S. Francisc	00												
Terms of Daily	Use weekly	Saltuario		Abandoned		Busy hours							
Position Isolated	In aggregate	e Low-rise buildings		Extremities or corner									
Level of n	naintenance.												
Awful	Expiring	Reasonable	-	Good		Crack pattern i			ar crack	pattern in	the side v	ault - Crus	sh and / o
Typologic	al and dimensional d	lata											
Damage a	and vulnerabilty inde	x											
				1- OVERTUR	NING O	F THE FACADE	E	1					
Vulnerability	yes no yes no yes no	Aseismatic presidi Presence of longitudinal Presence of effective ele Good quality of scarf be Indicators of vulnerabili Presence of thrusted ele Presence of large openi	ements of tween the ty ements	e facade and the	walls of	the nave							
Эе	Current	Detach of the facade from											
Damage	Old	Detach of the facade from											
		1						l .					
	voc no	Aseismatic presidi		2- OVERTUR	NING C	OF THE GABLE							
Vulnerability	yes no	Presence of links with ti Presence of groundwate Presence of orizzontal le	er braces edge	erage									
Vulnei	yes no	Indicators of vulnerabili Presence of large openin Presence of a top sailing Rigid beam filled in c.a.	ngs (rose g with a la	arge size and wei	ight								
age	Current	Inclined crack pattern (shear) - v	ertical crack patt	tern - Ro	tation of main co	uple						
Damage	Old	Inclined crack pattern (shear) - v	ertical crack patt	tern - Ro	tation of main co	uple						

Denomination of the church

		3- MECHANISMS IN PLAN OF FACADE			
Vulnerability	yes no	Aseismatic presidi Presence of chains in counter Side contrast provided by bodies or smeli facade inserted in aggregate			
Vulne	yes no	<u>Indicators of vulnerability</u> Presence of large openings (also curtain wall) High slenderness (ratio height / width			
Damage	Current	Inclined crack pattern (shear) - vertical crack pattern - Other cracks			
Dam	Old	Inclined crack pattern (shear) - vertical crack pattern - Other cracks			
	•				
		4- PROTHYRUM - NARTHEX			
ability	yes no	Aseismatic presidi Presence of chains Presence of columns, piers with adequate stiffness			
Vulnerability	yes no	Indicators of vulnerability Presence of pushing elements (arch, vault)			
age	Current	Crack pattern in the entablature for rotation of the columns - Detach comprehensive from the facade - Pounding of the protiro- Arches damaged			
Damage	Old	Crack pattern in the entablature for rotation of the columns - Detach comprehensive from the facade - Pounding of the protiro- Arches damaged			
		5- TRANSVERSAL ANSWER OF THE HALL			
	yes no	Aseismatic presidi			
ability		Presence of external buttresses Presence of adjacent bodies annexes Presence of transversal chains			
Vulnerability	yes no	Indicators of vulnerability Presence of walls with high slenderness Presence of vault and arches (The vault is pretended)			
lage	Current	Crack pattern in the arches (with the possible continuation in the vault) - Rotazioni wall - shear carck pattern in the vault - Out of lead and crushing columns			
Damage	Old	Crack pattern in the arches (with the possible continuation in the vault) - Rotazioni wall -			

		6- SHEAR MECHANISMS IN SIDE WAALS (LONGITUDINAL ANSW	/ER)			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)				
Vulner	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC.				
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity				
Daπ	Old	Inclined crack (single or cross) - Crack through local discontinuity				
		7- LONGITUDINAL ANSWER OF THE COLONNADE OF CHURCHES WITH	STDE ATO	: E		
	yes no	Aseismatic presidi	SIDE AIS	<u> </u>		
Vulnerability		Presence of longitudinal chains Presence of buttresses in front or body appendages				
	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in c.a, heavy coverage in c.a.				
Damage	Current	Crack pattern in the arches - shear crack pattern in the side vault - Crush and / or crack on the base of the columns				
Dam	Old	Crack pattern in the arches - shear crack pattern in the side vault - Crush and / or crack on the base of the columns				
		8- VAULT OF CENTRAL AISLE				
		(The vault is not carryng)				
ability	yes no	Aseismatic presidi Presence of chains into effective place				
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension				
lage	Current	Crack pattern in the vault or disconnections				
Damage	Old	Crack pattern in the vault aisle or disconnections				

	9- VAULT OF SIDE AISLES (The vault is not carryng)											
ability	yes no	Aseismatic presidi Presence of chains into effective place										
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension										
amage	Current	Crack pattern in the vault or disconnections										
Dam	Old	Crack pattern in the vault or disconnections										
	10- OVERTURNING OF THE END WALLS OF TRANSEPT (The transept is not presented)											
Vulnerability	yes no	Aseismatic presidi Presence of longitudinal chains Presence of effective elements of contrast (buttresses, smeli bodies, other buildings) Good connection with the coverage (beam-chains, controventi) Good interaction between the front wall and side walls Presence of orizzontal ledge (reticular metal, masonry army, about subtle)										
>	yes no	Indicators of vulnerability Presence, beams filled AC, heavy coverage Presence of large openings in the front wall (rosette), or in those side Presence of a gable wall with a great size and weight										
age	Current	Detach of the front wall from the side walls or overtuning in the top										
Damag	Old	Detach of the front wall from the side walls or overtuning in the top										

