SEC GROUP INC.

Memo

Date:	May 15, 2008
To:	Jim Keim, Village of Antioch and Director of Physical Services
From:	Bob Davies, SEC Group, Inc.
cc:	Tim Hartnett, SEC Group, Inc.
Re:	Fire Station Smoke Tower
SEC Job No:	ANTI-080197.01-MU06

SEC Group, Inc. performed a visual observation of the condition of the concrete and brick masonry walls for the above portion of the fire station on April 29, 2008. The fire station was constructed in 1978 using "brick on block" type construction. The floors and the pitched roof in the smoke tower consist of hollow core precast concrete slabs.

Generally, vertical step cracking was noted in the north and east walls around the northeast corner of the tower. The cracks ranged up to approximately 1/8" and appear to be relatively recent. Some of the cracks show through the outer wythe of brick masonry. An open vertical crack between the east exterior wall and the interior concrete masonry partition separating the stair tower from the rest of the smoke tower was also noted the crack is approximately 1/8" and runs nearly the full height of the tower. Step cracking was noted in the east wall at the smoke room floor elevation extending from the balcony to the southeast corner. On the south wall, the masonry above the smoke room level roof access door lintel is cracked up to the parapet and has moved out of plane. The areas in question are summarized on the attached sketches.

The architect's drawings do not indicate horizontal bed joint reinforcement or bond beams in these walls. However, his specifications call for #9 gage truss type bed joint reinforcement (often refered to as "Duro-Wall"). The reinforcement was to be installed in every other bed joint (16" on center) 2" narrower than the wall. For a brick on block wall, this should mean the bed joint reinforcement connects the concrete masonry wythe to the clay brick wythe every 16". The specifications also call for continuity at partitions meaning the joint between the interior wall parallel to the stairs is connected to the exterior wall.

We contacted Camosey Construction at your suggestion. They were not involved with the construction of Station #1.

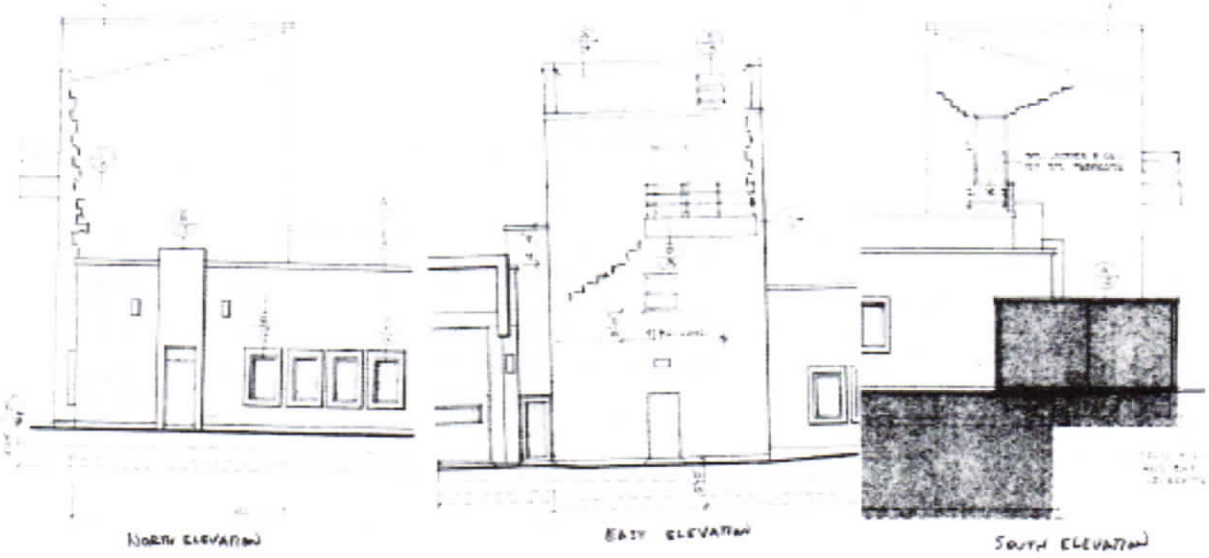
The smoke tower walls are subject to movement from the hollow core floor system which runs in different directions at different elevations and is pitched at the roof. The details

