls,Med</sub> 18	-153804.83	220.32	41019.12	-45.03
<b>Combinazioni Quasi Permanenti</b>					
266	Ft. 22	-145405.67	-87.33	-16772.73	-200.60
	σ <sub>s,c</sub> 21	-155337.23	-103.69	-17174.57	-794.59
	σ <sub>cls,Max</sub> 21	-155337.23	-103.69	-17174.57	-56.14

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-155337.23	-103.69	-17174.57	-34.02
366	Ft. 22	-141955.67	189.61	39567.38	358.13
	σ <sub>s,c</sub> 21	-151887.23	219.15	40993.05	-1231.01
	σ <sub>cls,Max</sub> 21	-151887.23	219.15	40993.05	-90.76
	σ <sub>cls,Med</sub> 21	-151887.23	219.15	40993.05	-44.93

Pilastro: **67/167** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
67	1	-437326.16	888.99	-3463.96	0.51
167	1	-431671.16	-1928.94	-592.69	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	744.62	61956.98	3487.63	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	744.62	46467.73	3487.63	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	744.62	61956.98	3487.63	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
67	Ft. 17	-295462.25	667.00	-2601.70	-906.97
	σ <sub>s,c</sub> 15	-305883.03	574.76	-2561.34	-1065.17
	σ <sub>cls,Max</sub> 15	-305883.03	574.76	-2561.34	-72.12
	σ <sub>cls,Med</sub> 15	-305883.03	574.76	-2561.34	-67.00
167	Ft. 17	-291112.25	-1412.36	-537.71	-902.73
	σ <sub>s,c</sub> 15	-301533.03	-1310.55	-544.68	-1041.29
	σ <sub>cls,Max</sub> 15	-301533.03	-1310.55	-544.68	-71.01
	σ <sub>cls,Med</sub> 15	-301533.03	-1310.55	-544.68	-66.05
<b>Combinazioni Frequenti</b>					
67	Ft. 20	-290408.47	652.93	-2883.62	-886.20
	σ <sub>s,c</sub> 18	-295611.41	569.57	-2838.22	-1035.78
	σ <sub>cls,Max</sub> 18	-295611.41	569.57	-2838.22	-70.21
	σ <sub>cls,Med</sub> 18	-295611.41	569.57	-2838.22	-64.75
167	Ft. 20	-286058.47	-1368.56	-291.83	-891.54
	σ <sub>s,c</sub> 18	-291261.41	-1266.31	-323.96	-1002.53
	σ <sub>cls,Max</sub> 18	-291261.41	-1266.31	-323.96	-68.34
	σ <sub>cls,Med</sub> 18	-291261.41	-1266.31	-323.96	-63.80
<b>Combinazioni Quasi Permanenti</b>					
67	Ft. 22	-288723.88	648.24	-2977.60	-879.28
	σ <sub>s,c</sub> 21	-292194.41	567.51	-2929.14	-1025.98
	σ <sub>cls,Max</sub> 21	-292194.41	567.51	-2929.14	-69.57
	σ <sub>cls,Med</sub> 21	-292194.41	567.51	-2929.14	-64.00
167	Ft. 22	-284373.88	-1353.96	-209.87	-887.81
	σ <sub>s,c</sub> 21	-287844.41	-1251.26	-251.01	-989.63
	σ <sub>cls,Max</sub> 21	-287844.41	-1251.26	-251.01	-67.45
	σ <sub>cls,Med</sub> 21	-287844.41	-1251.26	-251.01	-63.05

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **167/267** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
167	1	-356779.78	2469.64	11962.46	0.45
267	1	-352294.78	-1938.06	-8171.82	0.43

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1277.59	61956.98	5836.02	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	1277.59	46467.73	5836.02	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	1277.59	61956.98	5836.02	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
167	Ft. 17	-237968.36	1748.59	8068.23	-594.25
	σ <sub>s,c</sub> 15	-248302.98	1740.00	8151.94	-1004.50
	σ <sub>cls,Max</sub> 15	-248302.98	1740.00	8151.94	-70.40
	σ <sub>cls,Med</sub> 15	-248302.98	1740.00	8151.94	-54.39
267	Ft. 17	-234518.36	-1260.99	-5559.02	-639.47
	σ <sub>s,c</sub> 15	-244852.98	-1374.42	-5586.65	-939.57
	σ <sub>cls,Max</sub> 15	-244852.98	-1374.42	-5586.65	-65.20
	σ <sub>cls,Med</sub> 15	-244852.98	-1374.42	-5586.65	-53.63
<b>Combinazioni Frequenti</b>					
167	Ft. 20	-235646.75	1658.30	7790.42	-594.04
	σ <sub>s,c</sub> 18	-240760.11	1650.32	7799.93	-971.11
	σ <sub>cls,Max</sub> 18	-240760.11	1650.32	7799.93	-68.01
	σ <sub>cls,Med</sub> 18	-240760.11	1650.32	7799.93	-52.73
267	Ft. 20	-232196.75	-1172.77	-5273.29	-639.32
	σ <sub>s,c</sub> 18	-237310.11	-1298.23	-5256.06	-906.96
	σ <sub>cls,Max</sub> 18	-237310.11	-1298.23	-5256.06	-62.88
	σ <sub>cls,Med</sub> 18	-237310.11	-1298.23	-5256.06	-51.98
<b>Combinazioni Quasi Permanenti</b>					
167	Ft. 22	-234872.89	1628.21	7697.81	-593.97
	σ <sub>s,c</sub> 21	-238252.00	1620.10	7682.90	-959.99
	σ <sub>cls,Max</sub> 21	-238252.00	1620.10	7682.90	-67.21
	σ <sub>cls,Med</sub> 21	-238252.00	1620.10	7682.90	-52.19
267	Ft. 22	-231422.89	-1143.37	-5178.04	-639.27
	σ <sub>s,c</sub> 21	-234802.00	-1272.61	-5145.80	-896.10
	σ <sub>cls,Max</sub> 21	-234802.00	-1272.61	-5145.80	-62.11
	σ <sub>cls,Med</sub> 21	-234802.00	-1272.61	-5145.80	-51.43

Pilastro: **267/367** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
267	1	-290907.09	3835.79	13372.06	0.38
367	1	-286422.09	-6416.88	-38896.68	0.48

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3529.77	61956.98	15150.37	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3529.77	46467.73	15150.37	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3529.77	61956.98	15150.37	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
267	Ft. 17	-190412.92	2971.19	9035.77	-383.29
	σ <sub>s,c</sub> 15	-201023.69	2632.82	9350.78	-897.17
	σ <sub>cls,Max</sub> 15	-201023.69	2632.82	9350.78	-64.48
	σ <sub>cls,Med</sub> 15	-201023.69	2632.82	9350.78	-44.03
367	Ft. 17	-186962.92	-5309.85	-25272.80	-28.75
	σ <sub>s,c</sub> 15	-197573.69	-4364.85	-26522.96	-1222.19
	σ <sub>cls,Max</sub> 15	-197573.69	-4364.85	-26522.96	-91.18
	σ <sub>cls,Med</sub> 15	-197573.69	-4364.85	-26522.96	-43.52
<b>Combinazioni Frequenti</b>					
267	Ft. 20	-190742.50	2911.43	8754.86	-390.87
	σ <sub>s,c</sub> 18	-195953.33	2537.29	8952.57	-870.96
	σ <sub>cls,Max</sub> 18	-195953.33	2537.29	8952.57	-62.55
	σ <sub>cls,Med</sub> 18	-195953.33	2537.29	8952.57	-42.92
367	Ft. 20	-187292.50	-5269.15	-24825.78	-39.20
	σ <sub>s,c</sub> 20	-187292.50	-5269.15	-24825.78	-1190.54
	σ <sub>cls,Max</sub> 20	-187292.50	-5269.15	-24825.78	-89.84
	σ <sub>cls,Med</sub> 18	-192503.33	-4236.70	-25440.27	-42.35
<b>Combinazioni Quasi Permanenti</b>					
267	Ft. 22	-190852.38	2891.51	8661.22	-393.39
	σ <sub>s,c</sub> 21	-194268.83	2504.93	8821.04	-862.25
	σ <sub>cls,Max</sub> 22	-190852.38	2891.51	8661.22	-62.22
	σ <sub>cls,Med</sub> 21	-194268.83	2504.93	8821.04	-42.55
367	Ft. 22	-187402.38	-5255.58	-24676.77	-42.65
	σ <sub>s,c</sub> 22	-187402.38	-5255.58	-24676.77	-1187.89
	σ <sub>cls,Max</sub> 22	-187402.38	-5255.58	-24676.77	-89.61
	σ <sub>cls,Med</sub> 21	-190818.83	-4192.94	-25083.26	-41.96

Pilastro: **68/168** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
68	1	-384948.84	-1298.78	11912.49	0.48
168	1	-379293.84	-4704.60	1038.82	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1095.58	61956.98	3925.31	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1095.58	46467.73	3925.31	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1095.58	61956.98	3925.31	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
68	Ft. 16	-259742.42	-1053.96	8045.42	-688.26

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-268901.63	-1081.53	8492.63	-1056.80
	σ <sub>cls,Max</sub> 15	-268901.63	-1081.53	8492.63	-73.20
	σ <sub>cls,Med</sub> 15	-268901.63	-1081.53	8492.63	-58.90
168	Ft. 17	-253096.59	-3344.42	716.62	-713.44
	σ <sub>s,c</sub> 15	-264551.63	-3182.46	618.19	-980.54
	σ <sub>cls,Max</sub> 15	-264551.63	-3182.46	618.19	-69.11
	σ <sub>cls,Med</sub> 15	-264551.63	-3182.46	618.19	-57.95
<b>Combinazioni Frequenti</b>					
68	Ft. 20	-252910.33	-797.88	7771.03	-678.45
	σ <sub>s,c</sub> 18	-259655.77	-1038.07	8029.00	-1017.46
	σ <sub>cls,Max</sub> 18	-259655.77	-1038.07	8029.00	-70.44
	σ <sub>cls,Med</sub> 18	-259655.77	-1038.07	8029.00	-56.87
168	Ft. 20	-248560.33	-3179.69	720.46	-703.71
	σ <sub>s,c</sub> 18	-255305.77	-3039.57	632.53	-945.85
	σ <sub>cls,Max</sub> 18	-255305.77	-3039.57	632.53	-66.64
	σ <sub>cls,Med</sub> 18	-255305.77	-3039.57	632.53	-55.92
<b>Combinazioni Quasi Permanenti</b>					
68	Ft. 22	-251398.23	-809.81	7667.19	-674.80
	σ <sub>s,c</sub> 21	-256588.25	-1026.23	7877.20	-1004.52
	σ <sub>cls,Max</sub> 21	-256588.25	-1026.23	7877.20	-69.54
	σ <sub>cls,Med</sub> 21	-256588.25	-1026.23	7877.20	-56.20
168	Ft. 22	-247048.23	-3124.78	721.74	-700.47
	σ <sub>s,c</sub> 21	-252238.25	-2990.26	636.56	-934.27
	σ <sub>cls,Max</sub> 21	-252238.25	-2990.26	636.56	-65.81
	σ <sub>cls,Med</sub> 21	-252238.25	-2990.26	636.56	-55.25

Pilastro: **168/268** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
168	1	-316033.34	9641.96	-7561.82	0.45
268	1	-311548.34	-7550.13	-55.24	0.42

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5034.07	61956.98	2193.08	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	5034.07	46467.73	2193.08	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	5034.07	61956.98	2193.08	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
168	Ft. 17	-208106.80	6822.63	-5384.87	-378.62
	σ <sub>s,c</sub> 15	-219622.27	6779.04	-5454.83	-1026.45
	σ <sub>cls,Max</sub> 15	-219622.27	6779.04	-5454.83	-77.14
	σ <sub>cls,Med</sub> 15	-219622.27	6779.04	-5454.83	-48.10
268	Ft. 17	-204656.80	-5409.63	289.88	-495.57
	σ <sub>s,c</sub> 15	-216172.27	-5336.24	180.23	-882.94
	σ <sub>cls,Max</sub> 15	-216172.27	-5336.24	180.23	-64.99
	σ <sub>cls,Med</sub> 15	-216172.27	-5336.24	180.23	-47.35

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
168	Ft. 20	-205993.70	6484.23	-5096.62	-387.15
	$\sigma_{s,c}18$	-212790.06	6437.82	-5165.02	-988.41
	$\sigma_{cls,Max}18$	-212790.06	6437.82	-5165.02	-74.16
	$\sigma_{cls,Med}18$	-212790.06	6437.82	-5165.02	-46.61
268	Ft. 20	-202543.70	-5089.16	93.77	-502.03
	$\sigma_{s,c}18$	-209340.06	-5046.55	102.06	-850.00
	$\sigma_{cls,Max}18$	-209340.06	-5046.55	102.06	-62.45
	$\sigma_{cls,Med}18$	-209340.06	-5046.55	102.06	-45.85
<b>Combinazioni Quasi Permanenti</b>					
168	Ft. 22	-205289.34	6371.43	-5000.53	-390.00
	$\sigma_{s,c}21$	-210525.13	6322.96	-5068.53	-975.74
	$\sigma_{cls,Max}21$	-210525.13	6322.96	-5068.53	-73.17
	$\sigma_{cls,Med}21$	-210525.13	6322.96	-5068.53	-46.11
268	Ft. 22	-201839.34	-4982.33	28.40	-504.18
	$\sigma_{s,c}21$	-207075.13	-4948.97	75.90	-839.03
	$\sigma_{cls,Max}21$	-207075.13	-4948.97	75.90	-61.60
	$\sigma_{cls,Med}21$	-207075.13	-4948.97	75.90	-45.36

Pilastro: **268/368** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:**  $12 \varnothing 20 \text{ Af}=37.70 \text{ [cm}^2\text{]} < 1f20 \times 4 \text{ V} + 3f20 \times 2 \text{ B} + 1f20 \times 2 \text{ H} >$

**Staffe:**  $\varnothing 10 \text{ 4br.x2br./15.0} \times 100.0/\varnothing 10 \text{ 4br.x2br./20.0} \times 120.0/\varnothing 10 \text{ 4br.x2br./15.0} \times 100.0$

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
268	1	-250394.30	12958.59	-11821.71	0.41
368	1	-245909.30	-20709.89	30280.17	0.57

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	9758.98	61956.98	12203.45	86297.23	$\varnothing 10 \text{ 4br.x2br./15.0}$
1.13	2.32	9758.98	46467.73	12203.45	64722.92	$\varnothing 10 \text{ 4br.x2br./20.0}$
2.32	3.32	9758.98	61956.98	12203.45	86297.23	$\varnothing 10 \text{ 4br.x2br./15.0}$

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
268	Ft. 17	-161022.80	8854.59	-7922.93	-117.27
	$\sigma_{s,c}15$	-172699.91	8904.78	-8090.76	-983.05
	$\sigma_{cls,Max}15$	-172699.91	8904.78	-8090.76	-77.14
	$\sigma_{cls,Med}15$	-172699.91	8904.78	-8090.76	-37.86
368	Ft. 17	-157572.80	-13914.08	20049.96	437.08
	$\sigma_{s,c}15$	-169249.91	-14092.58	20694.74	-1419.00
	$\sigma_{cls,Max}15$	-169249.91	-14092.58	20694.74	-117.02
	$\sigma_{cls,Med}15$	-169249.91	-14092.58	20694.74	-45.68
<b>Combinazioni Frequenti</b>					
268	Ft. 20	-161312.56	8625.86	-7798.59	-127.82
	$\sigma_{s,c}18$	-168222.58	8564.72	-7811.53	-952.94
	$\sigma_{cls,Max}18$	-168222.58	8564.72	-7811.53	-74.70
	$\sigma_{cls,Med}18$	-168222.58	8564.72	-7811.53	-36.86
368	Ft. 20	-157862.56	-13754.66	20087.64	423.80
	$\sigma_{s,c}18$	-164772.58	-13657.50	20210.72	-1379.82
	$\sigma_{cls,Max}20$	-157862.56	-13754.66	20087.64	-113.76
	$\sigma_{cls,Med}18$	-164772.58	-13657.50	20210.72	-44.40
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
268	Ft. 22	-161409.13	8549.61	-7757.15	-131.30
	σ <sub>s,c</sub> 21	-166740.53	8449.30	-7717.82	-942.86
	σ <sub>cls,Max</sub> 21	-166740.53	8449.30	-7717.82	-73.88
	σ <sub>cls,Med</sub> 21	-166740.53	8449.30	-7717.82	-36.53
368	Ft. 22	-157959.13	-13701.52	20100.20	419.43
	σ <sub>s,c</sub> 22	-157959.13	-13701.52	20100.20	-1368.93
	σ <sub>cls,Max</sub> 22	-157959.13	-13701.52	20100.20	-113.50
	σ <sub>cls,Med</sub> 21	-163290.53	-13508.70	20047.38	-43.96

Pilastro: **69/169** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
69	1	-308213.66	-715.92	3593.44	0.37
169	1	-302558.66	-4363.66	-2420.89	0.38