		11- SHEAR MECHANISM IN THE WALL OF THE TRANSEPT (The transept is not presented)			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army) Indicators of vulnerability		-	-
		Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
Daπ	Old	Inclined crack (single or cross) - Crack through local discontinuity			
		12- VAULT OF THE TRANSEPT (The transept is not presented)			
ability	yes no	Aseismatic presidi Presence of chains into effective place			
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension			
Damage	Current	Crack pattern in the vault or disconnections			
Раπ	Old	Crack pattern in the vault or disconnections			
		13- TRIUMPHAL ARCH (The triumphal arch is not presented)			
Vulnerability	yes no	Aseismatic presidi Effective enforcement walls (ratio light/width nave) Presence of chains Good ashlar or appropriate thickness Presence of tympanum			
Vulner	yes no	Indicators of vulnerability Presence of heavy coverage in AC Presence of dome or lantern			
Damage	Current	Crack in the arch - creep of ashlar - Crush on the base of piers			
Darr	Old	Crack in the arch - creep of ashlar - Crush on the base of piers			

			14- DOME AND THE TIBURIO (We consider the 3 dome under the bell tower)			
Vulnerability	yes	no	Aseismatic presidi Presence of reinforcement ring, even at multiple levels Presence of external buttresses in the drume Dome directly set on triumphal arches (no drum)			
	yes	no	Indicators of vulnerability Presence of heavy coverage in AC Presence of large openings in drum Presence of concentrated loads transmitted from the coverage			
amage	Current	:	Crack in the dome with possible prosecution in drum (Crack alog the meridian of central dome) Crack in the dome with possible prosecution in drum			
Da	Old		(Crack alog the meridian of central dome)			
			15- LANTERN (The lantern is not presented)			
Vulnerability	yes	no	Aseismatic presidi Presence of external reinforcement ring Presence of external buttresses Size contained compared to those of dome			
Vuln	yes I	no	Indicators of vulnerability Lantern with high slenderness, with large openings and small pillars			
Damage	Current		Crack in the dome of lantern - Rotazioni of piers			
Darr	Old		Crack in the dome of lantern - Rotazioni of piers			

	-	16- OVERTURNING OF THE APSE	 	 	
ability	yes no	Aseismatic presidi Presence of reinforcement ring, of chains Presence of external buttresses in the drume Presence of braced coverage not pusher		88.88	-
Vulnerability	yes no	Indicators of vulnerability Presence of strong weakening for the presence of openings in the walls Presence of pushing vault Presence of heavy coverage, strut of pitch in AC			
Damage	Current	Inclined or vertical crack in the wall of the apse			
Dam	Old	Inclined or vertical crack in the wall of the apse			
		17- SHEAR MECHANISM IN THE WALL OF THE APSE			
ability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)			
Vulnerability	yes no	<u>Indicators of vulnerability</u> Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
amage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
Jam	Old	Inclined crack (single or cross) - Crack through local discontinuity			

		18- VAULT OF APSE (The vault is not carryng)			
ability	yes no	Aseismatic presidi Presence of chains into effective place			
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension			
Damage	Current	Crack pattern in the vault or disconnections			
Dam	Old	Crack pattern in the vault aisle or disconnections			
		19- MECHANISMS OF ELEMENTS IN COVERAGE - SIDE WALLS S	IDE		
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
Vuli	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage			
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			

		20- MECHANISMS OF ELEMENTS IN COVERAGE - TRANSEPT			
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage			
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
		21- MECHANISMS OF ELEMENTS IN COVERAGE - APSE			
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
Vul	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage			
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			

	22- OVERTURNING OF THE CHAPEL (The chapel is not presented)											
Vulnerability	yes	no	Aseismatic presidi Presence of reinforcement ring, of chains Presence of external buttresses in the drume Presence of good connections between frontal wall and side walls									
Vulr	yes	no	Indicators of vulnerability Presence of strong weakening for the presence of openings in the walls									
amage	Current		Detach from the frontal wall to the side walls									
Darr	Old		Detach from the frontal wall to the side walls									
			23- SHEAR MECHANISM IN THE WALL OF THE CHAPEL (The chapel is not presented)									
ability	yes	no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)									
Vulnerability	yes	no	<u>Indicators of vulnerability</u> Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC									
age	Current		Inclined crack (single or cross) - Crack through local discontinuity									
Damage	Old		Inclined crack (single or cross) - Crack through local discontinuity									