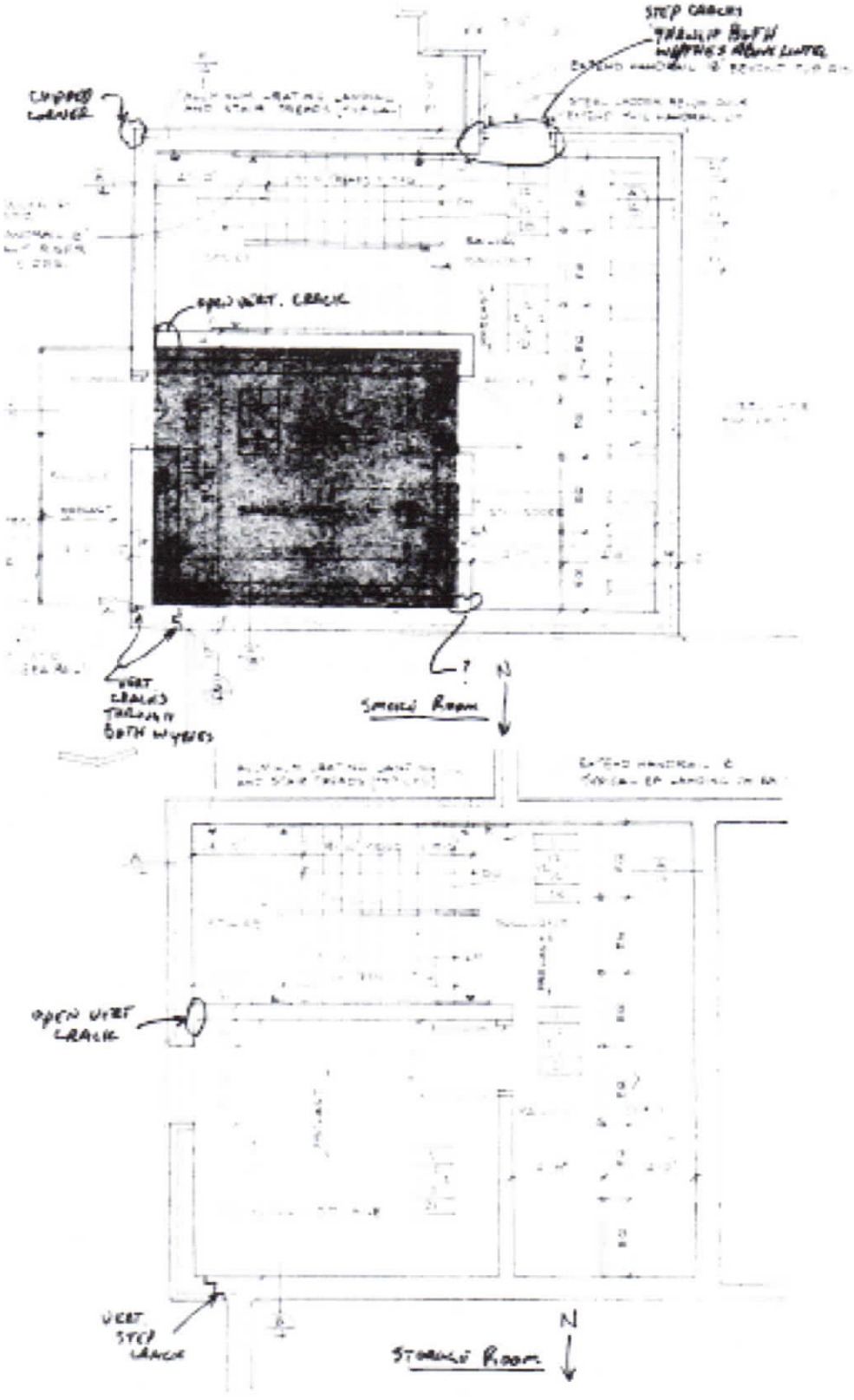
indicate the non-bearing edges of the plank are locked into the masonry which does not allow the precast concrete to camber upward as it would be expected to do over time. These conditions are not typical for a masonry building and may have caused confusion interpreting the architect's intent resulting in discontinuities or an absence of reinforcement in the walls. The size of the cracks observed indicates whatever reinforcement steel is present is not controlling crack size.

The cracking pattern does not indicate a foundation problem.

The north and south walls of the smoke tower include tall masonry parapets. We were not able to observe the condition of the parapets closely but recommend they be checked for out of plane movement and cracking at the roof line. This is especially important for the section above the roof access door lintel on the south wall. These large pieces of masonry which are not well supported.

We recommend a masonry contractor be brought in to check the stability of the parapets and verify bed joint reinforcement connects the partition to the exterior wall. If this reinforcement is in place, the cracking should be manageable with tuckpointing and caulking. If it is not in place, reinforcement and/or reconstruction may be appropriate in some parts of the smoke tower. If the parapets are not stable the Village should take immediate action.




STEP CRACK
CHIPPED CORNER
OPEN VERT. CRACK
VERT CRACKS THROUGH BOTH WYTHES
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