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1118.18	61956.98	2340.11	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1118.18	46467.73	2340.11	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1118.18	61956.98	2340.11	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
69	Ft. 16	-208404.58	-713.51	2237.47	-625.42
	σ <sub>s,c</sub> 15	-215582.53	-712.96	2439.64	-770.89
	σ <sub>cls,Max</sub> 15	-215582.53	-712.96	2439.64	-52.64
	σ <sub>cls,Med</sub> 15	-215582.53	-712.96	2439.64	-47.22
169	Ft. 17	-203891.73	-3133.69	-1884.27	-539.38
	σ <sub>s,c</sub> 15	-211232.53	-2910.38	-1689.12	-814.22
	σ <sub>cls,Max</sub> 15	-211232.53	-2910.38	-1689.12	-57.90
	σ <sub>cls,Med</sub> 15	-211232.53	-2910.38	-1689.12	-46.27

**Combinazioni Frequenti**

69	Ft. 20	-204783.53	-399.16	2622.63	-617.22
	σ <sub>s,c</sub> 18	-208327.08	-696.16	2236.98	-743.20
	σ <sub>cls,Max</sub> 18	-208327.08	-696.16	2236.98	-50.74
	σ <sub>cls,Med</sub> 18	-208327.08	-696.16	2236.98	-45.63
169	Ft. 20	-200433.53	-2973.10	-1752.53	-535.28
	σ <sub>s,c</sub> 18	-203977.08	-2775.89	-1569.03	-784.14
	σ <sub>cls,Max</sub> 20	-200433.53	-2973.10	-1752.53	-55.82
	σ <sub>cls,Med</sub> 18	-203977.08	-2775.89	-1569.03	-44.68

**Combinazioni Quasi Permanenti**

69	Ft. 22	-203630.80	-420.19	2552.41	-613.92
	σ <sub>s,c</sub> 21	-205921.50	-693.46	2169.51	-734.11
	σ <sub>cls,Max</sub> 21	-205921.50	-693.46	2169.51	-50.12
	σ <sub>cls,Med</sub> 21	-205921.50	-693.46	2169.51	-45.10
169	Ft. 22	-199280.80	-2919.57	-1708.62	-533.92
	σ <sub>s,c</sub> 22	-199280.80	-2919.57	-1708.62	-775.57
	σ <sub>cls,Max</sub> 22	-199280.80	-2919.57	-1708.62	-55.34



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-201571.50	-2729.31	-1529.18	-44.15

Pilastro: **169/269** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
169	1	-253073.00	7985.13	345.03	0.36
269	1	-248588.00	-6478.62	-3185.49	0.34

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4253.08	61956.98	1023.34	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	4253.08	46467.73	1023.34	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	4253.08	61956.98	1023.34	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
169	Ft. 17	-168962.83	5700.42	207.37	-370.40
	σ <sub>s,c</sub> 15	-176111.17	5613.92	232.57	-761.01
	σ <sub>cls,Max</sub> 15	-176111.17	5613.92	232.57	-57.19
	σ <sub>cls,Med</sub> 15	-176111.17	5613.92	232.57	-38.57
269	Ft. 17	-165512.83	-4629.44	-1949.64	-364.63
	σ <sub>s,c</sub> 15	-172661.17	-4576.35	-2155.28	-748.12
	σ <sub>cls,Max</sub> 15	-172661.17	-4576.35	-2155.28	-55.48
	σ <sub>cls,Med</sub> 15	-172661.17	-4576.35	-2155.28	-37.82
<b>Combinazioni Frequenti</b>					
169	Ft. 20	-167313.36	5405.36	216.17	-374.22
	σ <sub>s,c</sub> 18	-170697.27	5324.30	231.80	-734.00
	σ <sub>cls,Max</sub> 18	-170697.27	5324.30	231.80	-55.05
	σ <sub>cls,Med</sub> 18	-170697.27	5324.30	231.80	-37.39
269	Ft. 20	-163863.36	-4350.49	-1896.46	-368.96
	σ <sub>s,c</sub> 18	-167247.27	-4328.49	-2066.80	-721.00
	σ <sub>cls,Max</sub> 18	-167247.27	-4328.49	-2066.80	-53.38
	σ <sub>cls,Med</sub> 18	-167247.27	-4328.49	-2066.80	-36.63
<b>Combinazioni Quasi Permanenti</b>					
169	Ft. 22	-166763.52	5307.01	219.10	-375.49
	σ <sub>s,c</sub> 21	-168903.50	5226.40	231.56	-724.99
	σ <sub>cls,Max</sub> 21	-168903.50	5226.40	231.56	-54.34
	σ <sub>cls,Med</sub> 21	-168903.50	5226.40	231.56	-37.00
269	Ft. 22	-163313.52	-4257.50	-1878.73	-370.40
	σ <sub>s,c</sub> 21	-165453.50	-4244.47	-2037.10	-711.95
	σ <sub>cls,Max</sub> 21	-165453.50	-4244.47	-2037.10	-52.67
	σ <sub>cls,Med</sub> 21	-165453.50	-4244.47	-2037.10	-36.24

Pilastro: **269/369** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
269	1	-200149.95	11582.95	-1250.81	0.33

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
369	1	-195664.95	-18252.96	5146.53	0.42

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	8857.60	61956.98	1854.30	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	8857.60	46467.73	1854.30	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	8857.60	61956.98	1854.30	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
269	Ft. 17	-131248.86	8072.32	-335.13	-168.94
	σ <sub>s,c</sub> 15	-138302.86	7930.50	-800.46	-719.78
	σ <sub>cls,Max</sub> 15	-138302.86	7930.50	-800.46	-57.18
	σ <sub>cls,Med</sub> 15	-138302.86	7930.50	-800.46	-30.29
369	Ft. 17	-127798.85	-12713.64	1885.82	102.13
	σ <sub>s,c</sub> 15	-134852.86	-12373.59	3506.67	-916.54
	σ <sub>cls,Max</sub> 15	-134852.86	-12373.59	3506.67	-77.06
	σ <sub>cls,Med</sub> 17	-127798.85	-12713.64	1885.82	-36.30
<b>Combinazioni Frequenti</b>					
269	Ft. 20	-131393.53	7849.47	-377.61	-175.81
	σ <sub>s,c</sub> 18	-134680.61	7609.65	-796.05	-697.60
	σ <sub>cls,Max</sub> 18	-134680.61	7609.65	-796.05	-55.34
	σ <sub>cls,Med</sub> 18	-134680.61	7609.65	-796.05	-29.50
369	Ft. 20	-127943.53	-12526.40	1955.00	88.70
	σ <sub>s,c</sub> 18	-131230.61	-11956.92	3463.07	-889.37
	σ <sub>cls,Max</sub> 20	-127943.53	-12526.40	1955.00	-74.70
	σ <sub>cls,Med</sub> 20	-127943.53	-12526.40	1955.00	-35.86
<b>Combinazioni Quasi Permanenti</b>					
269	Ft. 22	-131441.77	7775.19	-391.77	-178.10
	σ <sub>s,c</sub> 21	-133481.58	7500.66	-794.11	-690.16
	σ <sub>cls,Max</sub> 21	-133481.58	7500.66	-794.11	-54.72
	σ <sub>cls,Med</sub> 21	-133481.58	7500.66	-794.11	-29.24
369	Ft. 22	-127991.77	-12463.99	1978.06	84.33
	σ <sub>s,c</sub> 21	-130031.57	-11814.40	3447.49	-880.17
	σ <sub>cls,Max</sub> 22	-127991.77	-12463.99	1978.06	-74.44
	σ <sub>cls,Med</sub> 22	-127991.77	-12463.99	1978.06	-35.72

Pilastro: **70/170** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
70	1	-380995.94	614.61	-4700.02	0.45
170	1	-375340.94	-4662.80	-5043.82	0.47

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1463.71	61956.98	3060.67	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1463.71	46467.73	3060.67	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1463.71	61956.98	3060.67	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
 Parcheggio interrato - Tabulato di calcolo

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
70	Ft. 16	-257314.88	171.75	-3654.63	-780.17
	σ <sub>s,c</sub> 15	-265486.50	208.65	-3567.84	-937.26
	σ <sub>cls,Max</sub> 15	-265486.50	208.65	-3567.84	-63.36
	σ <sub>cls,Med</sub> 15	-265486.50	208.65	-3567.84	-58.15
170	Ft. 17	-256000.58	-3378.60	-3524.40	-675.97
	σ <sub>s,c</sub> 15	-261136.50	-3102.28	-3396.08	-1012.21
	σ <sub>cls,Max</sub> 15	-261136.50	-3102.28	-3396.08	-71.63
	σ <sub>cls,Med</sub> 15	-261136.50	-3102.28	-3396.08	-57.20
<b>Combinazioni Frequenti</b>					
70	Ft. 19	-254498.70	174.96	-3670.24	-770.56
	σ <sub>s,c</sub> 20	-256526.88	526.13	-3342.90	-914.24
	σ <sub>cls,Max</sub> 20	-256526.88	526.13	-3342.90	-62.14
	σ <sub>cls,Med</sub> 18	-257219.39	187.79	-3640.85	-56.34
170	Ft. 20	-252176.88	-3220.75	-3274.97	-672.50
	σ <sub>s,c</sub> 20	-252176.88	-3220.75	-3274.97	-984.56
	σ <sub>cls,Max</sub> 20	-252176.88	-3220.75	-3274.97	-69.90
	σ <sub>cls,Med</sub> 18	-252869.39	-2966.09	-3178.65	-55.39
<b>Combinazioni Quasi Permanenti</b>					
70	Ft. 22	-255252.30	496.49	-3422.33	-766.86
	σ <sub>s,c</sub> 22	-255252.30	496.49	-3422.33	-910.41
	σ <sub>cls,Max</sub> 22	-255252.30	496.49	-3422.33	-61.87
	σ <sub>cls,Med</sub> 22	-255252.30	496.49	-3422.33	-55.91
170	Ft. 22	-250902.30	-3168.13	-3191.83	-671.35
	σ <sub>s,c</sub> 22	-250902.30	-3168.13	-3191.83	-977.34
	σ <sub>cls,Max</sub> 22	-250902.30	-3168.13	-3191.83	-69.34
	σ <sub>cls,Med</sub> 22	-250902.30	-3168.13	-3191.83	-54.96

Pilastro: **170/270** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
170	1	-319726.59	6612.25	5370.86	0.42
270	1	-315241.59	-5235.26	-182.42	0.40

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3488.62	61956.98	1619.56	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3488.62	46467.73	1619.56	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3488.62	61956.98	1619.56	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
170	Ft. 17	-216835.86	4765.89	3774.73	-499.06
	σ <sub>s,c</sub> 15	-221608.69	4650.20	3837.28	-938.80
	σ <sub>cls,Max</sub> 15	-221608.69	4650.20	3837.28	-68.58
	σ <sub>cls,Med</sub> 15	-221608.69	4650.20	3837.28	-48.54
270	Ft. 17	-213385.86	-3712.18	-306.97	-577.97
	σ <sub>s,c</sub> 15	-218158.69	-3702.37	-221.61	-838.17
	σ <sub>cls,Max</sub> 15	-218158.69	-3702.37	-221.61	-60.15

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-218158.69	-3702.37	-221.61	-47.78
<b>Combinazioni Frequenti</b>					
170	Ft. 20	-215089.17	4515.03	3651.38	-503.32
	σ <sub>s,c</sub> 20	-215089.17	4515.03	3651.38	-910.04
	σ <sub>cls,Max</sub> 20	-215089.17	4515.03	3651.38	-66.47
	σ <sub>cls,Med</sub> 18	-215437.34	4408.89	3680.68	-47.19
270	Ft. 19	-209960.61	-3427.52	-66.69	-579.70
	σ <sub>s,c</sub> 18	-211987.34	-3498.20	-106.49	-809.52
	σ <sub>cls,Max</sub> 18	-211987.34	-3498.20	-106.49	-57.98
	σ <sub>cls,Med</sub> 18	-211987.34	-3498.20	-106.49	-46.43
<b>Combinazioni Quasi Permanenti</b>					
170	Ft. 21	-213394.02	4327.11	3628.29	-504.11
	σ <sub>s,c</sub> 22	-214506.91	4431.41	3610.26	-904.79
	σ <sub>cls,Max</sub> 22	-214506.91	4431.41	3610.26	-66.02
	σ <sub>cls,Med</sub> 22	-214506.91	4431.41	3610.26	-46.98
270	Ft. 21	-209944.02	-3428.95	-67.47	-579.59
	σ <sub>s,c</sub> 22	-211056.91	-3396.63	-86.65	-802.90
	σ <sub>cls,Max</sub> 22	-211056.91	-3396.63	-86.65	-57.42
	σ <sub>cls,Med</sub> 22	-211056.91	-3396.63	-86.65	-46.23

Pilastro: **270/370** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
270	1	-261810.33	11443.51	12125.14	0.41
370	3	-250714.56	-20426.36	-41101.14	0.62

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	9428.34	61956.98	15663.24	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	9428.34	46467.73	15663.24	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	9428.34	61956.98	15663.24	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
270	Ft. 17	-175752.61	8240.40	8246.67	-180.40
	σ <sub>s,c</sub> 15	-180159.77	7801.79	8330.44	-976.37
	σ <sub>cls,Max</sub> 17	-175752.61	8240.40	8246.67	-75.84
	σ <sub>cls,Med</sub> 15	-180159.77	7801.79	8330.44	-39.46
370	Ft. 17	-172302.61	-13800.44	-27921.22	552.82
	σ <sub>s,c</sub> 17	-172302.61	-13800.44	-27921.22	-1572.41
	σ <sub>cls,Max</sub> 17	-172302.61	-13800.44	-27921.22	-129.30
	σ <sub>cls,Med</sub> 17	-172302.61	-13800.44	-27921.22	-48.42
<b>Combinazioni Frequenti</b>					
270	Ft. 20	-176069.20	8025.06	8056.26	-191.41
	σ <sub>s,c</sub> 20	-176069.20	8025.06	8056.26	-965.55
	σ <sub>cls,Max</sub> 20	-176069.20	8025.06	8056.26	-74.96
	σ <sub>cls,Med</sub> 20	-176069.20	8025.06	8056.26	-38.57
370	Ft. 20	-172619.20	-13593.53	-27663.79	526.85

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 20	-172619.20	-13593.53	-27663.79	-1556.34
	σ <sub>cls,Max</sub> 20	-172619.20	-13593.53	-27663.79	-127.71
	σ <sub>cls,Med</sub> 20	-172619.20	-13593.53	-27663.79	-48.03
<b>Combinazioni Quasi Permanenti</b>					
270	Ft. 22	-176174.73	7953.29	7992.79	-195.08
	σ <sub>s,c</sub> 22	-176174.73	7953.29	7992.79	-962.58
	σ <sub>cls,Max</sub> 22	-176174.73	7953.29	7992.79	-74.67
	σ <sub>cls,Med</sub> 22	-176174.73	7953.29	7992.79	-38.59
370	Ft. 22	-172724.73	-13524.56	-27577.98	518.31
	σ <sub>s,c</sub> 22	-172724.73	-13524.56	-27577.98	-1551.02
	σ <sub>cls,Max</sub> 22	-172724.73	-13524.56	-27577.98	-127.18
	σ <sub>cls,Med</sub> 22	-172724.73	-13524.56	-27577.98	-47.90

Pilastro: **71/171** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
71	1	-509076.22	1958.98	10278.25	0.62
171	1	-503421.22	-2735.51	-1355.32	0.60

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1215.73	61956.98	3665.40	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1215.73	46467.73	3665.40	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1215.73	61956.98	3665.40	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
71	Ft. 17	-341389.56	1381.32	6342.71	-973.95
	σ <sub>s,c</sub> 15	-353383.88	1270.82	6931.21	-1314.85
	σ <sub>cls,Max</sub> 15	-353383.88	1270.82	6931.21	-90.34
	σ <sub>cls,Med</sub> 15	-353383.88	1270.82	6931.21	-77.40
171	Ft. 17	-337039.56	-1938.75	-568.54	-1036.38
	σ <sub>s,c</sub> 15	-349033.88	-1827.66	-797.04	-1217.94
	σ <sub>cls,Max</sub> 15	-349033.88	-1827.66	-797.04	-83.42
	σ <sub>cls,Med</sub> 15	-349033.88	-1827.66	-797.04	-76.45
<b>Combinazioni Frequenti</b>					
71	Ft. 20	-336600.34	1344.41	5917.90	-966.34
	σ <sub>s,c</sub> 18	-343024.22	1246.18	6414.14	-1271.57
	σ <sub>cls,Max</sub> 18	-343024.22	1246.18	6414.14	-87.33
	σ <sub>cls,Med</sub> 18	-343024.22	1246.18	6414.14	-75.13
171	Ft. 20	-332250.34	-1881.19	-426.48	-1024.79
	σ <sub>s,c</sub> 18	-338674.22	-1772.88	-648.54	-1179.73
	σ <sub>cls,Max</sub> 18	-338674.22	-1772.88	-648.54	-80.79
	σ <sub>cls,Med</sub> 18	-338674.22	-1772.88	-648.54	-74.18
<b>Combinazioni Quasi Permanenti</b>					
71	Ft. 22	-335003.91	1332.11	5776.29	-963.80
	σ <sub>s,c</sub> 21	-339577.44	1237.58	6240.42	-1257.13
	σ <sub>cls,Max</sub> 21	-339577.44	1237.58	6240.42	-86.33

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-339577.44	1237.58	6240.42	-74.38
171	Ft. 22	-330653.91	-1862.00	-379.13	-1020.93
	σ <sub>s,c</sub> 21	-335227.44	-1754.30	-598.65	-1167.00
	σ <sub>cls,Max</sub> 21	-335227.44	-1754.30	-598.65	-79.91
	σ <sub>cls,Med</sub> 21	-335227.44	-1754.30	-598.65	-73.43