		24- VAULT OF THE CHAPEL (The chapel is not presented)			
ability	yes no	Aseismatic presidi Presence of chains into effective place			
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension			
Damage	Current	Crack pattern in the vault or disconnections			
Dam	Old	Crack pattern in the vault or disconnections			
		25- INTERACTIONS NEAR OF PLANO-ALTIMETRIC IRREGULARIT	ΓIES		
ability	yes no	Aseismatic presidi Presence of chains Presence of an adequate connection between the walls of different stages			
Vulnerability	yes no	Indicators of vulnerability Presence of high stiffness difference between the two bodies Possible actions transmitted from Relay			
age	Current	Movement of the joint or crack in the masonry for hammering - vertical crack in the less rigid body - Rotation in the highest body			
Damage	Old	Movement of the joint or crack in the masonry for hammering - vertical crack in the less rigid body - Rotation in the highest body			
		26- OVERHANG (GABLE - SPIRES - PINNACLES - STATUTES))		
Vulnerability	yes no	Aseismatic presidi Presence of pins link with masonry or elements of restraint Elements with limited importance and size Monolithic masonry (a squared or otherwise of good quality)			
Vulner	yes no	Indicators of vulnerability Elements with high slenderness Asymmetric location respect to the underlying element			
Damage	Current	Elevated permanent rotations or slide			
Darr	Old	Elevated permanent rotations or slide			

		27- BELL TOWER			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence chains Presence of adequate distance from the walls of the church (where adjacent) Presence good connection with the walls of the church (if incorporated)			
	yes no	Indicators of vulnerability Presence of significant openings on multiple levels Constraint on asymmetrical walls to the base station (tower incorporated) Masonry low to the ground on some sides (for porch), tower building on pillars			
Damage	Current	Crack near the detachment from the body of the church - shear crack or slider - vertical crack (expulsion of one or more corners)			
Dam	Old	Crack near the detachment from the body of the church - shear crack or slider - vertical crack (expulsion of one or more corners)			
		28- BELL CELL			
ability	yes no	Aseismatic presidi Presence of piece piers Presence of chains or reinforcemenet ring			
Vulnerability	yes no	Indicators of vulnerability Presence of heavy coverage or other significant masses Presence coverage Pusher			
Damage	Current	Crack in the arches - rotation or sliding of piers			
Dam	Old	Crack in the arches - rotation or sliding of piers			

NON SEISMIC DAMAGE

	A- FOUNDATION SETTLEMENT					
Damage	Inclined crack 45° - vertical crack - rotation					
macroelement	front wall side walls transept apse	bell tower				
·						
	Inclined crack 45° - vertical crack - rotation					
Damage	Detach of masonry walls - extended vertical crack for crushing stress					
macroelement	front wall side walls transept apse	bell tower				
	C- ROTATION OF WALLS					
Damage	Out of plumb					
macroelement	front wall side walls transept apse	bell tower				

Denomin Les Herma	ation of the church anitas				
Terms of Daily	Use weekly	Saltuario Abandoned Busy hours			
Position Isolated	In aggrega	te Low-rise Extremities buildings or corner			
Level of r	maintenance.				
Awful	Expiring	Reasonable Good			
Typologic	cal and dimensional	data			
Damage a	and vulnerabilty inde	ex			
		1- OVERTURNING OF THE FACADE			
rability	yes no	Aseismatic presidi Presence of longitudinal chains Presence of effective elements of contrast (buttress, other building) Good quality of scarf between the facade and the walls of the nave			
Position Isolated Level of main Awful Typological a Damage and Y Y Y Y Y Y Y Y Y Y Y Y Y	yes no	Indicators of vulnerability Presence of thrusted elements Presence of large openings in the side walls near the cantonal			
age	Current	Detach of the facade from the walls or clear off lead			
Dam	Old	Detach of the facade from the walls or clear off lead			
		2- OVERTURNING OF THE GABLE			
ability	yes no	Aseismatic presidi Presence of links with timely coverage Presence of groundwater braces Presence of orizzontal ledge			
Vulnera	yes no	Indicators of vulnerability Presence of large openings (rosette) Presence of a top sailing with a large size and weight Rigid beam filled in c.a. Heavy coverage in c.a.			
lage	Current	Inclined crack pattern (shear) - vertical crack pattern - Rotation of main couple			
Dam	Old	Inclined crack pattern (shear) - vertical crack pattern - Rotation of main couple			