Pilastro: **171/271** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
171	1	-429776.75	393.60	-9128.34	0.52
271	1	-425291.75	-568.19	-2050.35	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	360.44	61956.98	2051.59	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	360.44	46467.73	2051.59	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	360.44	61956.98	2051.59	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
171	Ft. 17	-284702.88	410.18	-6249.40	-820.13
	σ <sub>s,c</sub> 15	-296696.50	349.55	-6319.60	-1089.29
	σ <sub>cls,Max</sub> 15	-296696.50	349.55	-6319.60	-74.14
	σ <sub>cls,Med</sub> 15	-296696.50	349.55	-6319.60	-64.99
271	Ft. 17	-281252.88	-407.22	-1406.52	-888.10
	σ <sub>s,c</sub> 15	-293246.50	-456.44	-1252.87	-998.48
	σ <sub>cls,Max</sub> 15	-293246.50	-456.44	-1252.87	-67.31
	σ <sub>cls,Med</sub> 15	-293246.50	-456.44	-1252.87	-64.23
<b>Combinazioni Frequenti</b>					
171	Ft. 20	-282807.34	354.14	-5940.35	-820.74
	σ <sub>s,c</sub> 18	-289200.81	313.81	-5988.64	-1058.11
	σ <sub>cls,Max</sub> 18	-289200.81	313.81	-5988.64	-71.96
	σ <sub>cls,Med</sub> 18	-289200.81	313.81	-5988.64	-63.35
271	Ft. 20	-279357.34	-350.70	-1563.44	-881.10
	σ <sub>s,c</sub> 18	-285750.81	-426.55	-1352.58	-974.53
	σ <sub>cls,Max</sub> 18	-285750.81	-426.55	-1352.58	-65.70
	σ <sub>cls,Med</sub> 18	-285750.81	-426.55	-1352.58	-62.59
<b>Combinazioni Quasi Permanenti</b>					
171	Ft. 22	-282175.56	335.46	-5837.33	-820.94
	σ <sub>s,c</sub> 21	-286708.09	301.41	-5878.97	-1047.74
	σ <sub>cls,Max</sub> 21	-286708.09	301.41	-5878.97	-71.24
	σ <sub>cls,Med</sub> 21	-286708.09	301.41	-5878.97	-62.80
271	Ft. 22	-278725.56	-331.86	-1615.75	-878.77
	σ <sub>s,c</sub> 21	-283258.09	-416.18	-1385.27	-966.55
	σ <sub>cls,Max</sub> 21	-283258.09	-416.18	-1385.27	-65.16
	σ <sub>cls,Med</sub> 21	-283258.09	-416.18	-1385.27	-62.04

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **271/371** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
271	1	-354078.31	3137.69	-13393.12	0.45
371	1	-349593.31	-4626.15	39948.34	0.54

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2810.84	61956.98	16240.43	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	2810.84	46467.73	16240.43	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	2810.84	61956.98	16240.43	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
271	Ft. 17	-230554.20	2491.18	-9573.71	-521.64
	σ <sub>s,c</sub> 15	-242559.72	2141.60	-9182.97	-1015.27
	σ <sub>cls,Max</sub> 15	-242559.72	2141.60	-9182.97	-71.76
	σ <sub>cls,Med</sub> 15	-242559.72	2141.60	-9182.97	-53.13
371	Ft. 17	-227104.20	-4079.91	28701.86	-146.89
	σ <sub>s,c</sub> 17	-227104.20	-4079.91	28701.86	-1345.42
	σ <sub>cls,Max</sub> 17	-227104.20	-4079.91	28701.86	-99.45
	σ <sub>cls,Med</sub> 15	-239109.72	-3140.45	27300.58	-52.37
<b>Combinazioni Frequenti</b>					
271	Ft. 20	-231541.98	2430.77	-9517.79	-527.73
	σ <sub>s,c</sub> 18	-237897.14	2057.48	-9037.21	-994.89
	σ <sub>cls,Max</sub> 20	-231541.98	2430.77	-9517.79	-70.72
	σ <sub>cls,Med</sub> 18	-237897.14	2057.48	-9037.21	-52.11
371	Ft. 20	-228091.98	-4031.48	28675.87	-152.10
	σ <sub>s,c</sub> 20	-228091.98	-4031.48	28675.87	-1346.70
	σ <sub>cls,Max</sub> 20	-228091.98	-4031.48	28675.87	-99.47
	σ <sub>cls,Med</sub> 18	-234447.14	-3048.12	26901.53	-51.35
<b>Combinazioni Quasi Permanenti</b>					
271	Ft. 22	-231871.25	2410.64	-9499.15	-529.75
	σ <sub>s,c</sub> 22	-231871.25	2410.64	-9499.15	-993.88
	σ <sub>cls,Max</sub> 22	-231871.25	2410.64	-9499.15	-70.70
	σ <sub>cls,Med</sub> 21	-236348.08	2028.87	-8989.18	-51.77
371	Ft. 22	-228421.25	-4015.33	28667.20	-153.84
	σ <sub>s,c</sub> 22	-228421.25	-4015.33	28667.20	-1347.13
	σ <sub>cls,Max</sub> 22	-228421.25	-4015.33	28667.20	-99.48
	σ <sub>cls,Med</sub> 21	-232898.08	-3016.15	26771.93	-51.01

Pilastro: **72/172** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
72	1	-288368.44	1649.03	-7908.00	0.36
172	1	-282713.44	-1701.08	3961.53	0.34



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	935.60	61956.98	6559.90	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	935.60	46467.73	6559.90	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	935.60	61956.98	6559.90	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
72	Ft. 17	-187353.86	1125.66	-5176.93	-495.07
	σ <sub>s,c</sub> 15	-202190.89	1081.86	-5440.92	-787.72
	σ <sub>cls,Max</sub> 15	-202190.89	1081.86	-5440.92	-54.72
	σ <sub>cls,Med</sub> 15	-202190.89	1081.86	-5440.92	-44.29
172	Ft. 17	-183003.86	-1159.55	2764.94	-519.15
	σ <sub>s,c</sub> 15	-197840.89	-1129.50	2889.97	-733.21
	σ <sub>cls,Max</sub> 15	-197840.89	-1129.50	2889.97	-50.68
	σ <sub>cls,Med</sub> 15	-197840.89	-1129.50	2889.97	-43.33
<b>Combinazioni Frequenti</b>					
72	Ft. 20	-185068.56	1110.41	-5383.08	-484.67
	σ <sub>s,c</sub> 18	-195399.53	1073.49	-5460.59	-765.46
	σ <sub>cls,Max</sub> 18	-195399.53	1073.49	-5460.59	-53.23
	σ <sub>cls,Med</sub> 18	-195399.53	1073.49	-5460.59	-42.80
172	Ft. 20	-180718.56	-1140.85	2894.45	-510.12
	σ <sub>s,c</sub> 18	-191049.53	-1110.31	2933.73	-711.01
	σ <sub>cls,Max</sub> 18	-191049.53	-1110.31	2933.73	-49.19
	σ <sub>cls,Med</sub> 18	-191049.53	-1110.31	2933.73	-41.85
<b>Combinazioni Quasi Permanenti</b>					
72	Ft. 22	-184306.78	1105.32	-5451.79	-481.21
	σ <sub>s,c</sub> 21	-193134.81	1070.65	-5467.02	-758.03
	σ <sub>cls,Max</sub> 21	-193134.81	1070.65	-5467.02	-52.73
	σ <sub>cls,Med</sub> 21	-193134.81	1070.65	-5467.02	-42.30
172	Ft. 22	-179956.78	-1134.62	2937.62	-507.11
	σ <sub>s,c</sub> 21	-188784.81	-1103.96	2947.97	-703.60
	σ <sub>cls,Max</sub> 21	-188784.81	-1103.96	2947.97	-48.69
	σ <sub>cls,Med</sub> 21	-188784.81	-1103.96	2947.97	-41.35

Pilastro: **172/272** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
172	1	-249188.97	-1325.54	-13074.79	0.33
272	1	-244703.97	386.12	118.58	0.28

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	496.13	61956.98	3931.22	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	496.13	46467.73	3931.22	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	496.13	61956.98	3931.22	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
172	Ft. 17	-159120.20	-823.49	-8940.67	-350.35

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-174065.03	-844.79	-8878.70	-744.00
	σ <sub>cls,Max</sub> 15	-174065.03	-844.79	-8878.70	-52.14
	σ <sub>cls,Med</sub> 15	-174065.03	-844.79	-8878.70	-38.13
272	Ft. 17	-155670.20	231.66	374.87	-497.96
	σ <sub>s,c</sub> 15	-170615.03	231.78	190.62	-571.05
	σ <sub>cls,Max</sub> 15	-170615.03	231.78	190.62	-38.37
	σ <sub>cls,Med</sub> 15	-170615.03	231.78	190.62	-37.37
<b>Combinazioni Frequenti</b>					
172	Ft. 20	-157956.98	-807.93	-8335.46	-356.93
	σ <sub>s,c</sub> 18	-168394.19	-816.97	-8292.07	-714.89
	σ <sub>cls,Max</sub> 18	-168394.19	-816.97	-8292.07	-50.06
	σ <sub>cls,Med</sub> 18	-168394.19	-816.97	-8292.07	-36.88
272	Ft. 20	-154506.98	227.78	-162.42	-497.73
	σ <sub>s,c</sub> 18	-164944.19	215.13	-270.30	-553.19
	σ <sub>cls,Max</sub> 18	-164944.19	215.13	-270.30	-37.17
	σ <sub>cls,Med</sub> 18	-164944.19	215.13	-270.30	-36.13
<b>Combinazioni Quasi Permanenti</b>					
172	Ft. 22	-157569.23	-802.74	-8133.73	-359.12
	σ <sub>s,c</sub> 21	-166503.06	-807.81	-8096.97	-705.19
	σ <sub>cls,Max</sub> 21	-166503.06	-807.81	-8096.97	-49.37
	σ <sub>cls,Med</sub> 21	-166503.06	-807.81	-8096.97	-36.47
272	Ft. 22	-154119.23	226.49	-341.52	-493.57
	σ <sub>s,c</sub> 21	-163053.06	209.73	-423.36	-549.31
	σ <sub>cls,Max</sub> 21	-163053.06	209.73	-423.36	-36.94
	σ <sub>cls,Med</sub> 21	-163053.06	209.73	-423.36	-35.71

Pilastro: **272/372** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
272	1	-212924.81	-249.94	-27238.68	0.33
372	1	-208439.83	1969.15	68114.13	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	643.21	61956.98	27638.49	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	643.21	46467.73	27638.49	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	643.21	61956.98	27638.49	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
272	Ft. 17	-132938.33	-90.33	-18238.09	-135.58
	σ <sub>s,c</sub> 15	-148048.13	-159.51	-18607.24	-795.85
	σ <sub>cls,Max</sub> 15	-148048.13	-159.51	-18607.24	-56.54
	σ <sub>cls,Med</sub> 15	-148048.13	-159.51	-18607.24	-32.43
372	Ft. 17	-129488.31	1088.08	44985.06	810.58
	σ <sub>s,c</sub> 15	-144598.13	1291.23	46344.25	-1402.63
	σ <sub>cls,Max</sub> 15	-144598.13	1291.23	46344.25	-106.37
	σ <sub>cls,Med</sub> 15	-144598.13	1291.23	46344.25	-50.23

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
272	Ft. 20	-132794.25	-85.86	-18101.10	-137.49
	$\sigma_{s,c}18$	-143390.72	-150.60	-18269.57	-774.74
	$\sigma_{cls,Max}18$	-143390.72	-150.60	-18269.57	-55.06
	$\sigma_{cls,Med}18$	-143390.72	-150.60	-18269.57	-31.41
372	Ft. 20	-129344.23	1050.82	45246.58	825.80
	$\sigma_{s,c}18$	-139940.70	1220.06	45883.27	-1383.49
	$\sigma_{cls,Max}18$	-139940.70	1220.06	45883.27	-105.09
	$\sigma_{cls,Med}18$	-139940.70	1220.06	45883.27	-49.71
<b>Combinazioni Quasi Permanenti</b>					
272	Ft. 22	-132746.20	-84.37	-18055.44	-138.12
	$\sigma_{s,c}21$	-141837.44	-147.53	-18156.57	-767.69
	$\sigma_{cls,Max}21$	-141837.44	-147.53	-18156.57	-54.57
	$\sigma_{cls,Med}21$	-141837.44	-147.53	-18156.57	-31.07
372	Ft. 22	-129296.21	1038.40	45333.76	830.90
	$\sigma_{s,c}21$	-138387.45	1196.38	45729.86	-1377.17
	$\sigma_{cls,Max}21$	-138387.45	1196.38	45729.86	-104.68
	$\sigma_{cls,Med}21$	-138387.45	1196.38	45729.86	-49.54

Pilastro: **73/173** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:**  $\varnothing$  10 4br.x2br./15.0 x 100.0/ $\varnothing$  10 4br.x2br./20.0 x 210.0/ $\varnothing$  10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
73	1	-395720.75	1440.81	-4449.17	0.47
173	1	-390065.75	2409.29	-1242.77	0.47

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.13	1.13	631.61	61956.98	3056.09	86297.23	$\varnothing$ 10 4br.x2br./15.0
1.13	3.23	631.61	46467.73	3056.09	64722.92	$\varnothing$ 10 4br.x2br./20.0
3.23	4.23	631.61	61956.98	3056.09	86297.23	$\varnothing$ 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
73	Ft. 16	-267541.19	987.39	-3575.89	-789.11
	$\sigma_{s,c}15$	-276770.41	972.22	-3398.88	-995.86
	$\sigma_{cls,Max}15$	-276770.41	972.22	-3398.88	-68.10
	$\sigma_{cls,Med}15$	-276770.41	972.22	-3398.88	-60.62
173	Ft. 16	-263191.19	1615.06	-702.93	-801.84
	$\sigma_{s,c}15$	-272420.38	1734.87	-899.73	-964.95
	$\sigma_{cls,Max}15$	-272420.38	1734.87	-899.73	-66.47
	$\sigma_{cls,Med}15$	-272420.38	1734.87	-899.73	-59.67
<b>Combinazioni Frequenti</b>					
73	Ft. 19	-264463.56	992.39	-3633.54	-777.90
	$\sigma_{s,c}20$	-271981.19	998.15	-3344.71	-980.06
	$\sigma_{cls,Max}20$	-271981.19	998.15	-3344.71	-67.07
	$\sigma_{cls,Med}20$	-271981.19	998.15	-3344.71	-59.57
173	Ft. 19	-260113.64	1575.21	-638.08	-794.06
	$\sigma_{s,c}20$	-267631.19	1611.61	-718.72	-942.33
	$\sigma_{cls,Max}20$	-267631.19	1611.61	-718.72	-64.79
	$\sigma_{cls,Med}20$	-267631.19	1611.61	-718.72	-58.62
<b>Combinazioni Quasi Permanenti</b>					

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
73	Ft. 21	-264463.31	992.38	-3633.25	-777.90
	σ <sub>s,c</sub> 22	-270462.38	1008.63	-3413.03	-976.52
	σ <sub>cls,Max</sub> 22	-270462.38	1008.63	-3413.03	-66.86
	σ <sub>cls,Med</sub> 22	-270462.38	1008.63	-3413.03	-59.24
173	Ft. 21	-260113.39	1575.23	-638.23	-794.06
	σ <sub>s,c</sub> 22	-266112.38	1573.50	-648.80	-934.99
	σ <sub>cls,Max</sub> 22	-266112.38	1573.50	-648.80	-64.24
	σ <sub>cls,Med</sub> 22	-266112.38	1573.50	-648.80	-58.29

Pilastro: **173/273** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
173	3	-325398.22	-6781.43	12795.21	0.44
273	1	-320423.78	4677.05	-6287.99	0.41

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3338.82	61956.98	5528.59	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3338.82	46467.73	5528.59	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3338.82	61956.98	5528.59	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
173	Ft. 16	-219263.27	-4565.49	8354.88	-438.49
	σ <sub>s,c</sub> 17	-226428.73	-4755.60	8792.10	-1039.03
	σ <sub>cls,Max</sub> 17	-226428.73	-4755.60	8792.10	-76.26
	σ <sub>cls,Med</sub> 17	-226428.73	-4755.60	8792.10	-49.60
273	Ft. 16	-215813.27	3118.46	-4054.93	-543.53
	σ <sub>s,c</sub> 15	-222652.42	3305.72	-4353.55	-907.90
	σ <sub>cls,Max</sub> 15	-222652.42	3305.72	-4353.55	-65.07
	σ <sub>cls,Med</sub> 17	-222978.73	3254.92	-4347.18	-48.84
<b>Combinazioni Frequenti</b>					
173	Ft. 19	-216982.75	-4488.42	8231.13	-435.48
	σ <sub>s,c</sub> 20	-224281.98	-4541.71	8480.63	-1020.08
	σ <sub>cls,Max</sub> 20	-224281.98	-4541.71	8480.63	-74.70
	σ <sub>cls,Med</sub> 20	-224281.98	-4541.71	8480.63	-49.13
273	Ft. 19	-213532.75	3055.65	-3955.16	-539.66
	σ <sub>s,c</sub> 20	-220831.98	3059.77	-4042.76	-889.01
	σ <sub>cls,Max</sub> 20	-220831.98	3059.77	-4042.76	-63.48
	σ <sub>cls,Med</sub> 20	-220831.98	3059.77	-4042.76	-48.37
<b>Combinazioni Quasi Permanenti</b>					
173	Ft. 21	-216982.59	-4488.36	8231.12	-435.48
	σ <sub>s,c</sub> 22	-223566.38	-4470.42	8376.80	-1013.77
	σ <sub>cls,Max</sub> 22	-223566.38	-4470.42	8376.80	-74.18
	σ <sub>cls,Med</sub> 22	-223566.38	-4470.42	8376.80	-48.97
273	Ft. 21	-213532.59	3055.57	-3955.11	-539.67
	σ <sub>s,c</sub> 22	-220116.38	2994.72	-3941.28	-882.93
	σ <sub>cls,Max</sub> 22	-220116.38	2994.72	-3941.28	-62.98

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-220116.38	2994.72	-3941.28	-48.21

Pilastro: **273/373** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
273	3	-266803.50	-6783.44	15926.77	0.38
373	3	-262318.50	11342.64	-48037.15	0.55

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5253.94	61956.98	18540.27	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	5253.94	46467.73	18540.27	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	5253.94	61956.98	18540.27	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
273	Ft. 16	-178790.64	-4516.61	10588.60	-270.54
	σ <sub>s,c</sub> 17	-184320.97	-4729.05	11015.68	-936.22
	σ <sub>cls,Max</sub> 17	-184320.97	-4729.05	11015.68	-69.77
	σ <sub>cls,Med</sub> 17	-184320.97	-4729.05	11015.68	-40.37
373	Ft. 17	-180870.97	7808.71	-32612.28	259.20
	σ <sub>s,c</sub> 17	-180870.97	7808.71	-32612.28	-1415.00
	σ <sub>cls,Max</sub> 17	-180870.97	7808.71	-32612.28	-110.20
	σ <sub>cls,Med</sub> 17	-180870.97	7808.71	-32612.28	-44.82
<b>Combinazioni Frequenti</b>					
273	Ft. 19	-177241.61	-4449.40	10449.42	-269.86
	σ <sub>s,c</sub> 20	-184517.41	-4579.97	10750.21	-927.78
	σ <sub>cls,Max</sub> 20	-184517.41	-4579.97	10750.21	-68.99
	σ <sub>cls,Med</sub> 20	-184517.41	-4579.97	10750.21	-40.42
373	Ft. 20	-181067.41	7713.72	-32227.11	243.63
	σ <sub>s,c</sub> 20	-181067.41	7713.72	-32227.11	-1403.45
	σ <sub>cls,Max</sub> 20	-181067.41	7713.72	-32227.11	-109.16
	σ <sub>cls,Med</sub> 20	-181067.41	7713.72	-32227.11	-44.59
<b>Combinazioni Quasi Permanenti</b>					
273	Ft. 21	-177241.53	-4449.46	10449.58	-269.86
	σ <sub>s,c</sub> 22	-184582.88	-4530.27	10661.72	-924.96
	σ <sub>cls,Max</sub> 22	-184582.88	-4530.27	10661.72	-68.73
	σ <sub>cls,Med</sub> 22	-184582.88	-4530.27	10661.72	-40.43
373	Ft. 22	-181132.88	7682.06	-32098.71	238.50
	σ <sub>s,c</sub> 22	-181132.88	7682.06	-32098.71	-1399.62
	σ <sub>cls,Max</sub> 22	-181132.88	7682.06	-32098.71	-108.82
	σ <sub>cls,Med</sub> 22	-181132.88	7682.06	-32098.71	-44.52

Pilastro: **74/174** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
74	1	-441579.75	534.95	13663.67	0.55

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
174	1	-435924.75	1557.73	1469.58	0.51

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	842.02	61956.98	4003.18	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	842.02	46467.73	4003.18	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	842.02	61956.98	4003.18	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
74	Ft. 16	-297652.19	383.58	9096.38	-816.95
	σ <sub>s,c</sub> 15	-308014.09	331.41	9578.49	-1179.21
	σ <sub>cls,Max</sub> 15	-308014.09	331.41	9578.49	-80.69
	σ <sub>cls,Med</sub> 15	-308014.09	331.41	9578.49	-67.47
174	Ft. 17	-293379.50	1149.66	1299.38	-906.08
	σ <sub>s,c</sub> 15	-303664.09	1136.15	993.62	-1050.09
	σ <sub>cls,Max</sub> 15	-303664.09	1136.15	993.62	-71.48
	σ <sub>cls,Med</sub> 15	-303664.09	1136.15	993.62	-66.51
<b>Combinazioni Frequenti</b>					
74	Ft. 19	-294198.41	400.81	8935.02	-807.69
	σ <sub>s,c</sub> 18	-297652.41	383.41	9095.71	-1138.92
	σ <sub>cls,Max</sub> 18	-297652.41	383.41	9095.71	-77.98
	σ <sub>cls,Med</sub> 18	-297652.41	383.41	9095.71	-65.20
174	Ft. 20	-288297.38	1036.48	1269.13	-893.48
	σ <sub>s,c</sub> 18	-293302.41	1019.71	977.82	-1012.08
	σ <sub>cls,Max</sub> 18	-293302.41	1019.71	977.82	-68.81
	σ <sub>cls,Med</sub> 18	-293302.41	1019.71	977.82	-64.24
<b>Combinazioni Quasi Permanenti</b>					
74	Ft. 22	-290953.31	399.99	8508.23	-804.04
	σ <sub>s,c</sub> 21	-294198.44	400.78	8934.89	-1125.49
	σ <sub>cls,Max</sub> 21	-294198.44	400.78	8934.89	-77.08
	σ <sub>cls,Med</sub> 21	-294198.44	400.78	8934.89	-64.44
174	Ft. 22	-286603.31	998.75	1259.05	-889.27
	σ <sub>s,c</sub> 21	-289848.44	980.89	972.52	-999.41
	σ <sub>cls,Max</sub> 21	-289848.44	980.89	972.52	-67.92
	σ <sub>cls,Med</sub> 21	-289848.44	980.89	972.52	-63.49

Pilastro: **174/274** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
174	1	-364443.22	-6722.96	-8122.28	0.48
274	1	-359958.22	6224.34	1192.75	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3752.84	61956.98	2700.01	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3752.84	46467.73	2700.01	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3752.84	61956.98	2700.01	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
174	Ft. 17	-242538.86	-4589.83	-5670.05	-558.11
	σ <sub>s,c</sub> 15	-252951.83	-4637.67	-5814.38	-1073.72
	σ <sub>cls,Max</sub> 15	-252951.83	-4637.67	-5814.38	-77.91
	σ <sub>cls,Med</sub> 15	-252951.83	-4637.67	-5814.38	-55.41
274	Ft. 17	-239088.86	4227.13	778.80	-638.32
	σ <sub>s,c</sub> 15	-249501.83	4325.87	1013.10	-973.93
	σ <sub>cls,Max</sub> 15	-249501.83	4325.87	1013.10	-70.05
	σ <sub>cls,Med</sub> 15	-249501.83	4325.87	1013.10	-54.65
<b>Combinazioni Frequenti</b>					
174	Ft. 20	-240152.95	-4389.93	-5380.53	-561.36
	σ <sub>s,c</sub> 18	-245258.38	-4411.07	-5514.41	-1036.33
	σ <sub>cls,Max</sub> 18	-245258.38	-4411.07	-5514.41	-75.10
	σ <sub>cls,Med</sub> 18	-245258.38	-4411.07	-5514.41	-53.72
274	Ft. 20	-236702.95	4039.07	561.21	-640.02
	σ <sub>s,c</sub> 18	-241808.38	4111.85	898.19	-939.97
	σ <sub>cls,Max</sub> 18	-241808.38	4111.85	898.19	-67.52
	σ <sub>cls,Med</sub> 18	-241808.38	4111.85	898.19	-52.96
<b>Combinazioni Quasi Permanenti</b>					
174	Ft. 22	-239357.66	-4323.29	-5284.03	-562.45
	σ <sub>s,c</sub> 21	-242693.80	-4335.73	-5414.40	-1023.87
	σ <sub>cls,Max</sub> 21	-242693.80	-4335.73	-5414.40	-74.17
	σ <sub>cls,Med</sub> 21	-242693.80	-4335.73	-5414.40	-53.16
274	Ft. 22	-235907.66	3976.39	488.68	-640.59
	σ <sub>s,c</sub> 21	-239243.80	4040.73	859.88	-928.65
	σ <sub>cls,Max</sub> 21	-239243.80	4040.73	859.88	-66.68
	σ <sub>cls,Med</sub> 21	-239243.80	4040.73	859.88	-52.40

Pilastro: **274/374** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
274	1	-293396.06	-8766.74	-10503.13	0.42
374	1	-288911.06	12754.96	26870.74	0.49

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6238.18	61956.98	11615.68	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	6238.18	46467.73	11615.68	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	6238.18	61956.98	11615.68	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
274	Ft. 17	-191494.88	-5993.31	-7697.81	-312.59
	σ <sub>s,c</sub> 15	-202193.84	-6068.27	-7252.93	-975.99
	σ <sub>cls,Max</sub> 15	-202193.84	-6068.27	-7252.93	-73.28
	σ <sub>cls,Med</sub> 15	-202193.84	-6068.27	-7252.93	-44.29
374	Ft. 17	-188044.88	8609.16	19828.85	-12.01
	σ <sub>s,c</sub> 15	-198743.84	8705.53	18473.58	-1233.63
	σ <sub>cls,Max</sub> 15	-198743.84	8705.53	18473.58	-95.51



**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-198743.84	8705.53	18473.58	-44.13
<b>Combinazioni Frequenti</b>					
274	Ft. 20	-191775.92	-5819.34	-7576.41	-321.03
	σ <sub>s,c</sub> 18	-197078.78	-5815.46	-6998.32	-946.98
	σ <sub>cls,Max</sub> 18	-197078.78	-5815.46	-6998.32	-71.02
	σ <sub>cls,Med</sub> 18	-197078.78	-5815.46	-6998.32	-43.17
374	Ft. 20	-188325.92	8468.24	19925.70	-16.51
	σ <sub>s,c</sub> 20	-188325.92	8468.24	19925.70	-1218.17
	σ <sub>cls,Max</sub> 20	-188325.92	8468.24	19925.70	-94.54
	σ <sub>cls,Med</sub> 18	-193628.78	8381.63	18071.58	-42.97
<b>Combinazioni Quasi Permanenti</b>					
274	Ft. 22	-191869.59	-5761.36	-7535.95	-323.84
	σ <sub>s,c</sub> 21	-195373.53	-5731.14	-6913.39	-937.31
	σ <sub>cls,Max</sub> 22	-191869.59	-5761.36	-7535.95	-70.38
	σ <sub>cls,Med</sub> 21	-195373.53	-5731.14	-6913.39	-42.79
374	Ft. 22	-188419.59	8421.26	19957.98	-18.00
	σ <sub>s,c</sub> 22	-188419.59	8421.26	19957.98	-1217.39
	σ <sub>cls,Max</sub> 22	-188419.59	8421.26	19957.98	-94.44
	σ <sub>cls,Med</sub> 21	-191923.53	8273.60	17937.38	-42.58

Pilastro: **75/175** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
75	1	-360713.09	998.88	-5971.00	0.43
175	1	-355058.09	746.36	502.50	0.41

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	722.11	61956.98	3453.33	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	722.11	46467.73	3453.33	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	722.11	61956.98	3453.33	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
75	Ft. 16	-243702.09	727.65	-4146.53	-709.72
	σ <sub>s,c</sub> 15	-251975.73	676.71	-4149.18	-917.27
	σ <sub>cls,Max</sub> 15	-251975.73	676.71	-4149.18	-62.66
	σ <sub>cls,Med</sub> 15	-251975.73	676.71	-4149.18	-55.19
175	Ft. 17	-238362.28	629.17	134.77	-760.92
	σ <sub>s,c</sub> 15	-247625.73	556.30	328.13	-836.64
	σ <sub>cls,Max</sub> 15	-247625.73	556.30	328.13	-56.47
	σ <sub>cls,Med</sub> 15	-247625.73	556.30	328.13	-54.24
<b>Combinazioni Frequenti</b>					
75	Ft. 19	-240944.28	744.41	-4147.08	-700.11
	σ <sub>s,c</sub> 18	-243702.17	727.42	-4148.02	-891.68
	σ <sub>cls,Max</sub> 18	-243702.17	727.42	-4148.02	-61.01
	σ <sub>cls,Med</sub> 18	-243702.17	727.42	-4148.02	-53.38
175	Ft. 20	-234391.14	530.74	219.92	-749.62

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 18	-239352.17	455.83	373.02	-807.00
	σ <sub>cls,Max</sub> 18	-239352.17	455.83	373.02	-54.39
	σ <sub>cls,Med</sub> 18	-239352.17	455.83	373.02	-52.43
<b>Combinazioni Quasi Permanenti</b>					
75	Ft. 22	-237417.42	689.21	-3759.28	-696.62
	σ <sub>s,c</sub> 21	-240944.30	744.36	-4147.38	-883.15
	σ <sub>cls,Max</sub> 21	-240944.30	744.36	-4147.38	-60.46
	σ <sub>cls,Med</sub> 21	-240944.30	744.36	-4147.38	-52.78
175	Ft. 22	-233067.42	497.93	248.30	-745.85
	σ <sub>s,c</sub> 21	-236594.30	422.32	387.85	-797.11
	σ <sub>cls,Max</sub> 21	-236594.30	422.32	387.85	-53.69
	σ <sub>cls,Med</sub> 21	-236594.30	422.32	387.85	-51.82

Pilastro: **175/275** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
175	1	-298116.84	-6319.74	2673.45	0.39
275	1	-293631.84	6095.98	-1256.00	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3598.76	61956.98	1138.97	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3598.76	46467.73	1138.97	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3598.76	61956.98	1138.97	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
175	Ft. 17	-197931.61	-4265.98	1885.32	-483.76
	σ <sub>s,c</sub> 15	-207242.59	-4311.87	1892.60	-849.03
	σ <sub>cls,Max</sub> 15	-207242.59	-4311.87	1892.60	-61.86
	σ <sub>cls,Med</sub> 15	-207242.59	-4311.87	1892.60	-45.39
275	Ft. 17	-194481.63	4032.20	-800.78	-497.60
	σ <sub>s,c</sub> 15	-203792.61	4194.50	-880.69	-817.41
	σ <sub>cls,Max</sub> 15	-203792.61	4194.50	-880.69	-59.44
	σ <sub>cls,Med</sub> 15	-203792.61	4194.50	-880.69	-44.64
<b>Combinazioni Frequenti</b>					
175	Ft. 20	-195995.78	-4094.35	1831.75	-483.74
	σ <sub>s,c</sub> 18	-201016.03	-4105.74	1823.29	-820.88
	σ <sub>cls,Max</sub> 18	-201016.03	-4105.74	1823.29	-59.74
	σ <sub>cls,Med</sub> 18	-201016.03	-4105.74	1823.29	-44.03
275	Ft. 20	-192545.80	3873.53	-720.81	-497.60
	σ <sub>s,c</sub> 18	-197566.05	3996.66	-809.11	-789.48
	σ <sub>cls,Max</sub> 18	-197566.05	3996.66	-809.11	-57.34
	σ <sub>cls,Med</sub> 18	-197566.05	3996.66	-809.11	-43.27
<b>Combinazioni Quasi Permanenti</b>					
175	Ft. 22	-195350.53	-4037.14	1813.90	-483.73
	σ <sub>s,c</sub> 21	-198940.50	-4037.26	1800.10	-811.50
	σ <sub>cls,Max</sub> 21	-198940.50	-4037.26	1800.10	-59.03

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-198940.50	-4037.26	1800.10	-43.57
275	Ft. 22	-191900.55	3820.64	-694.16	-497.60
	σ <sub>s,c</sub> 21	-195490.52	3930.98	-785.14	-780.18
	σ <sub>cls,Max</sub> 21	-195490.52	3930.98	-785.14	-56.64
	σ <sub>cls,Med</sub> 21	-195490.52	3930.98	-785.14	-42.82

Pilastro: **275/375** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
275	1	-242460.75	-8552.56	-165.68	0.35
375	1	-237975.75	12677.52	-802.19	0.38