		3- MECHANISMS IN PLAN OF FACADE			
Vulnerability	yes no	Aseismatic presidi Presence of chains in counter Side contrast provided by bodies or smeli facade inserted in aggregate			
Vulne	yes no	Indicators of vulnerability Presence of large openings (also curtain wall) High slenderness (ratio height / width			
Damage	Current	Inclined crack pattern (shear) - vertical crack pattern - Other cracks			
Оап	Old	Inclined crack pattern (shear) - vertical crack pattern - Other cracks			
		4- PROTHYRUM - NARTHEX (The prothyrum is not presented)			
ability	yes no	Aseismatic presidi Presence of chains Presence of columns, piers with adequate stiffness			
Vulnerability	yes no	Indicators of vulnerability Presence of pushing elements (arch, vault)			
age	Current	Crack pattern in the entablature for rotation of the columns - Detach comprehensive from the facade - Pounding of the protiro- Arches damaged			
Damage	Old	Crack pattern in the entablature for rotation of the columns - Detach comprehensive from the facade - Pounding of the protiro- Arches damaged			
	1	5- TRANSVERSAL ANSWER OF THE HALL			
ability	yes no	Aseismatic presidi Presence of external buttresses Presence of adjacent bodies annexes Presence of transversal chains			
Vulnerability	yes no	Indicators of vulnerability Presence of walls with high slenderness Presence of vault and arches (The vault is pretended)			
Damage	Current	Crack pattern in the arches (with the possible continuation in the vault) - Rotazioni wall - shear carck pattern in the vault - Out of lead and crushing columns			
Darr	Old	Crack pattern in the arches (with the possible continuation in the vault) - Rotazioni wall - shear carck pattern in the vault - Out of lead and crushing columns			

	1	6- SHEAR MECHANISMS IN SIDE WAALS (LONGITUDINAL ANSW	ER)			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)				
Vulner	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC.				
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity				
Рап	Old	Inclined crack (single or cross) - Crack through local discontinuity				
		7- LONGITUDINAL ANSWER OF THE COLONNADE OF CHURCHES WITH S	STDE ATS	il F		
	yes no	Aseismatic presidi	SIDL AIS	<u>'LL</u>		
ability		Presence of longitudinal chains Presence of buttresses in front or body appendages				
Vulnerability	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in c.a, heavy coverage in c.a.				
Damage	Current	Crack pattern in the arches - shear crack pattern in the side vault - Crush and / or crack on the base of the columns				
Darr	Old	Crack pattern in the arches - shear crack pattern in the side vault - Crush and / or crack on the base of the columns				
		8- VAULT OF CENTRAL AISLE				
ability	yes no	Aseismatic presidi Presence of chains into effective place				
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension				
Damage	Current	Crack pattern in the vault or disconnections				
Darr	Old	Crack pattern in the vault aisle or disconnections				

	9- VAULT OF SIDE AISLES											
	1											
>-	yes no	Aseismatic presidi Presence of chains into effective place										
Vulnerability												
- lue	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage										
>		Presence of lunette with high dimension										
amage	Current	Crack pattern in the vault or disconnections										
Dam	Old	Crack pattern in the vault or disconnections										
		10- OVERTURNING OF THE END WALLS OF TRANSEPT										
	yes no	Aseismatic presidi										
		Presence of longitudinal chains										
		Presence of effective elements of contrast (buttresses, smell bodies, other buildings)										
l jë		Good connection with the coverage (beam-chains, controventi)										
rat		Good interaction between the front wall and side walls										
Vulnerability		Presence of orizzontal ledge (reticular metal, masonry army, about subtle)										
>	yes no	Indicators of vulnerability										
		Presence, beams filled AC, heavy coverage										
		Presence of large openings in the front wall (rosette), or in those side Presence of a gable wall with a great size and weight										
lage	Current	Detach of the front wall from the side walls or overtuning in the top										
Damage	Old	Detach of the front wall from the side walls or overtuning in the top										

		11- SHEAR MECHANISM IN THE WALL OF THE TRANSEPT			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)			
Vulne	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
Dan	Old	Inclined crack (single or cross) - Crack through local discontinuity			
		12- VAULT OF THE TRANSEPT			
		Tautomatic contra	 	 	
Vulnerability	yes no	Aseismatic presidi Presence of chains into effective place			
Vulner	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension			
Damage	Current	Crack pattern in the vault or disconnections			
Darr	Old	Crack pattern in the vault or disconnections			
		13- TRIUMPHAL ARCH			
Vulnerability	yes no	Aseismatic presidi Effective enforcement walls (ratio light/width nave) Presence of chains Good ashlar or appropriate thickness Presence of tympanum			
Vulne	yes no	Indicators of vulnerability Presence of heavy coverage in AC Presence of dome or lantern			
Damage	Current	Crack in the arch - creep of ashlar - Crush on the base of piers			
— Dan	Old	Crack in the arch - creep of ashlar - Crush on the base of piers			

		14- DOME AND THE TIBURIO			
Vulnerability	yes no	Aseismatic presidi Presence of reinforcement ring, even at multiple levels Presence of external buttresses in the drume Dome directly set on triumphal arches (no drum)			
	yes no	Indicators of vulnerability Presence of heavy coverage in AC Presence of large openings in drum Presence of concentrated loads transmitted from the coverage			
amage	Current	Crack in the dome with possible prosecution in drum (Crack alog the meridian of central dome)			
Dam	Old	Crack in the dome with possible prosecution in drum (Crack alog the meridian of central dome)			
		15- LANTERN			
Vulnerability	yes no	Aseismatic presidi Presence of external reinforcement ring Presence of external buttresses Size contained compared to those of dome			
	yes no	Indicators of vulnerability Lantern with high slenderness, with large openings and small pillars			
Damage	Current	Crack in the dome of lantern - Rotazioni of piers			
Darr	Old	Crack in the dome of lantern - Rotazioni of piers			