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	6325.24	61956.98	1609.05	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	6325.24	46467.73	1609.05	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	6325.24	61956.98	1609.05	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
275	Ft. 17	-157790.66	-5969.48	316.96	-323.34
	σ <sub>s,c</sub> 15	-167425.86	-5893.62	-57.42	-738.51
	σ <sub>cls,Max</sub> 15	-167425.86	-5893.62	-57.42	-55.97
	σ <sub>cls,Med</sub> 15	-167425.86	-5893.62	-57.42	-36.67
375	Ft. 17	-154340.66	8935.19	-1932.46	-191.23
	σ <sub>s,c</sub> 15	-163975.86	8616.38	-628.67	-823.14
	σ <sub>cls,Max</sub> 17	-154340.66	8935.19	-1932.46	-65.41
	σ <sub>cls,Med</sub> 15	-163975.86	8616.38	-628.67	-35.92
<b>Combinazioni Frequenti</b>					
275	Ft. 20	-157861.14	-5807.91	271.57	-329.45
	σ <sub>s,c</sub> 18	-163154.23	-5652.51	-73.47	-717.07
	σ <sub>cls,Max</sub> 18	-163154.23	-5652.51	-73.47	-54.27
	σ <sub>cls,Med</sub> 18	-163154.23	-5652.51	-73.47	-35.74
375	Ft. 20	-154411.14	8780.48	-1867.00	-197.46
	σ <sub>s,c</sub> 20	-154411.14	8780.48	-1867.00	-817.19
	σ <sub>cls,Max</sub> 20	-154411.14	8780.48	-1867.00	-64.84
	σ <sub>cls,Med</sub> 18	-159704.23	8284.74	-570.23	-34.98
<b>Combinazioni Quasi Permanenti</b>					
275	Ft. 22	-157884.64	-5754.05	256.45	-331.49
	σ <sub>s,c</sub> 21	-161730.28	-5572.06	-78.64	-709.91
	σ <sub>cls,Max</sub> 21	-161730.28	-5572.06	-78.64	-53.70
	σ <sub>cls,Med</sub> 21	-161730.28	-5572.06	-78.64	-35.42
375	Ft. 22	-154434.64	8728.91	-1845.18	-199.53
	σ <sub>s,c</sub> 22	-154434.64	8728.91	-1845.18	-815.27
	σ <sub>cls,Max</sub> 22	-154434.64	8728.91	-1845.18	-64.65
	σ <sub>cls,Med</sub> 21	-158280.28	8174.12	-551.04	-34.67

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **76/176** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
76	1	-450017.06	609.20	-1463.00	0.52
176	1	-444362.06	2330.93	-3402.51	0.53

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1164.79	61956.98	2313.24	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1164.79	46467.73	2313.24	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1164.79	61956.98	2313.24	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
76	Ft. 16	-303723.06	461.56	-1161.87	-964.20
	σ <sub>s,c</sub> 15	-313463.03	387.91	-1059.93	-1059.57
	σ <sub>cls,Max</sub> 15	-313463.03	387.91	-1059.93	-71.27
	σ <sub>cls,Med</sub> 15	-313463.03	387.91	-1059.93	-68.66
176	Ft. 16	-299373.06	1528.13	-2200.99	-898.98
	σ <sub>s,c</sub> 15	-309113.03	1689.25	-2332.49	-1107.49
	σ <sub>cls,Max</sub> 15	-309113.03	1689.25	-2332.49	-76.18
	σ <sub>cls,Med</sub> 15	-309113.03	1689.25	-2332.49	-67.71
<b>Combinazioni Frequenti</b>					
76	Ft. 19	-300474.59	486.73	-1197.99	-952.14
	σ <sub>s,c</sub> 20	-306113.41	382.66	-1033.30	-1034.82
	σ <sub>cls,Max</sub> 20	-306113.41	382.66	-1033.30	-69.61
	σ <sub>cls,Med</sub> 20	-306113.41	382.66	-1033.30	-67.05
176	Ft. 19	-296124.59	1473.88	-2155.64	-890.78
	σ <sub>s,c</sub> 20	-301763.41	1631.12	-2248.15	-1080.11
	σ <sub>cls,Max</sub> 20	-301763.41	1631.12	-2248.15	-74.27
	σ <sub>cls,Med</sub> 20	-301763.41	1631.12	-2248.15	-66.10
<b>Combinazioni Quasi Permanenti</b>					
76	Ft. 21	-300474.22	486.86	-1198.43	-952.12
	σ <sub>s,c</sub> 22	-304563.22	407.34	-1097.28	-1031.56
	σ <sub>cls,Max</sub> 22	-304563.22	407.34	-1097.28	-69.43
	σ <sub>cls,Med</sub> 22	-304563.22	407.34	-1097.28	-66.71
176	Ft. 21	-296124.22	1473.77	-2155.33	-890.78
	σ <sub>s,c</sub> 22	-300213.22	1578.06	-2197.38	-1072.50
	σ <sub>cls,Max</sub> 22	-300213.22	1578.06	-2197.38	-73.69
	σ <sub>cls,Med</sub> 22	-300213.22	1578.06	-2197.38	-65.76

Pilastro: **176/276** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
176	1	-375532.63	-10198.20	2399.77	0.52
276	1	-371047.63	9452.12	1260.35	0.50

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Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5695.75	61956.98	569.07	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	5695.75	46467.73	569.07	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	5695.75	61956.98	569.07	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
176	Ft. 16	-253013.59	-6699.27	1699.05	-590.37
	σ <sub>s,c</sub> 15	-260219.69	-7038.62	1785.61	-1108.08
	σ <sub>cls,Max</sub> 15	-260219.69	-7038.62	1785.61	-82.23
	σ <sub>cls,Med</sub> 15	-260219.69	-7038.62	1785.61	-57.00
276	Ft. 16	-249563.59	6235.03	836.06	-607.92
	σ <sub>s,c</sub> 15	-256769.70	6556.80	758.66	-1064.62
	σ <sub>cls,Max</sub> 15	-256769.70	6556.80	758.66	-78.60
	σ <sub>cls,Med</sub> 15	-256769.70	6556.80	758.66	-56.24
<b>Combinazioni Frequenti</b>					
176	Ft. 19	-250610.53	-6584.03	1671.66	-586.59
	σ <sub>s,c</sub> 20	-255836.09	-6675.09	1692.69	-1080.59
	σ <sub>cls,Max</sub> 20	-255836.09	-6675.09	1692.69	-79.96
	σ <sub>cls,Med</sub> 20	-255836.09	-6675.09	1692.69	-56.04
276	Ft. 19	-247160.53	6125.54	859.94	-603.12
	σ <sub>s,c</sub> 20	-252386.09	6028.25	941.14	-1036.39
	σ <sub>cls,Max</sub> 20	-252386.09	6028.25	941.14	-76.14
	σ <sub>cls,Med</sub> 20	-252386.09	6028.25	941.14	-55.28
<b>Combinazioni Quasi Permanenti</b>					
176	Ft. 21	-250610.31	-6583.60	1671.97	-586.60
	σ <sub>s,c</sub> 22	-255137.14	-6574.62	1665.68	-1074.66
	σ <sub>cls,Max</sub> 22	-255137.14	-6574.62	1665.68	-79.45
	σ <sub>cls,Med</sub> 22	-255137.14	-6574.62	1665.68	-55.88
276	Ft. 21	-247160.31	6125.07	859.55	-603.14
	σ <sub>s,c</sub> 22	-251687.14	5934.01	980.09	-1031.73
	σ <sub>cls,Max</sub> 22	-251687.14	5934.01	980.09	-75.73
	σ <sub>cls,Med</sub> 22	-251687.14	5934.01	980.09	-55.13

Pilastro: **276/376** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
276	3	-306905.94	-11425.34	7200.68	0.45
376	3	-302420.94	16620.65	-25055.37	0.54

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	8129.27	61956.98	9349.58	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	8129.27	46467.73	9349.58	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	8129.27	61956.98	9349.58	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
276	Ft. 17	-211189.33	-7889.09	4969.44	-361.61

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Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 17	-211189.33	-7889.09	4969.44	-1026.12
	σ <sub>cls,Max</sub> 17	-211189.33	-7889.09	4969.44	-78.30
	σ <sub>cls,Med</sub> 15	-213154.34	-7540.29	4787.17	-46.69
376	Ft. 17	-207739.33	11299.21	-17068.42	-35.47
	σ <sub>s,c</sub> 17	-207739.33	11299.21	-17068.42	-1326.13
	σ <sub>cls,Max</sub> 17	-207739.33	11299.21	-17068.42	-104.49
	σ <sub>cls,Med</sub> 17	-207739.33	11299.21	-17068.42	-46.87
<b>Combinazioni Frequenti</b>					
276	Ft. 20	-211611.44	-7660.48	4864.76	-371.98
	σ <sub>s,c</sub> 20	-211611.44	-7660.48	4864.76	-1018.52
	σ <sub>cls,Max</sub> 20	-211611.44	-7660.48	4864.76	-77.51
	σ <sub>cls,Med</sub> 20	-211611.44	-7660.48	4864.76	-46.35
376	Ft. 20	-208161.44	11112.78	-16973.03	-45.73
	σ <sub>s,c</sub> 20	-208161.44	11112.78	-16973.03	-1319.23
	σ <sub>cls,Max</sub> 20	-208161.44	11112.78	-16973.03	-103.78
	σ <sub>cls,Med</sub> 20	-208161.44	11112.78	-16973.03	-46.81
<b>Combinazioni Quasi Permanenti</b>					
276	Ft. 22	-211752.13	-7584.27	4829.87	-375.44
	σ <sub>s,c</sub> 22	-211752.13	-7584.27	4829.87	-1015.99
	σ <sub>cls,Max</sub> 22	-211752.13	-7584.27	4829.87	-77.25
	σ <sub>cls,Med</sub> 22	-211752.13	-7584.27	4829.87	-46.38
376	Ft. 22	-208302.13	11050.63	-16941.24	-49.12
	σ <sub>s,c</sub> 22	-208302.13	11050.63	-16941.24	-1316.94
	σ <sub>cls,Max</sub> 22	-208302.13	11050.63	-16941.24	-103.54
	σ <sub>cls,Med</sub> 22	-208302.13	11050.63	-16941.24	-46.79

Pilastro: **77/177** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 7f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 210.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
77	1	-333299.25	2448.93	6272.60	0.37
177	1	-327644.25	3587.33	-285.27	0.36

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1104.01	61956.98	1906.85	86297.23	Ø 10 4br.x2br./15.0
1.13	3.23	1104.01	46467.73	1906.85	64722.92	Ø 10 4br.x2br./20.0
3.23	4.23	1104.01	61956.98	1906.85	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
77	Ft. 16	-226431.02	1916.33	4301.78	-565.30
	σ <sub>s,c</sub> 15	-232885.44	1816.90	4496.74	-828.85
	σ <sub>cls,Max</sub> 15	-232885.44	1816.90	4496.74	-57.89
	σ <sub>cls,Med</sub> 15	-232885.44	1816.90	4496.74	-47.12
177	Ft. 17	-222539.52	2608.66	18.80	-599.92
	σ <sub>s,c</sub> 15	-228535.44	2497.17	-159.00	-768.01
	σ <sub>cls,Max</sub> 15	-228535.44	2497.17	-159.00	-53.81
	σ <sub>cls,Med</sub> 15	-228535.44	2497.17	-159.00	-46.24

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**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
77	Ft. 19	-224282.64	1949.87	4235.19	-558.84
	$\sigma_{s,c}18$	-226434.23	1916.74	4300.12	-809.10
	$\sigma_{cls,Max}18$	-226434.23	1916.74	4300.12	-56.65
	$\sigma_{cls,Med}18$	-226434.23	1916.74	4300.12	-45.81
177	Ft. 20	-219617.70	2371.09	37.96	-597.61
	$\sigma_{s,c}18$	-222084.23	2258.39	-141.60	-741.28
	$\sigma_{cls,Max}18$	-222084.23	2258.39	-141.60	-51.78
	$\sigma_{cls,Med}18$	-222084.23	2258.39	-141.60	-44.93
<b>Combinazioni Quasi Permanenti</b>					
77	Ft. 21	-224283.28	1949.95	4234.86	-558.85
	$\sigma_{s,c}21$	-224283.28	1949.95	4234.86	-802.52
	$\sigma_{cls,Max}21$	-224283.28	1949.95	4234.86	-56.23
	$\sigma_{cls,Med}21$	-224283.28	1949.95	4234.86	-45.38
177	Ft. 22	-218643.75	2291.90	44.35	-596.83
	$\sigma_{s,c}21$	-219933.28	2178.81	-136.04	-732.37
	$\sigma_{cls,Max}21$	-219933.28	2178.81	-136.04	-51.10
	$\sigma_{cls,Med}21$	-219933.28	2178.81	-136.04	-44.50

Pilastro: **177/277** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 20 Ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 7f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
177	1	-275674.97	-16401.91	-6673.26	0.42
277	1	-271189.97	14021.76	-989.09	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	8818.45	61956.98	1647.59	86297.23	Ø 10 4br.x2br./15.0
1.13	2.32	8818.45	46467.73	1647.59	64722.92	Ø 10 4br.x2br./20.0
2.32	3.32	8818.45	61956.98	1647.59	86297.23	Ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
177	Ft. 17	-185497.84	-11274.87	-4488.25	-168.47
	$\sigma_{s,c}15$	-191298.48	-11314.45	-4574.47	-977.53
	$\sigma_{cls,Max}15$	-191298.48	-11314.45	-4574.47	-77.64
	$\sigma_{cls,Med}15$	-191298.48	-11314.45	-4574.47	-38.71
277	Ft. 17	-182047.84	9628.76	-771.05	-263.08
	$\sigma_{s,c}15$	-187848.48	9702.04	-641.48	-859.63
	$\sigma_{cls,Max}15$	-187848.48	9702.04	-641.48	-67.45
	$\sigma_{cls,Med}15$	-187848.48	9702.04	-641.48	-38.01
<b>Combinazioni Frequenti</b>					
177	Ft. 20	-184543.27	-10807.74	-4323.83	-181.60
	$\sigma_{s,c}18$	-186758.53	-10781.78	-4381.37	-945.41
	$\sigma_{cls,Max}18$	-186758.53	-10781.78	-4381.37	-74.92
	$\sigma_{cls,Med}18$	-186758.53	-10781.78	-4381.37	-37.79
277	Ft. 20	-181093.27	9187.62	-863.52	-271.46
	$\sigma_{s,c}18$	-183308.53	9212.89	-702.82	-832.71
	$\sigma_{cls,Max}18$	-183308.53	9212.89	-702.82	-65.16
	$\sigma_{cls,Med}18$	-183308.53	9212.89	-702.82	-37.09
<b>Combinazioni Quasi Permanenti</b>					



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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
177	Ft. 22	-184225.08	-10652.03	-4269.02	-185.97
	σ <sub>s,c</sub> 21	-185245.00	-10604.43	-4317.22	-934.71
	σ <sub>cls,Max</sub> 21	-185245.00	-10604.43	-4317.22	-74.01
	σ <sub>cls,Med</sub> 21	-185245.00	-10604.43	-4317.22	-37.48
277	Ft. 22	-180775.08	9040.57	-894.35	-274.25
	σ <sub>s,c</sub> 21	-181795.00	9050.08	-722.95	-823.73
	σ <sub>cls,Max</sub> 21	-181795.00	9050.08	-722.95	-64.40
	σ <sub>cls,Med</sub> 21	-181795.00	9050.08	-722.95	-36.78

Pilastro: **277/377** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 20 ø 20 Af=62.83 [cm<sup>2</sup>] < 1f20 x 4 V + 7f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
277	1	-238587.27	-19586.47	-9246.66	0.42
377	3	-225124.75	30561.26	35437.94	0.63

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	14545.41	61956.98	13073.70	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	14545.41	46467.73	13073.70	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	14545.41	61956.98	13073.70	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
277	Ft. 17	-157944.75	-13423.98	-6587.49	44.84
	σ <sub>s,c</sub> 15	-163929.77	-13449.55	-6307.72	-996.11
	σ <sub>cls,Max</sub> 15	-163929.77	-13449.55	-6307.72	-81.88
	σ <sub>cls,Med</sub> 15	-163929.77	-13449.55	-6307.72	-36.97
377	Ft. 17	-154494.75	20782.69	24049.43	1051.98
	σ <sub>s,c</sub> 17	-154494.75	20782.69	24049.43	-1653.90
	σ <sub>cls,Max</sub> 17	-154494.75	20782.69	24049.43	-145.40
	σ <sub>cls,Med</sub> 17	-154494.75	20782.69	24049.43	-54.69

**Combinazioni Frequenti**

277	Ft. 20	-158878.77	-13082.74	-6515.08	23.67
	σ <sub>s,c</sub> 20	-158878.77	-13082.74	-6515.08	-974.11
	σ <sub>cls,Max</sub> 20	-158878.77	-13082.74	-6515.08	-80.09
	σ <sub>cls,Med</sub> 20	-158878.77	-13082.74	-6515.08	-35.95
377	Ft. 20	-155428.77	20489.14	23942.09	1011.63
	σ <sub>s,c</sub> 20	-155428.77	20489.14	23942.09	-1638.90
	σ <sub>cls,Max</sub> 20	-155428.77	20489.14	23942.09	-143.59
	σ <sub>cls,Med</sub> 20	-155428.77	20489.14	23942.09	-54.03

**Combinazioni Quasi Permanenti**

277	Ft. 22	-159190.09	-12969.00	-6490.94	16.85
	σ <sub>s,c</sub> 22	-159190.09	-12969.00	-6490.94	-970.42
	σ <sub>cls,Max</sub> 22	-159190.09	-12969.00	-6490.94	-79.68
	σ <sub>cls,Med</sub> 22	-159190.09	-12969.00	-6490.94	-35.79
377	Ft. 22	-155740.09	20391.29	23906.30	998.33
	σ <sub>s,c</sub> 22	-155740.09	20391.29	23906.30	-1633.90
	σ <sub>cls,Max</sub> 22	-155740.09	20391.29	23906.30	-142.99

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 22	-155740.09	20391.29	23906.30	-53.81

Pilastro: **78/178** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
78	1	-169402.06	4668.32	2012.41	0.23
178	1	-163747.06	-901.45	176.70	0.20