		16- OVERTURNING OF THE APSE		 	
ability	yes no	Aseismatic presidi Presence of reinforcement ring, of chains Presence of external buttresses in the drume Presence of braced coverage not pusher			
Vulnerability	yes no	Indicators of vulnerability Presence of strong weakening for the presence of openings in the walls Presence of pushing vault Presence of heavy coverage, strut of pitch in AC			
lage	Current	Inclined or vertical crack in the wall of the apse			
Damage	Old	Inclined or vertical crack in the wall of the apse			
		17- SHEAR MECHANISM IN THE WALL OF THE APSE			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)			
Vulner	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
lage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
Damage	Old	Inclined crack (single or cross) - Crack through local discontinuity			

		18- VAULT OF APSE							
ability	yes no	Aseismatic presidi Presence of chains into effective place							
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension							
age	Current	Crack pattern in the vault or disconnections							
Damage	Old	Crack pattern in the vault aisle or disconnections							
	19- MECHANISMS OF ELEMENTS IN COVERAGE - SIDE WALLS SIDE								
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage							
	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage							
lage	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the							
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the							

		20- MECHANISMS OF ELEMENTS IN COVERAGE - TRANSEPT			
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
n/	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage			
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
		21- MECHANISMS OF ELEMENTS IN COVERAGE - APSE			
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
Vul	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage			
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			

		22- OVERTURNING OF THE CHAPEL (The chapel is not presented)			
Vulnerability	yes no	Aseismatic presidi Presence of reinforcement ring, of chains Presence of external buttresses in the drume Presence of good connections between frontal wall and side walls			
	yes no	Indicators of vulnerability Presence of strong weakening for the presence of openings in the walls			
Damage	Current	Detach from the frontal wall to the side walls			
Dam	Old	Detach from the frontal wall to the side walls			
		23- SHEAR MECHANISM IN THE WALL OF THE CHAPEL (The chapel is not presented)			
ability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)			
Vulnerability	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
	Old	Inclined crack (single or cross) - Crack through local discontinuity			

24- VAULT OF THE CHAPEL (The chapel is not presented)											
ability	yes no	Aseismatic presidi Presence of chains into effective place									
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension									
Damage	Current	Crack pattern in the vault or disconnections									
Dam	Old	Crack pattern in the vault or disconnections									
		25- INTERACTIONS NEAR OF PLANO-ALTIMETRIC IRREGULARIT	TES								
ability	yes no	Aseismatic presidi Presence of chains Presence of an adequate connection between the walls of different stages									
Vulnerability	yes no	Indicators of vulnerability Presence of high stiffness difference between the two bodies Possible actions transmitted from Relay									
amage	Current	Movement of the joint or crack in the masonry for hammering - vertical crack in the less rigid body - Rotation in the highest body									
Dam	Old	Movement of the joint or crack in the masonry for hammering - vertical crack in the less rigid body - Rotation in the highest body									

	26- OVERHANG (GABLE - SPIRES - PINNACLES - STATUTES)											
Vulnerability	yes no	Aseismatic presidi Presence of pins link with masonry or elements of restraint Elements with limited importance and size Monolithic masonry (a squared or otherwise of good quality)										
	yes no	Indicators of vulnerability Elements with high slenderness Asymmetric location respect to the underlying element										
amage	Current	Elevated permanent rotations or slide										
Dam	Old	Elevated permanent rotations or slide										
		27- BELL TOWER (The bell tower is not presented)										
ability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence chains Presence of adequate distance from the walls of the church (where adjacent) Presence good connection with the walls of the church (if incorporated)										
Vulnerability	yes no	Indicators of vulnerability Presence of significant openings on multiple levels Constraint on asymmetrical walls to the base station (tower incorporated) Masonry low to the ground on some sides (for porch), tower building on pillars										
age	Current	Crack near the detachment from the body of the church - shear crack or slider - vertical crack (expulsion of one or more corners)										
Damage	Old	Crack near the detachment from the body of the church - shear crack or slider - vertical crack (expulsion of one or more corners)										