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	1533.66	61956.98	2163.93	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	1533.66	46467.73	2163.93	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	1533.66	61956.98	2163.93	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
78	Ft. 17	-113143.84	3240.14	1299.00	-247.41
	σ <sub>s,c</sub> 15	-120102.30	3379.36	1482.26	-526.35
	σ <sub>cls,Max</sub> 15	-120102.30	3379.36	1482.26	-39.21
	σ <sub>cls,Med</sub> 15	-120102.30	3379.36	1482.26	-26.31
178	Ft. 17	-108793.84	-572.70	315.25	-334.07
	σ <sub>s,c</sub> 15	-115752.30	-612.22	267.61	-404.16
	σ <sub>cls,Max</sub> 15	-115752.30	-612.22	267.61	-27.69
	σ <sub>cls,Med</sub> 15	-115752.30	-612.22	267.61	-25.35
<b>Combinazioni Frequenti</b>					
78	Ft. 20	-111881.01	3343.15	1208.57	-241.47
	σ <sub>s,c</sub> 18	-116560.44	3440.07	1389.46	-515.13
	σ <sub>cls,Max</sub> 18	-116560.44	3440.07	1389.46	-38.52
	σ <sub>cls,Med</sub> 18	-116560.44	3440.07	1389.46	-25.53
178	Ft. 20	-107531.01	-684.72	314.33	-326.37
	σ <sub>s,c</sub> 18	-112210.44	-709.58	264.56	-395.57
	σ <sub>cls,Max</sub> 18	-112210.44	-709.58	264.56	-27.23
	σ <sub>cls,Med</sub> 18	-112210.44	-709.58	264.56	-24.58
<b>Combinazioni Quasi Permanenti</b>					
78	Ft. 22	-111460.07	3377.49	1178.42	-239.48
	σ <sub>s,c</sub> 21	-115379.34	3460.21	1358.73	-511.38
	σ <sub>cls,Max</sub> 21	-115379.34	3460.21	1358.73	-38.28
	σ <sub>cls,Med</sub> 21	-115379.34	3460.21	1358.73	-25.27
178	Ft. 22	-107110.07	-722.06	314.03	-323.81
	σ <sub>s,c</sub> 21	-111029.34	-742.04	263.32	-392.70
	σ <sub>cls,Max</sub> 21	-111029.34	-742.04	263.32	-27.07
	σ <sub>cls,Med</sub> 21	-111029.34	-742.04	263.32	-24.32

Pilastro: **178/278** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
178	1	-139130.27	-8728.80	-9654.47	0.25

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
278	1	-134645.27	6404.60	627.59	0.21

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	4386.49	61956.98	3010.26	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	4386.49	46467.73	3010.26	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	4386.49	61956.98	3010.26	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
178	Ft. 17	-91116.63	-5937.26	-6587.92	6.50
	σ <sub>s,c</sub> 15	-98090.65	-6013.60	-6602.34	-624.56
	σ <sub>cls,Max</sub> 15	-98090.65	-6013.60	-6602.34	-49.77
	σ <sub>cls,Med</sub> 15	-98090.65	-6013.60	-6602.34	-22.29
278	Ft. 17	-87666.63	4404.47	617.12	-137.82
	σ <sub>s,c</sub> 15	-94640.65	4424.58	533.81	-460.43
	σ <sub>cls,Max</sub> 15	-94640.65	4424.58	533.81	-35.84
	σ <sub>cls,Med</sub> 15	-94640.65	4424.58	533.81	-20.73
<b>Combinazioni Frequenti</b>					
178	Ft. 20	-90575.77	-5711.76	-6293.28	-6.42
	σ <sub>s,c</sub> 18	-95258.55	-5746.97	-6300.19	-601.25
	σ <sub>cls,Max</sub> 18	-95258.55	-5746.97	-6300.19	-47.84
	σ <sub>cls,Med</sub> 18	-95258.55	-5746.97	-6300.19	-21.55
278	Ft. 20	-87125.77	4203.87	488.25	-144.53
	σ <sub>s,c</sub> 18	-91808.55	4198.27	430.44	-442.24
	σ <sub>cls,Max</sub> 18	-91808.55	4198.27	430.44	-34.35
	σ <sub>cls,Med</sub> 18	-91808.55	4198.27	430.44	-20.11
<b>Combinazioni Quasi Permanenti</b>					
178	Ft. 22	-90395.48	-5636.59	-6195.07	-10.61
	σ <sub>s,c</sub> 21	-94314.29	-5658.27	-6199.57	-593.50
	σ <sub>cls,Max</sub> 21	-94314.29	-5658.27	-6199.57	-47.20
	σ <sub>cls,Med</sub> 21	-94314.29	-5658.27	-6199.57	-21.31
278	Ft. 22	-86945.48	4137.01	445.30	-146.77
	σ <sub>s,c</sub> 21	-90864.29	4123.07	396.21	-436.18
	σ <sub>cls,Max</sub> 21	-90864.29	4123.07	396.21	-33.86
	σ <sub>cls,Med</sub> 21	-90864.29	4123.07	396.21	-19.90

Pilastro: **278/378** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
278	1	-123366.65	-7526.48	-10566.77	0.23
378	1	-118881.66	12658.99	33182.50	0.42

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5850.86	61956.98	12680.95	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	5850.86	46467.73	12680.95	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	5850.86	61956.98	12680.95	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
278	Ft. 17	-78783.62	-4970.55	-7225.32	29.43
	σ <sub>s,c</sub> 15	-86136.81	-5170.89	-7242.34	-570.33
	σ <sub>cls,Max</sub> 15	-86136.81	-5170.89	-7242.34	-45.35
	σ <sub>cls,Med</sub> 15	-86136.81	-5170.89	-7242.34	-19.82
378	Ft. 17	-75333.62	8065.03	21844.20	847.27
	σ <sub>s,c</sub> 15	-82686.81	8583.99	22371.61	-1100.67
	σ <sub>cls,Max</sub> 15	-82686.81	8583.99	22371.61	-94.14
	σ <sub>cls,Med</sub> 15	-82686.81	8583.99	22371.61	-31.96
<b>Combinazioni Frequenti</b>					
278	Ft. 20	-78848.68	-4797.53	-6986.92	16.71
	σ <sub>s,c</sub> 18	-83783.27	-4938.29	-6972.69	-550.09
	σ <sub>cls,Max</sub> 18	-83783.27	-4938.29	-6972.69	-43.66
	σ <sub>cls,Med</sub> 18	-83783.27	-4938.29	-6972.69	-19.19
378	Ft. 20	-75398.68	7850.04	21443.39	800.60
	σ <sub>s,c</sub> 18	-80333.27	8202.39	21682.77	-1059.63
	σ <sub>cls,Max</sub> 18	-80333.27	8202.39	21682.77	-90.44
	σ <sub>cls,Med</sub> 18	-80333.27	8202.39	21682.77	-30.75
<b>Combinazioni Quasi Permanenti</b>					
278	Ft. 22	-78870.37	-4739.86	-6907.45	12.59
	σ <sub>s,c</sub> 21	-82998.71	-4860.62	-6882.43	-543.34
	σ <sub>cls,Max</sub> 21	-82998.71	-4860.62	-6882.43	-43.10
	σ <sub>cls,Med</sub> 21	-82998.71	-4860.62	-6882.43	-18.98
378	Ft. 22	-75420.37	7778.38	21309.79	785.25
	σ <sub>s,c</sub> 21	-79548.71	8075.05	21452.86	-1045.93
	σ <sub>cls,Max</sub> 21	-79548.71	8075.05	21452.86	-89.20
	σ <sub>cls,Med</sub> 21	-79548.71	8075.05	21452.86	-30.35

Pilastro: **383/483** / L 4.02[m] / Sezione **5 B 30 [cm]H 30 [cm]**

**Af:** 4 ø 20 Af=12.57 [cm<sup>2</sup>] < 1f20 x 4 V + 0f20 x 2 B + 0f20 x 2 H >

**Staffe:** ø 10/15.0 x 92.0/ø 10/20.0 x 218.0/ø 10/15.0 x 92.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
383	2	-11045.76	98.23	366.91	0.07
483	2	-9796.79	-147.89	-366.30	0.07

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.05	57.64	19917.99	175.62	19917.99	ø 10/15.0
1.05	3.22	57.64	16319.03	175.62	16319.03	ø 10/20.0
3.22	4.14	57.64	19917.99	175.62	19917.99	ø 10/15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
383	Ft. 15	-7606.73	67.78	269.21	-54.00
	σ <sub>s,c</sub> 16	-7911.20	67.57	257.03	-157.98
	σ <sub>cls,Max</sub> 16	-7911.20	67.57	257.03	-13.39
	σ <sub>cls,Med</sub> 16	-7911.20	67.57	257.03	-7.27
483	Ft. 15	-6645.98	-101.65	-257.45	-37.36
	σ <sub>s,c</sub> 16	-6950.45	-103.89	-258.52	-150.45
	σ <sub>cls,Max</sub> 16	-6950.45	-103.89	-258.52	-13.22

**Comune di Catania**  
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**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 16	-6950.45	-103.89	-258.52	-6.40
<b>Combinazioni Frequenti</b>					
383	Ft. 18	-7311.83	63.35	249.18	-53.62
	σ <sub>s,c</sub> 19	-7433.29	63.42	245.38	-149.01
	σ <sub>cls,Max</sub> 19	-7433.29	63.42	245.38	-12.65
	σ <sub>cls,Med</sub> 19	-7433.29	63.42	245.38	-6.83
483	Ft. 18	-6351.08	-94.57	-241.98	-36.73
	σ <sub>s,c</sub> 19	-6472.54	-95.62	-242.89	-140.26
	σ <sub>cls,Max</sub> 19	-6472.54	-95.62	-242.89	-12.33
	σ <sub>cls,Med</sub> 19	-6472.54	-95.62	-242.89	-5.96
<b>Combinazioni Quasi Permanenti</b>					
383	Ft. 21	-7313.42	62.57	243.81	-54.57
	σ <sub>s,c</sub> 21	-7313.42	62.57	243.81	-146.99
	σ <sub>cls,Max</sub> 21	-7313.42	62.57	243.81	-12.50
	σ <sub>cls,Med</sub> 22	-7330.32	60.71	209.81	-6.73
483	Ft. 21	-6352.67	-93.76	-239.58	-37.24
	σ <sub>s,c</sub> 21	-6352.67	-93.76	-239.58	-137.83
	σ <sub>cls,Max</sub> 21	-6352.67	-93.76	-239.58	-12.12
	σ <sub>cls,Med</sub> 21	-6352.67	-93.76	-239.58	-5.85

Pilastro: **384/484** / L 3.42[m] / Sezione **5 B 30 [cm]H 30 [cm]**

**Af:** 4 ø 20 Af=12.57 [cm<sup>2</sup>] < 1f20 x 4 V + 0f20 x 2 B + 0f20 x 2 H >

**Staffe:** ø 10/15.0 x 93.7/ø 10/20.0 x 154.7/ø 10/15.0 x 93.7

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
384	2	-15200.11	-327.95	-221.57	0.09
484	2	-14126.63	520.98	628.48	0.12

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.06	231.31	19917.99	231.62	19917.99	ø 10/15.0
1.06	2.61	231.31	16319.03	231.62	16319.03	ø 10/20.0
2.61	3.54	231.31	19917.99	231.62	19917.99	ø 10/15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
384	Ft. 17	-10003.69	-209.29	-137.75	-85.51
	σ <sub>s,c</sub> 16	-10870.76	-234.07	-163.33	-209.74
	σ <sub>cls,Max</sub> 16	-10870.76	-234.07	-163.33	-17.48
	σ <sub>cls,Med</sub> 16	-10870.76	-234.07	-163.33	-9.99
484	Ft. 15	-9508.37	354.42	424.94	-2.59
	σ <sub>s,c</sub> 16	-10045.01	373.00	449.36	-267.41
	σ <sub>cls,Max</sub> 16	-10045.01	373.00	449.36	-25.54
	σ <sub>cls,Med</sub> 16	-10045.01	373.00	449.36	-10.35
<b>Combinazioni Frequenti</b>					
384	Ft. 18	-9888.05	-216.33	-138.33	-82.77
	σ <sub>s,c</sub> 19	-10099.69	-218.78	-144.23	-193.93
	σ <sub>cls,Max</sub> 19	-10099.69	-218.78	-144.23	-16.12
	σ <sub>cls,Med</sub> 19	-10099.69	-218.78	-144.23	-9.28
484	Ft. 18	-9062.30	335.51	403.02	-3.48

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
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 Parcheggio interrato - Tabulato di calcolo

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 19	-9273.94	342.95	412.70	-246.22
	σ <sub>cls,Max</sub> 19	-9273.94	342.95	412.70	-23.49
	σ <sub>cls,Med</sub> 19	-9273.94	342.95	412.70	-9.54
<b>Combinazioni Quasi Permanenti</b>					
384	Ft. 21	-9903.15	-215.23	-139.23	-83.01
	σ <sub>s,c</sub> 22	-9998.75	-209.40	-140.56	-190.57
	σ <sub>cls,Max</sub> 22	-9998.75	-209.40	-140.56	-15.78
	σ <sub>cls,Med</sub> 22	-9998.75	-209.40	-140.56	-9.19
484	Ft. 21	-9077.40	335.46	403.44	-3.69
	σ <sub>s,c</sub> 22	-9173.00	335.98	404.20	-242.20
	σ <sub>cls,Max</sub> 22	-9173.00	335.98	404.20	-23.06
	σ <sub>cls,Med</sub> 22	-9173.00	335.98	404.20	-9.39

Pilastro: **1361/2675 (87-187)** / L 1.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 120.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
1361	13	-21697.23	14126.29	-2109.35	0.15
2675	13	-20247.23	9521.01	1317.22	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.12	1.33	3176.05	86297.23	2597.10	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
1361	Ft. 16	-23996.86	8267.63	-1635.65	247.34
	σ <sub>s,c</sub> 15	-24894.03	8457.95	-1664.36	-328.72
	σ <sub>cls,Max</sub> 15	-24894.03	8457.95	-1664.36	-27.11
	σ <sub>cls,Med</sub> 15	-24894.03	8457.95	-1664.36	-9.96
2675	Ft. 16	-22546.86	5828.94	995.78	90.40
	σ <sub>s,c</sub> 15	-23444.03	5920.41	1013.88	-222.89
	σ <sub>cls,Max</sub> 15	-23444.03	5920.41	1013.88	-17.57
	σ <sub>cls,Med</sub> 15	-23444.03	5920.41	1013.88	-6.90
<b>Combinazioni Frequenti</b>					
1361	Ft. 19	-23692.08	8143.93	-1620.46	243.57
	σ <sub>s,c</sub> 18	-23990.94	8205.29	-1629.84	-319.87
	σ <sub>cls,Max</sub> 18	-23990.94	8205.29	-1629.84	-26.42
	σ <sub>cls,Med</sub> 18	-23990.94	8205.29	-1629.84	-9.68
2675	Ft. 19	-22242.08	5765.08	986.33	90.05
	σ <sub>s,c</sub> 18	-22540.94	5794.42	992.24	-217.77
	σ <sub>cls,Max</sub> 18	-22540.94	5794.42	992.24	-17.20
	σ <sub>cls,Med</sub> 18	-22540.94	5794.42	992.24	-6.74
<b>Combinazioni Quasi Permanenti</b>					
1361	Ft. 21	-23690.90	8131.46	-1619.30	242.73
	σ <sub>s,c</sub> 21	-23690.90	8131.46	-1619.30	-317.29
	σ <sub>cls,Max</sub> 21	-23690.90	8131.46	-1619.30	-26.22
	σ <sub>cls,Med</sub> 21	-23690.90	8131.46	-1619.30	-9.60
2675	Ft. 21	-22240.90	5758.18	985.62	89.73

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 21	-22240.90	5758.18	985.62	-216.26
	σ <sub>cls,Max</sub> 21	-22240.90	5758.18	985.62	-17.09
	σ <sub>cls,Med</sub> 21	-22240.90	5758.18	985.62	-6.69

Pilastro: **2675/3971(187-287)** / L 2.65[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 65.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2675	1	-74953.41	-829.57	-882.20	0.09
3971	1	-71183.41	-3892.58	1173.62	0.10

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.12	1.13	1723.22	86297.23	708.90	61956.98	ø 10 2br.x4br./15.0
1.13	1.78	1723.22	64722.92	708.90	46467.73	ø 10 2br.x4br./20.0
1.78	2.78	1723.22	86297.23	708.90	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2675	Ft. 17	-48931.49	-527.91	-582.84	-133.59
	σ <sub>s,c</sub> 15	-53002.02	-608.62	-631.52	-204.18
	σ <sub>cls,Max</sub> 15	-53002.02	-608.62	-631.52	-14.44
	σ <sub>cls,Med</sub> 15	-53002.02	-608.62	-631.52	-11.61
3971	Ft. 16	-48340.91	-2843.99	820.40	-86.21
	σ <sub>s,c</sub> 15	-50102.02	-2852.52	837.98	-237.93
	σ <sub>cls,Max</sub> 15	-50102.02	-2852.52	837.98	-17.33
	σ <sub>cls,Med</sub> 15	-50102.02	-2852.52	837.98	-10.97
<b>Combinazioni Frequenti</b>					
2675	Ft. 20	-48349.03	-560.18	-583.19	-131.14
	σ <sub>s,c</sub> 18	-51162.27	-614.72	-617.04	-197.78
	σ <sub>cls,Max</sub> 18	-51162.27	-614.72	-617.04	-14.00
	σ <sub>cls,Med</sub> 18	-51162.27	-614.72	-617.04	-11.21
3971	Ft. 20	-45449.03	-2442.09	774.68	-84.73
	σ <sub>s,c</sub> 18	-48262.27	-2808.02	818.02	-230.52
	σ <sub>cls,Max</sub> 18	-48262.27	-2808.02	818.02	-16.80
	σ <sub>cls,Med</sub> 18	-48262.27	-2808.02	818.02	-10.57
<b>Combinazioni Quasi Permanenti</b>					
2675	Ft. 22	-48154.88	-570.94	-583.31	-130.32
	σ <sub>s,c</sub> 21	-50562.12	-617.86	-612.52	-195.71
	σ <sub>cls,Max</sub> 21	-50562.12	-617.86	-612.52	-13.86
	σ <sub>cls,Med</sub> 21	-50562.12	-617.86	-612.52	-11.07
3971	Ft. 22	-45254.88	-2484.99	774.51	-83.40
	σ <sub>s,c</sub> 21	-47662.12	-2799.18	811.76	-228.21
	σ <sub>cls,Max</sub> 21	-47662.12	-2799.18	811.76	-16.64
	σ <sub>cls,Med</sub> 21	-47662.12	-2799.18	811.76	-10.44



**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Pilastro: **3971/7031 (287-387)** / L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** Ø 10 2br.x4br./15.0 x 100.0/Ø 10 2br.x4br./20.0 x 120.0/Ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
3971	1	-207128.80	1941.94	1898.57	0.25
7031	1	-202643.80	1109.91	-5614.05	0.28

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2421.83	86297.23	2326.43	61956.98	Ø 10 2br.x4br./15.0
1.13	2.32	2421.83	64722.92	2326.43	46467.73	Ø 10 2br.x4br./20.0
2.32	3.32	2421.83	86297.23	2326.43	61956.98	Ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm²]
<b>Combinazioni Rare</b>					
3971	Ft. 17	-133324.45	784.43	1479.65	-378.14
	σ <sub>s,c</sub> 15	-145329.61	1467.63	1330.59	-543.82
	σ <sub>cls,Max</sub> 15	-145329.61	1467.63	1330.59	-38.03
	σ <sub>cls,Med</sub> 15	-145329.61	1467.63	1330.59	-31.83
7031	Ft. 17	-129874.45	1279.52	-4184.42	-272.66
	σ <sub>s,c</sub> 15	-141879.61	791.94	-3991.10	-606.07
	σ <sub>cls,Max</sub> 15	-141879.61	791.94	-3991.10	-45.10
	σ <sub>cls,Med</sub> 15	-141879.61	791.94	-3991.10	-31.08
<b>Combinazioni Frequenti</b>					
3971	Ft. 20	-132111.05	1064.60	1323.68	-374.53
	σ <sub>s,c</sub> 18	-140455.89	1544.48	1217.25	-525.46
	σ <sub>cls,Max</sub> 18	-140455.89	1544.48	1217.25	-36.69
	σ <sub>cls,Med</sub> 18	-140455.89	1544.48	1217.25	-30.76
7031	Ft. 20	-128661.04	982.40	-3871.02	-283.50
	σ <sub>s,c</sub> 18	-137005.89	626.55	-3729.73	-579.04
	σ <sub>cls,Max</sub> 18	-137005.89	626.55	-3729.73	-42.97
	σ <sub>cls,Med</sub> 18	-137005.89	626.55	-3729.73	-30.01
<b>Combinazioni Quasi Permanenti</b>					
3971	Ft. 22	-131706.56	1157.98	1271.69	-373.33
	σ <sub>s,c</sub> 21	-138862.13	1575.92	1178.57	-519.50
	σ <sub>cls,Max</sub> 21	-138862.13	1575.92	1178.57	-36.26
	σ <sub>cls,Med</sub> 21	-138862.13	1575.92	1178.57	-30.42
7031	Ft. 22	-128256.55	883.37	-3766.55	-287.12
	σ <sub>s,c</sub> 21	-135412.13	570.46	-3641.89	-570.09
	σ <sub>cls,Max</sub> 21	-135412.13	570.46	-3641.89	-42.27
	σ <sub>cls,Med</sub> 21	-135412.13	570.46	-3641.89	-29.66

Pilastro: **7031/9601** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 Ø 20 Af=37.70 [cm²] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** Ø 10 4br.x2br./15.0 x 100.0/Ø 10 4br.x2br./20.0 x 120.0/Ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
7031	1	-155393.77	13460.75	6421.36	0.32
9601	1	-150908.77	-18788.20	-14518.86	0.43

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**Parcheggio interrato - Tabulato di calcolo**

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	9348.31	61956.98	6069.63	86297.23	ø 10 4br.x2br./15.0
1.13	2.33	9347.82	46467.73	6069.63	64722.92	ø 10 4br.x2br./20.0
2.33	3.33	9347.23	61956.98	6069.63	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
7031	Ft. 17	-96333.93	9125.33	4159.28	103.15
	σ <sub>s,c</sub> 15	-108198.75	9391.85	4414.56	-743.90
	σ <sub>cls,Max</sub> 15	-108198.75	9391.85	4414.56	-61.85
	σ <sub>cls,Med</sub> 15	-108198.75	9391.85	4414.56	-27.85
9601	Ft. 17	-92883.93	-12095.44	-9037.22	576.79
	σ <sub>s,c</sub> 15	-104748.75	-12937.61	-9810.61	-1029.68
	σ <sub>cls,Max</sub> 15	-104748.75	-12937.61	-9810.61	-91.20
	σ <sub>cls,Med</sub> 15	-104748.75	-12937.61	-9810.61	-37.39
<b>Combinazioni Frequenti</b>					
7031	Ft. 20	-96844.53	8805.01	4064.72	75.69
	σ <sub>s,c</sub> 18	-105123.29	8981.28	4265.12	-716.26
	σ <sub>cls,Max</sub> 18	-105123.29	8981.28	4265.12	-59.41
	σ <sub>cls,Med</sub> 18	-105123.29	8981.28	4265.12	-26.76
9601	Ft. 20	-93394.53	-11920.93	-8859.86	541.37
	σ <sub>s,c</sub> 18	-101673.29	-12500.46	-9454.23	-994.73
	σ <sub>cls,Max</sub> 18	-101673.29	-12500.46	-9454.23	-88.02
	σ <sub>cls,Med</sub> 18	-101673.29	-12500.46	-9454.23	-36.11
<b>Combinazioni Quasi Permanenti</b>					
7031	Ft. 22	-97014.74	8698.24	4033.21	67.02
	σ <sub>s,c</sub> 21	-104121.98	8843.74	4211.78	-707.02
	σ <sub>cls,Max</sub> 21	-104121.98	8843.74	4211.78	-58.59
	σ <sub>cls,Med</sub> 21	-104121.98	8843.74	4211.78	-26.40
9601	Ft. 22	-93564.74	-11862.75	-8800.74	529.78
	σ <sub>s,c</sub> 21	-100671.98	-12353.39	-9323.36	-982.74
	σ <sub>cls,Max</sub> 21	-100671.98	-12353.39	-9323.36	-86.92
	σ <sub>cls,Med</sub> 21	-100671.98	-12353.39	-9323.36	-35.68

Pilastro: **1587/4381 (47A-147A)** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
1587	3	-385857.84	-2273.63	-14252.03	0.49
4381	3	-380202.84	-863.56	6690.56	0.46

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	815.29	61956.98	6322.25	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	817.36	46467.73	6322.25	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	818.35	61956.98	6322.25	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
1587	Ft. 16	-260235.11	-1694.78	-9668.38	-642.95

**Comune di Catania**  
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**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
 Parcheggio interrato - Tabulato di calcolo

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 15	-267765.69	-1692.20	-9857.08	-1094.81
	σ <sub>cls,Max</sub> 15	-267765.69	-1692.20	-9857.08	-76.67
	σ <sub>cls,Med</sub> 17	-268515.84	-1595.67	-9806.88	-58.81
4381	Ft. 16	-255885.09	-466.42	4117.50	-758.53
	σ <sub>s,c</sub> 17	-264165.84	-612.92	4214.50	-956.36
	σ <sub>cls,Max</sub> 17	-264165.84	-612.92	4214.50	-65.21
	σ <sub>cls,Med</sub> 17	-264165.84	-612.92	4214.50	-57.86
<b>Combinazioni Frequenti</b>					
1587	Ft. 19	-257708.00	-1694.94	-9610.89	-635.58
	σ <sub>s,c</sub> 20	-264933.88	-1635.17	-9648.79	-1080.29
	σ <sub>cls,Max</sub> 20	-264933.88	-1635.17	-9648.79	-75.60
	σ <sub>cls,Med</sub> 20	-264933.88	-1635.17	-9648.79	-58.03
4381	Ft. 19	-253358.00	-443.75	4080.73	-751.55
	σ <sub>s,c</sub> 20	-260583.88	-529.81	4140.96	-940.74
	σ <sub>cls,Max</sub> 20	-260583.88	-529.81	4140.96	-64.06
	σ <sub>cls,Med</sub> 20	-260583.88	-529.81	4140.96	-57.08
<b>Combinazioni Quasi Permanenti</b>					
1587	Ft. 21	-257704.50	-1694.79	-9612.01	-635.55
	σ <sub>s,c</sub> 22	-263739.91	-1648.33	-9596.09	-1075.92
	σ <sub>cls,Max</sub> 22	-263739.91	-1648.33	-9596.09	-75.31
	σ <sub>cls,Med</sub> 22	-263739.91	-1648.33	-9596.09	-57.77
4381	Ft. 21	-253354.50	-443.83	4080.35	-751.54
	σ <sub>s,c</sub> 22	-259389.91	-502.11	4116.45	-935.54
	σ <sub>cls,Max</sub> 22	-259389.91	-502.11	4116.45	-63.67
	σ <sub>cls,Med</sub> 22	-259389.91	-502.11	4116.45	-56.82

Pilastro: **4381/7439 (147A-247A)**/ L 3.20[m] / Sezione **1 B 40 [cm]H 100 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 1f20 x 2 B + 3f20 x 2 H >

**Staffe:** ø 10 2br.x4br./15.0 x 100.0/ø 10 2br.x4br./20.0 x 120.0/ø 10 2br.x4br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
4381	3	-326045.69	-20301.47	3083.71	0.44
7439	3	-321560.69	5256.70	-1933.87	0.39

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	7437.46	86297.23	1465.65	61956.98	ø 10 2br.x4br./15.0
1.13	2.32	7437.46	64722.92	1465.65	46467.73	ø 10 2br.x4br./20.0
2.32	3.32	7437.46	86297.23	1465.65	61956.98	ø 10 2br.x4br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
4381	Ft. 16	-218816.42	-12939.85	2079.05	-441.13
	σ <sub>s,c</sub> 17	-225551.50	-13644.22	2225.21	-1035.02
	σ <sub>cls,Max</sub> 17	-225551.50	-13644.22	2225.21	-73.96
	σ <sub>cls,Med</sub> 17	-225551.50	-13644.22	2225.21	-49.40
7439	Ft. 16	-215366.42	3180.49	-1334.31	-613.12
	σ <sub>s,c</sub> 17	-222101.50	3537.69	-1417.94	-832.69
	σ <sub>cls,Max</sub> 17	-222101.50	3537.69	-1417.94	-57.76
	σ <sub>cls,Med</sub> 17	-222101.50	3537.69	-1417.94	-48.65

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

<b>Combinazioni Frequenti</b>					
4381	Ft. 19	-216978.64	-12710.93	2034.18	-440.26
	$\sigma_{s,c20}$	-224070.91	-13045.92	2087.42	-1015.99
	$\sigma_{cls,Max20}$	-224070.91	-13045.92	2087.42	-72.43
	$\sigma_{cls,Med20}$	-224070.91	-13045.92	2087.42	-49.08
7439	Ft. 19	-213528.64	3019.37	-1293.44	-611.02
	$\sigma_{s,c20}$	-220620.91	3083.89	-1271.81	-815.76
	$\sigma_{cls,Max20}$	-220620.91	3083.89	-1271.81	-56.38
	$\sigma_{cls,Med20}$	-220620.91	3083.89	-1271.81	-48.32

<b>Combinazioni Quasi Permanenti</b>					
4381	Ft. 21	-216975.47	-12709.52	2034.10	-440.28
	$\sigma_{s,c22}$	-223577.36	-12846.49	2041.49	-1009.64
	$\sigma_{cls,Max22}$	-223577.36	-12846.49	2041.49	-71.92
	$\sigma_{cls,Med22}$	-223577.36	-12846.49	2041.49	-48.97
7439	Ft. 21	-213525.47	3017.94	-1293.42	-611.03
	$\sigma_{s,c22}$	-220127.36	2932.62	-1223.10	-810.11
	$\sigma_{cls,Max22}$	-220127.36	2932.62	-1223.10	-55.92
	$\sigma_{cls,Med22}$	-220127.36	2932.62	-1223.10	-48.22

Pilastro: **7439/9808 (247A-347A)**/ L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12  $\varnothing$  20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:**  $\varnothing$  10 4br.x2br./15.0 x 100.0/ $\varnothing$  10 4br.x2br./20.0 x 120.0/ $\varnothing$  10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

<b>Nodo</b>	<b>Comb</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>Sd/Sr</b>
7439	3	-277015.28	-1356.53	-20161.63	0.38
9808	3	-272530.28	3640.00	60202.32	0.56

Verifiche a Taglio

<b>Da [m]</b>	<b>A [m]</b>	<b>V<sub>d12</sub> [kg]</b>	<b>V<sub>Rd12</sub> [kg]</b>	<b>V<sub>d13</sub> [kg]</b>	<b>V<sub>Rd13</sub> [kg]</b>	<b>Staffe</b>
0.12	1.13	1447.30	61956.98	23293.88	86297.23	$\varnothing$ 10 4br.x2br./15.0
1.13	2.33	1449.24	46467.73	23293.88	64722.92	$\varnothing$ 10 4br.x2br./20.0
2.33	3.33	1450.85	61956.98	23293.88	86297.23	$\varnothing$ 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b><math>\sigma</math> [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
7439	Ft. 16	-184596.45	-695.33	-13510.93	-363.38
	$\sigma_{s,c17}$	-190081.72	-1008.71	-13952.23	-884.82
	$\sigma_{cls,Max17}$	-190081.72	-1008.71	-13952.23	-62.62
	$\sigma_{cls,Med17}$	-190081.72	-1008.71	-13952.23	-41.63
9808	Ft. 17	-186631.72	2553.13	40717.02	188.74
	$\sigma_{s,c17}$	-186631.72	2553.13	40717.02	-1387.54
	$\sigma_{cls,Max17}$	-186631.72	2553.13	40717.02	-103.35
	$\sigma_{cls,Med17}$	-186631.72	2553.13	40717.02	-47.14

<b>Combinazioni Frequenti</b>					
7439	Ft. 19	-183384.92	-674.23	-13403.63	-361.82
	$\sigma_{s,c20}$	-190595.25	-958.69	-13738.37	-881.42
	$\sigma_{cls,Max20}$	-190595.25	-958.69	-13738.37	-62.30
	$\sigma_{cls,Med20}$	-190595.25	-958.69	-13738.37	-41.75
9808	Ft. 20	-187145.25	2591.41	40479.51	181.28
	$\sigma_{s,c20}$	-187145.25	2591.41	40479.51	-1385.26
	$\sigma_{cls,Max20}$	-187145.25	2591.41	40479.51	-103.17
	$\sigma_{cls,Med20}$	-187145.25	2591.41	40479.51	-47.00

<b>Combinazioni Quasi Permanenti</b>					
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**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
7439	Ft. 21	-183382.00	-674.19	-13404.02	-361.81
	σ <sub>s,c</sub> 22	-190766.44	-942.02	-13667.09	-880.29
	σ <sub>cls,Max</sub> 22	-190766.44	-942.02	-13667.09	-62.19
	σ <sub>cls,Med</sub> 22	-190766.44	-942.02	-13667.09	-41.78
9808	Ft. 22	-187316.44	2604.17	40400.35	178.83
	σ <sub>s,c</sub> 22	-187316.44	2604.17	40400.35	-1384.50
	σ <sub>cls,Max</sub> 22	-187316.44	2604.17	40400.35	-103.11
	σ <sub>cls,Med</sub> 22	-187316.44	2604.17	40400.35	-46.95