						28 (The bell to	8- BELL (ower is n		ed)			
ability	yes	no		<i>presidi</i> f piece piers f chains or rei	nforceme			•	•			
Vulnerability	yes	no	Presence of	<i>of vulnerabilit</i> f heavy cover overage Pusho	age or oth	ner significant r	nasses					
age	С	urrent	Crack in the	e arches - rot	ation or sl	liding of piers						
Damage		Old	Crack in the	e arches - rot	ation or sl	liding of piers						
NON SEISMIC DAMAGE A- FOUNDATION SETTLEMENT Damage Inclined crack 45° - vertical crack - rotation												
			B- CR	USHING OF	WALLS	·		· ·			 · · · · · · · · · · · · · · · · · · ·	
Damage		Detach of r				ack for crushing	g stress					
macroelen	nent	front wall		side walls		transept		apse		bell tower		
			C- RO	TATION OF	WALLS							
Damage		Out of plun	nb									
macroelen	nent	front wall		side walls		transept		apse		bell tower		

Denomir Matriz	nation of the church												
Terms of Daily	f Use weekly		Saltuario		Abandoned		Busy hours						
Position Isolated		te 🔲	Low-rise buildings		Extremities or corner	-							
Level of	maintenance.												
Awful	Expiring		Reasonable		Good								
Typological and dimensional data													
	and vulnerabilty ind												
					1- OVERTUR	NING O	F THE FACA	DE					
Vulnerability	yes no	Presence Presence Good qu	tic presidi e of longitudinal e of effective eler ality of scarf bet	ments of ween the									
Vulne	yes no	Presence	rs of vulnerability e of thrusted eler e of large openin	ments	side walls near	the canto	nal						
age	Current	Detach o	of the facade from	n the wa	ills or clear off le	ad							
Damage	Old	Detach o	of the facade from	m the wa	ills or clear off le	ad							
					2- OVERTUR	NINCO	E THE CARI	_					
Vulnerability	yes no	Presence Presence	tic presidi e of links with tin e of groundwater e of orizzontal lec	braces		MING O	r IIIL GADI	<u>- </u>					
	yes no	Indicator Presence Presence	rs of vulnerability e of large opening of a top sailing am filled in c.a. I	<u>/</u> gs (roset with a la	irge size and wei	ight							
age	Current		crack pattern (sl			tern - Rot	ation of main	couple					
Jamage	Old	Inclined	crack pattern (sl	hear) - v	ertical crack patt	tern - Rot	ation of main	couple					

		3- MECHANISMS IN PLAN OF FACADE				
Vulnerability	yes no	Aseismatic presidi Presence of chains in counter Side contrast provided by bodies or smeli facade inserted in aggregate				
Vulne	yes no	Indicators of vulnerability Presence of large openings (also curtain wall) High slenderness (ratio height / width				
Damage	Current	Inclined crack pattern (shear) - vertical crack pattern - Other cracks				
Dam	Old	Inclined crack pattern (shear) - vertical crack pattern - Other cracks				
		4- PROTHYRUM - NARTHEX (The prothyrum is not presented)				
ability	yes no	Aseismatic presidi Presence of chains Presence of columns, piers with adequate stiffness				
Vulnerability	yes no	Indicators of vulnerability Presence of pushing elements (arch, vault)				
age	Current	Crack pattern in the entablature for rotation of the columns - Detach comprehensive from the facade - Pounding of the protiro- Arches damaged				
Damage	Old	Crack pattern in the entablature for rotation of the columns - Detach comprehensive from the facade - Pounding of the protiro- Arches damaged				
		5- TRANSVERSAL ANSWER OF THE HALL	 			
ability	yes no	Aseismatic presidi Presence of external buttresses Presence of adjacent bodies annexes Presence of transversal chains				
Vulnerability	yes no	Indicators of vulnerability Presence of walls with high slenderness Presence of vault and arches (The vault is pretended)				
age	Current	Crack pattern in the arches (with the possible continuation in the vault) - Rotazioni wall - shear carck pattern in the vault - Out of lead and crushing columns				
Damage	Old	Crack pattern in the arches (with the possible continuation in the vault) - Rotazioni wall - shear carck pattern in the vault - Out of lead and crushing columns				

		6- SHEAR MECHANISMS IN SIDE WAALS (LONGITUDINAL ANSW	/ER)			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality (Adobe) Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)				
Vulner	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC.				
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity				
Рап	Old	Inclined crack (single or cross) - Crack through local discontinuity				
		7 LONGITUDINAL ANGWED OF THE COLONNADE OF CHURCHES WITH	CIDE ATC			
	yes no	7- LONGITUDINAL ANSWER OF THE COLONNADE OF CHURCHES WITH Aseismatic presidi	SIDE AIS	<u>LE</u>		
Vulnerability		Presence of longitudinal chains Presence of buttresses in front or body appendages				
Vulner	yes no	Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in c.a, heavy coverage in c.a.				
Damage	Current	Crack pattern in the arches - shear crack pattern in the side vault - Crush and / or crack on the base of the columns				
Dam	Old	Crack pattern in the arches - shear crack pattern in the side vault - Crush and / or crack on the base of the columns				
		8- VAULT OF CENTRAL AISLE				
		(The vault is not carryng)				
ability	yes no	Aseismatic presidi Presence of chains into effective place				
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension				
lage	Current	Crack pattern in the vault or disconnections				
Damage	Old	Crack pattern in the vault aisle or disconnections				