Pilastro: **2000/5093(60A-160A)** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2000	1	-80508.01	1665.64	238.40	0.11
5093	1	-74853.01	276.52	1773.81	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	608.28	61956.98	1215.30	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	608.28	46467.73	1215.30	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	608.28	61956.98	1215.30	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2000	Ft. 17	-53488.07	977.74	303.79	-139.66
	σ <sub>s,c</sub> 15	-57903.11	1282.13	207.79	-234.43
	σ <sub>cls,Max</sub> 15	-57903.11	1282.13	207.79	-17.13
	σ <sub>cls,Med</sub> 15	-57903.11	1282.13	207.79	-12.68
5093	Ft. 17	-49138.07	272.67	1067.69	-135.31
	σ <sub>s,c</sub> 15	-53553.11	128.04	1113.42	-198.24
	σ <sub>cls,Max</sub> 15	-53553.11	128.04	1113.42	-13.56
	σ <sub>cls,Med</sub> 15	-53553.11	128.04	1113.42	-11.73
<b>Combinazioni Frequenti</b>					
2000	Ft. 20	-52897.30	1010.92	201.44	-138.34
	σ <sub>s,c</sub> 18	-56333.95	1272.50	120.15	-227.53
	σ <sub>cls,Max</sub> 18	-56333.95	1272.50	120.15	-16.64
	σ <sub>cls,Med</sub> 18	-56333.95	1272.50	120.15	-12.34
5093	Ft. 20	-48547.30	233.90	1110.43	-133.90
	σ <sub>s,c</sub> 18	-51983.95	99.32	1119.17	-192.26
	σ <sub>cls,Max</sub> 18	-51983.95	99.32	1119.17	-13.13
	σ <sub>cls,Med</sub> 18	-51983.95	99.32	1119.17	-11.39
<b>Combinazioni Quasi Permanenti</b>					
2000	Ft. 22	-52700.38	1021.98	167.32	-137.90
	σ <sub>s,c</sub> 21	-55831.86	1272.06	90.88	-225.39
	σ <sub>cls,Max</sub> 21	-55831.86	1272.06	90.88	-16.49
	σ <sub>cls,Med</sub> 21	-55831.86	1272.06	90.88	-12.23
5093	Ft. 22	-48350.38	220.98	1124.68	-133.43
	σ <sub>s,c</sub> 21	-51481.86	88.25	1121.09	-190.29
	σ <sub>cls,Max</sub> 21	-51481.86	88.25	1121.09	-12.99

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 21	-51481.86	88.25	1121.09	-11.28

Pilastro: **5093/8151(160A-260A** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
5093	1	-66707.32	2417.74	-1864.54	0.10
8151	1	-62222.32	-1901.04	3430.23	0.09

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.12	1.13	1322.10	61956.98	1534.72	86297.23	ø 10 4br.x2br./15.0
1.13	2.33	1320.66	46467.73	1534.72	64722.92	ø 10 4br.x2br./20.0
2.33	3.33	1318.93	61956.98	1534.72	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
5093	Ft. 17	-43294.11	1716.15	-1130.22	-69.16
	σ <sub>s,c</sub> 15	-47844.83	1661.63	-1169.18	-229.18
	σ <sub>cls,Max</sub> 15	-47844.83	1661.63	-1169.18	-17.38
	σ <sub>cls,Med</sub> 15	-47844.83	1661.63	-1169.18	-10.48
8151	Ft. 17	-39844.11	-1406.05	2158.83	-50.87
	σ <sub>s,c</sub> 15	-44394.83	-1304.23	2235.39	-223.91
	σ <sub>cls,Max</sub> 15	-44394.83	-1304.23	2235.39	-16.81
	σ <sub>cls,Med</sub> 15	-44394.83	-1304.23	2235.39	-9.72
<b>Combinazioni Frequenti</b>					
5093	Ft. 20	-43024.02	1656.48	-1169.74	-69.53
	σ <sub>s,c</sub> 18	-46593.66	1586.89	-1167.93	-222.67
	σ <sub>cls,Max</sub> 18	-46593.66	1586.89	-1167.93	-16.86
	σ <sub>cls,Med</sub> 18	-46593.66	1586.89	-1167.93	-10.21
8151	Ft. 20	-39574.02	-1346.74	2140.41	-52.17
	σ <sub>s,c</sub> 18	-43143.66	-1236.68	2144.50	-216.17
	σ <sub>cls,Max</sub> 18	-43143.66	-1236.68	2144.50	-16.20
	σ <sub>cls,Med</sub> 18	-43143.66	-1236.68	2144.50	-9.45
<b>Combinazioni Quasi Permanenti</b>					
5093	Ft. 22	-42933.99	1636.58	-1182.91	-69.65
	σ <sub>s,c</sub> 21	-46198.53	1561.68	-1167.56	-220.56
	σ <sub>cls,Max</sub> 21	-46198.53	1561.68	-1167.56	-16.69
	σ <sub>cls,Med</sub> 21	-46198.53	1561.68	-1167.56	-10.12
8151	Ft. 22	-39483.99	-1326.97	2134.28	-52.60
	σ <sub>s,c</sub> 21	-42748.53	-1213.86	2114.24	-213.65
	σ <sub>cls,Max</sub> 21	-42748.53	-1213.86	2114.24	-16.00
	σ <sub>cls,Med</sub> 21	-42748.53	-1213.86	2114.24	-9.36

Pilastro: **8151/10190(260A-360A** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
8151	1	-50526.86	-4219.90	-3508.34	0.11

**Comune di Catania**  
**Completamento del piano di risanamento del rione San Berillo**  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
10190	1	-46041.86	6858.75	1762.39	0.14

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	3216.16	61956.98	1936.20	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	3216.16	46467.73	1936.20	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	3216.16	61956.98	1936.20	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
8151	Ft. 17	-31590.70	-2891.40	-2207.02	46.44
	σ <sub>s,c</sub> 15	-36235.35	-2846.77	-2295.39	-252.27
	σ <sub>cls,Max</sub> 15	-36235.35	-2846.77	-2295.39	-20.66
	σ <sub>cls,Med</sub> 15	-36235.35	-2846.77	-2295.39	-8.89
10190	Ft. 17	-28140.71	4575.86	1122.92	259.03
	σ <sub>s,c</sub> 15	-32785.35	4609.08	1155.97	-303.46
	σ <sub>cls,Max</sub> 17	-28140.71	4575.86	1122.92	-28.65
	σ <sub>cls,Med</sub> 17	-28140.71	4575.86	1122.92	-13.16
<b>Combinazioni Frequenti</b>					
8151	Ft. 20	-31666.83	-2827.45	-2182.31	40.90
	σ <sub>s,c</sub> 18	-35380.45	-2737.41	-2198.22	-243.74
	σ <sub>cls,Max</sub> 18	-35380.45	-2737.41	-2198.22	-19.92
	σ <sub>cls,Med</sub> 18	-35380.45	-2737.41	-2198.22	-8.61
10190	Ft. 20	-28216.83	4498.71	1116.86	245.25
	σ <sub>s,c</sub> 18	-31930.45	4442.08	1103.94	-292.78
	σ <sub>cls,Max</sub> 20	-28216.83	4498.71	1116.86	-28.11
	σ <sub>cls,Med</sub> 20	-28216.83	4498.71	1116.86	-12.92
<b>Combinazioni Quasi Permanenti</b>					
8151	Ft. 22	-31692.21	-2806.14	-2174.07	39.12
	σ <sub>s,c</sub> 21	-35118.49	-2699.29	-2165.80	-240.90
	σ <sub>cls,Max</sub> 22	-31692.21	-2806.14	-2174.07	-19.78
	σ <sub>cls,Med</sub> 21	-35118.49	-2699.29	-2165.80	-8.52
10190	Ft. 22	-28242.21	4472.99	1114.84	240.71
	σ <sub>s,c</sub> 21	-31668.49	4383.40	1086.76	-289.12
	σ <sub>cls,Max</sub> 22	-28242.21	4472.99	1114.84	-27.93
	σ <sub>cls,Med</sub> 22	-28242.21	4472.99	1114.84	-12.83

Pilastro: **2398/5711(79-179)** / L 4.10[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 210.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
2398	1	-234534.94	-759.12	3308.35	0.28
5711	1	-228879.94	-960.25	18.64	0.27

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	677.46	61956.98	2504.10	86297.23	ø 10 4br.x2br./15.0
1.13	3.23	676.31	46467.73	2504.10	64722.92	ø 10 4br.x2br./20.0
3.23	4.23	673.90	61956.98	2504.10	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.



**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
2398	Ft. 16	-159950.27	-647.95	2485.04	-464.26
	σ <sub>s,c</sub> 15	-165324.45	-620.37	2385.07	-601.92
	σ <sub>cls,Max</sub> 15	-165324.45	-620.37	2385.07	-41.26
	σ <sub>cls,Med</sub> 15	-165324.45	-620.37	2385.07	-36.21
5711	Ft. 16	-155600.27	-566.87	-13.88	-492.97
	σ <sub>s,c</sub> 15	-160974.45	-639.42	75.09	-550.45
	σ <sub>cls,Max</sub> 15	-160974.45	-639.42	75.09	-37.44
	σ <sub>cls,Med</sub> 15	-160974.45	-639.42	75.09	-35.26
<b>Combinazioni Frequenti</b>					
2398	Ft. 19	-158154.00	-656.71	2518.67	-457.53
	σ <sub>s,c</sub> 18	-159945.25	-647.50	2485.36	-586.75
	σ <sub>cls,Max</sub> 18	-159945.25	-647.50	2485.36	-40.30
	σ <sub>cls,Med</sub> 18	-159945.25	-647.50	2485.36	-35.03
5711	Ft. 20	-155109.27	-715.08	-55.47	-485.96
	σ <sub>s,c</sub> 20	-155109.27	-715.08	-55.47	-533.27
	σ <sub>cls,Max</sub> 20	-155109.27	-715.08	-55.47	-36.38
	σ <sub>cls,Med</sub> 18	-155595.25	-567.22	-13.88	-34.08
<b>Combinazioni Quasi Permanenti</b>					
2398	Ft. 21	-158153.00	-656.62	2518.73	-457.53
	σ <sub>s,c</sub> 21	-158153.00	-656.62	2518.73	-581.70
	σ <sub>cls,Max</sub> 21	-158153.00	-656.62	2518.73	-39.98
	σ <sub>cls,Med</sub> 22	-158560.16	-453.08	2478.33	-34.73
5711	Ft. 22	-154210.16	-695.05	-86.98	-483.13
	σ <sub>s,c</sub> 22	-154210.16	-695.05	-86.98	-530.19
	σ <sub>cls,Max</sub> 22	-154210.16	-695.05	-86.98	-36.16
	σ <sub>cls,Med</sub> 22	-154210.16	-695.05	-86.98	-33.78

Pilastro: **5711/8769 (179-279)** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
5711	1	-187761.63	-4814.53	6061.99	0.26
8769	1	-183276.63	4528.45	-2123.68	0.25

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	2731.32	61956.98	2409.23	86297.23	ø 10 4br.x2br./15.0
1.13	2.32	2731.32	46467.73	2409.23	64722.92	ø 10 4br.x2br./20.0
2.32	3.32	2731.32	61956.98	2409.23	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
5711	Ft. 17	-128830.47	-3341.03	4207.75	-248.16
	σ <sub>s,c</sub> 15	-131666.47	-3288.55	4158.10	-605.22
	σ <sub>cls,Max</sub> 15	-131666.47	-3288.55	4158.10	-44.84
	σ <sub>cls,Med</sub> 15	-131666.47	-3288.55	4158.10	-28.84
8769	Ft. 17	-125380.47	3107.56	-1507.29	-288.43
	σ <sub>s,c</sub> 15	-128216.50	3106.67	-1472.83	-544.18
	σ <sub>cls,Max</sub> 15	-128216.50	3106.67	-1472.83	-40.09

**Comune di Catania**  
 Completamento del piano di risanamento del rione San Berillo  
**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2**  
**Parcheggio interrato - Tabulato di calcolo**

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
	σ <sub>cls,Med</sub> 15	-128216.50	3106.67	-1472.83	-28.08
<b>Combinazioni Frequenti</b>					
5711	Ft. 20	-127535.70	-3233.13	4077.37	-249.47
	σ <sub>s,c</sub> 20	-127535.70	-3233.13	4077.37	-588.57
	σ <sub>cls,Max</sub> 20	-127535.70	-3233.13	4077.37	-43.65
	σ <sub>cls,Med</sub> 18	-127730.27	-3150.55	4003.66	-27.98
8769	Ft. 19	-122969.83	2928.15	-1287.72	-289.81
	σ <sub>s,c</sub> 20	-124085.70	3005.99	-1359.65	-525.55
	σ <sub>cls,Max</sub> 20	-124085.70	3005.99	-1359.65	-38.71
	σ <sub>cls,Med</sub> 18	-124280.27	2972.76	-1333.99	-27.22
<b>Combinazioni Quasi Permanenti</b>					
5711	Ft. 22	-127104.13	-3197.16	4033.91	-249.91
	σ <sub>s,c</sub> 22	-127104.13	-3197.16	4033.91	-585.29
	σ <sub>cls,Max</sub> 22	-127104.13	-3197.16	4033.91	-43.39
	σ <sub>cls,Med</sub> 22	-127104.13	-3197.16	4033.91	-27.84
8769	Ft. 21	-122968.95	2928.13	-1287.72	-289.80
	σ <sub>s,c</sub> 22	-123654.13	2972.13	-1310.44	-522.25
	σ <sub>cls,Max</sub> 22	-123654.13	2972.13	-1310.44	-38.44
	σ <sub>cls,Med</sub> 22	-123654.13	2972.13	-1310.44	-27.08

Pilastro: **8769/10528 (279-379)** / L 3.20[m] / Sezione **2 B 100 [cm]H 40 [cm]**

**Af:** 12 ø 20 Af=37.70 [cm<sup>2</sup>] < 1f20 x 4 V + 3f20 x 2 B + 1f20 x 2 H >

**Staffe:** ø 10 4br.x2br./15.0 x 100.0/ø 10 4br.x2br./20.0 x 120.0/ø 10 4br.x2br./15.0 x 100.0

Verifiche a Presso-Flessione S.L.U.

Nodo	Comb	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	Sd/Sr
8769	1	-157598.31	-6881.11	4298.30	0.24
10528	3	-148720.31	10614.57	-16769.00	0.31

Verifiche a Taglio

Da [m]	A [m]	V <sub>d12</sub> [kg]	V <sub>Rd12</sub> [kg]	V <sub>d13</sub> [kg]	V <sub>Rd13</sub> [kg]	Staffe
0.13	1.13	5164.85	61956.98	6106.39	86297.23	ø 10 4br.x2br./15.0
1.13	2.33	5167.11	46467.73	6106.39	64722.92	ø 10 4br.x2br./20.0
2.33	3.33	5168.99	61956.98	6106.39	86297.23	ø 10 4br.x2br./15.0

Verifiche a Presso-Flessione S.L.E.

Nodo	Combinazione	N [kg]	M <sub>12</sub> [kgm]	M <sub>13</sub> [kgm]	σ [kg/cm <sup>2</sup> ]
<b>Combinazioni Rare</b>					
8769	Ft. 17	-106761.01	-4922.28	2994.48	-145.20
	σ <sub>s,c</sub> 15	-109689.66	-4704.29	2994.63	-559.02
	σ <sub>cls,Max</sub> 17	-106761.01	-4922.28	2994.48	-43.24
	σ <sub>cls,Med</sub> 15	-109689.66	-4704.29	2994.63	-24.03
10528	Ft. 17	-103311.01	7173.94	-11403.93	113.73
	σ <sub>s,c</sub> 17	-103311.01	7173.94	-11403.93	-774.86
	σ <sub>cls,Max</sub> 17	-103311.01	7173.94	-11403.93	-62.54
	σ <sub>cls,Med</sub> 17	-103311.01	7173.94	-11403.93	-25.51
<b>Combinazioni Frequenti</b>					
8769	Ft. 20	-106763.16	-4809.84	2921.13	-149.98
	σ <sub>s,c</sub> 20	-106763.16	-4809.84	2921.13	-551.57
	σ <sub>cls,Max</sub> 20	-106763.16	-4809.84	2921.13	-42.78
	σ <sub>cls,Med</sub> 18	-106912.53	-4523.42	2891.48	-23.42
10528	Ft. 20	-103313.16	7077.91	-11275.76	105.57

**Comune di Catania**

Completamento del piano di risanamento del rione San Berillo

**PROGETTO ESECUTIVO – OPERE DI URBANIZZAZIONE PRIMARIA – Vp1 e Vp2***Parcheggio interrato - Tabulato di calcolo*

<b>Nodo</b>	<b>Combinazione</b>	<b>N [kg]</b>	<b>M<sub>12</sub> [kgm]</b>	<b>M<sub>13</sub> [kgm]</b>	<b>σ [kg/cm<sup>2</sup>]</b>
<b>Combinazioni Rare</b>					
	σ <sub>s,c</sub> 20	-103313.16	7077.91	-11275.76	-768.20
	σ <sub>cls,Max</sub> 20	-103313.16	7077.91	-11275.76	-61.92
	σ <sub>cls,Med</sub> 20	-103313.16	7077.91	-11275.76	-25.36
<b>Combinazioni Quasi Permanenti</b>					
8769	Ft. 22	-106763.88	-4772.36	2896.68	-151.57
	σ <sub>s,c</sub> 22	-106763.88	-4772.36	2896.68	-549.98
	σ <sub>cls,Max</sub> 22	-106763.88	-4772.36	2896.68	-42.63
	σ <sub>cls,Med</sub> 22	-106763.88	-4772.36	2896.68	-23.38
10528	Ft. 22	-103313.88	7045.90	-11233.04	102.88
	σ <sub>s,c</sub> 22	-103313.88	7045.90	-11233.04	-765.99
	σ <sub>cls,Max</sub> 22	-103313.88	7045.90	-11233.04	-61.71
	σ <sub>cls,Med</sub> 22	-103313.88	7045.90	-11233.04	-25.31