9- VAULT OF SIDE AISLES (The vault is not carryng)											
ability	yes no	Aseismatic presidi Presence of chains into effective place									
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension									
Damage	Current	Crack pattern in the vault or disconnections									
Dam	Old	Crack pattern in the vault or disconnections									
10- OVERTURNING OF THE END WALLS OF TRANSEPT											
		(The transept is not presented)									
Vulnerability	yes no	Aseismatic presidi Presence of longitudinal chains Presence of effective elements of contrast (buttresses, smeli bodies, other buildings) Good connection with the coverage (beam-chains, controventi) Good interaction between the front wall and side walls Presence of orizzontal ledge (reticular metal, masonry army, about subtle)									
>	yes no	Indicators of vulnerability Presence, beams filled AC, heavy coverage Presence of large openings in the front wall (rosette), or in those side Presence of a gable wall with a great size and weight									
Damage	Current	Detach of the front wall from the side walls or overtuning in the top									
Darr	Old	Detach of the front wall from the side walls or overtuning in the top									

		11- SHEAR MECHANISM IN THE WALL OF THE TRANSEPT (The transept is not presented)			
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army) Indicators of vulnerability		-	-
		Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
Damage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
Daπ	Old	Inclined crack (single or cross) - Crack through local discontinuity			
		12- VAULT OF THE TRANSEPT (The transept is not presented)			
ability	yes no	Aseismatic presidi Presence of chains into effective place			
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension			
Damage	Current	Crack pattern in the vault or disconnections			
Раπ	Old	Crack pattern in the vault or disconnections			
		13- TRIUMPHAL ARCH (The triumphal arch is not presented)			
Vulnerability	yes no	Aseismatic presidi Effective enforcement walls (ratio light/width nave) Presence of chains Good ashlar or appropriate thickness Presence of tympanum			
Vulner	yes no	Indicators of vulnerability Presence of heavy coverage in AC Presence of dome or lantern			
Damage	Current	Crack in the arch - creep of ashlar - Crush on the base of piers			
Darr	Old	Crack in the arch - creep of ashlar - Crush on the base of piers			

		14- DOME AND THE TIBURIO (We consider the 3 dome under the bell tower)			
Vulnerability	yes no	Aseismatic presidi Presence of reinforcement ring, even at multiple levels Presence of external buttresses in the drume Dome directly set on triumphal arches (no drum)			
	yes no	Indicators of vulnerability Presence of heavy coverage in AC Presence of large openings in drum Presence of concentrated loads transmitted from the coverage			
amage	Current	Crack in the dome with possible prosecution in drum (Crack alog the meridian of central dome)			
Dam	Old	Crack in the dome with possible prosecution in drum (Crack alog the meridian of central dome)			
		15- LANTERN (The lantern is not presented)			
Vulnerability	yes no	Aseismatic presidi Presence of external reinforcement ring (internal reinforcement) Presence of external buttresses Size contained compared to those of dome			-
Vulr	yes no	Indicators of vulnerability Lantern with high slenderness, with large openings and small pillars			
lage	Current	Crack in the dome of lantern - Rotazioni of piers			
Damage	Old	Crack in the dome of lantern - Rotazioni of piers			

	-	16- OVERTURNING OF THE APSE	 	 	<u> </u>
ability	yes no	Aseismatic presidi Presence of reinforcement ring, of chains Presence of external buttresses in the drume Presence of braced coverage not pusher			
Vulnerability	yes no	Indicators of vulnerability Presence of strong weakening for the presence of openings in the walls Presence of pushing vault Presence of heavy coverage, strut of pitch in AC			
Damage	Current	Inclined or vertical crack in the wall of the apse			
Dam	Old	Inclined or vertical crack in the wall of the apse			
		17- SHEAR MECHANISM IN THE WALL OF THE APSE			
ability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army)			
Vulnerability	yes no	<u>Indicators of vulnerability</u> Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC			
amage	Current	Inclined crack (single or cross) - Crack through local discontinuity			
Jam	Old	Inclined crack (single or cross) - Crack through local discontinuity			

		18- VAULT OF APSE (The vault is not carryng)			
ability	yes no	Aseismatic presidi Presence of chains into effective place			
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension			
Damage	Current	Crack pattern in the vault or disconnections			
Daπ	Old	Crack pattern in the vault aisle or disconnections			
		19- MECHANISMS OF ELEMENTS IN COVERAGE - SIDE WALLS S	IDE		
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
\n\	yes no	<u>Indicators of vulnerability</u> Presence of pushing coverage Presence of orizzontal ledge, heavy coverage			
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the			
		20- MECHANISMS OF ELEMENTS IN COVERAGE - TRANSEPT			
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage			
[¬] >	yes no	Indicators of vulnerability Presence of pushing coverage			

	Presence of orizzontal ledge, heavy coverage					
Damage	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the				
Dan	Old Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the					
		21- MECHANISMS OF ELEMENTS IN COVERAGE - APSE				
Vulnerability	yes no	Aseismatic presidi Presence of orizzontal ledge in AC Presence of local link between beams and walls Presence of braced pitch Presence of good connections between the elements of warping coverage				
	yes no	Indicators of vulnerability Presence of pushing coverage Presence of orizzontal ledge, heavy coverage				
age	Current	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the				
Damage	Old	Crack near to the heads of wooden beams, sliding them - connectionless between beam and masonry - Movements significant mantle - connectionless and movements among the				
		22- OVERTURNING OF THE CHAPEL (The chapel is not presented)				
Vulnerability	yes no	Aseismatic presidi Presence of reinforcement ring, of chains Presence of external buttresses in the drume Presence of good connections between frontal wall and side walls				
	yes no	<u>Indicators of vulnerability</u> Presence of strong weakening for the presence of openings in the walls				
Damage	Current	Detach from the frontal wall to the side walls				
Рап	Old	Detach from the frontal wall to the side walls				

23- SHEAR MECHANISM IN THE WALL OF THE CHAPEL (The chapel is not presented)							
Vulnerability	yes no	Aseismatic presidi Masonry uniform (the only constructive phase) and of good quality Presence of good openings architraves Presence of orizzontal ledge (reticular metal, masonry army) Indicators of vulnerability Presence of large openings (buffered), wall with restricted thickness Orizzontal ledge in AC, heavy coverage in AC					
amage	Current	Inclined crack (single or cross) - Crack through local discontinuity					
Dam	Old	Inclined crack (single or cross) - Crack through local discontinuity					
	yes no	24- VAULT OF THE CHAPEL (The chapel is not presented) Aseismatic presidi					
>:	yes no	Aseismatic presidi Presence of chains into effective place					
erabili		Indicateur of code and billion					
Vulnerability	yes no	Indicators of vulnerability Presence of concentrated loads transmitted from the coverage Presence of lunette with high dimension					
Damage	Current	Crack pattern in the vault or disconnections					
	Old	Crack pattern in the vault or disconnections					

		25- INTERACTIONS NEAR OF PLANO-ALTIMETRIC IRREGULARIT	TIES		
Vulnerability	yes no	Aseismatic presidi Presence of chains Presence of an adequate connection between the walls of different stages			
	yes no	Indicators of vulnerability Presence of high stiffness difference between the two bodies Possible actions transmitted from Relay			
Damage	Current	Movement of the joint or crack in the masonry for hammering - vertical crack in the less rigid body - Rotation in the highest body			
Dam	Old	Movement of the joint or crack in the masonry for hammering - vertical crack in the less rigid body - Rotation in the highest body			
		26- OVERHANG (GABLE - SPIRES - PINNACLES - STATUTES)		 	
Vulnerability	yes no	Aseismatic presidi Presence of pins link with masonry or elements of restraint Elements with limited importance and size Monolithic masonry (a squared or otherwise of good quality)			
	yes no	Indicators of vulnerability Elements with high slenderness Asymmetric location respect to the underlying element			
Damage	Current Elevated permanent rotations or slide				
Dam	Old	Elevated permanent rotations or slide			
		27- BELL TOWER			
Vulnerability	yes no yes no	Aseismatic presidi Stell internal structure (the only constructive phase) and of good quality Presence chains Presence of adequate distance from the walls of the church (where adjacent) Presence good connection with the walls of the church (if incorporated) Indicators of vulnerability Presence of significant openings on multiple levels Constraint on asymmetrical walls to the base station (tower incorporated) Masonry low to the ground on some sides (for porch), tower building on pillars			

Damage	Current	Crack near the detachment from the body of the church - shear crack or slider - vertica crack (expulsion of one or more corners)				
Dam	Old Crack near the detachment from the body of the church - shear crack or slider - vertic crack (expulsion of one or more corners)					
	ı	ferder (expansion of one of more corners)				
		28- BELL CELL				
	yes no					
		Presence of piece piers Presence of chains or reinforcemenet ring				
Vulnerability						
nera	yes no					
Ν		Presence of heavy coverage or other significant masses Presence coverage Pusher				
		•				
Damage	Current	Current Crack in the arches - rotation or sliding of piers				
Darr	Old	Old Crack in the arches - rotation or sliding of piers				
NON SEIS	SMIC DAMAGE					
D	T !	A- FOUNDATION SETTLEMENT				
Damage		d crack 45° - vertical crack - rotation	bell tower			
macroelement front wall side walls transept apse						
Damage	Datash	B- CRUSHING OF WALLS				
Damage macroeler	-	of masonry walls - extended vertical crack for crushing stress apse	bell tower			
macroelei	nenc mone w	an side wans transept apse	Dell tower			
					1	
D	0.1.5	C- ROTATION OF WALLS				
Damage	Out of		hall tawa:			
macroeler	nent front w	all side walls transept apse	bell tower			