



Structural

Environmental

Geotechnical

Civil

Materials Testing

MRW Project: S12076

May 3, 2012

Ms. Rhonda Bear, Manager
Algo Centre Mall
c/o Eastwood Mall Inc.,
Elliot Lake, ON P6A 2T2

**Re: Structural Condition Inspection
Algo Centre Mall, Elliot Lake, ON**

Dear Rhonda

As per your request we met with your maintenance staff on Thursday April 12, 2012 to inspect the above noted mall complex. We are familiar with the mall in Elliot Lake from previous inspections of the parking deck structure and completion of steel beam fire proofing conducted for the Building Department in 2009.

The complex was constructed in 1980 and has therefore been occupied for 32 years. The building footprint is 140,000 square feet. The mall was designed by James W. Kewyan Architect, structural design by Beta Engineering.

We have always been of the opinion that the complex was designed and constructed to the sealed design documents.

Our inspection revealed evidence of rusting on the structural steel beam members in areas where the parking deck has leaked as shown in Pictures 1 through 8. The area of open walkways shown in Pictures 9 through 12 also have areas with surface rust.

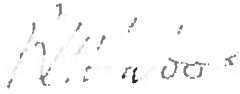
All beams inspected had little loss of section and we would consider the members still structurally sound. The ongoing leakage from the parking deck is of particular concern in the areas of Zellers, and the expansion joint located along the south wall of the Algo Inn, over the municipal library. As per Pictures 5 and 6 we noted vehicular impact on wall siding in this area, that may also have added to the problem.

The Mall is conducting further waterproofing maintenance on the parking deck this spring. The upper surface waterproofing is considered only a temporary solution. A permanent repair needs to be budgeted for to suitably protect the structure.

It is our opinion that the observed rusting at this time has not detrimentally changed the load carrying capacities of the structure, and no visual signs of structural distress were observed.

We trust that you will find the enclosed adequate for your consideration and please contact us if we can be of further assistance.

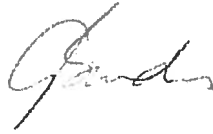
Yours truly,



R.G.H. Wood,
President

RGHW:tp

Encl.



G.J. Saunders, P. Eng.
Manager of Engineering.

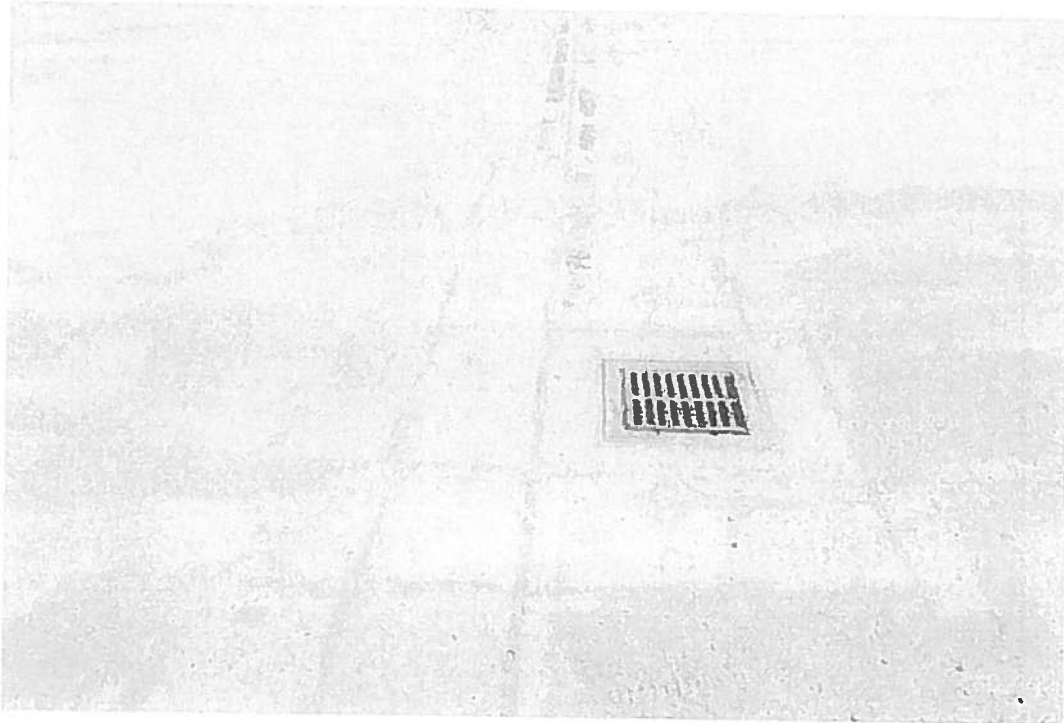
Algo Mall, Elliot Lake, ON



Picture 1: Algo Inn parking deck over mall, lower roof at end in the central boiler room, offices at deck level , three floors of hotel above.



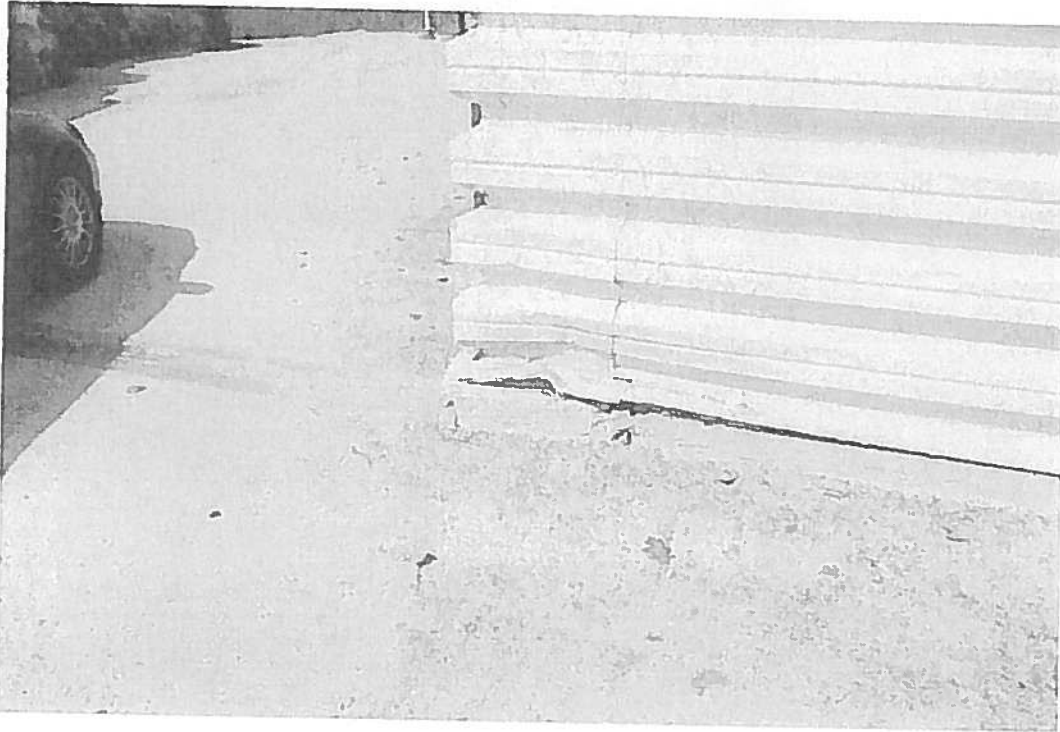
Picture 2: South entry to parking deck above Zellers..



Picture 3: Parking deck sealant in joints and deck drain above area leaks below in Zellers.



Picture 4: Major expansion joint at SW corner of Algo Inn. Leakage in Library below.



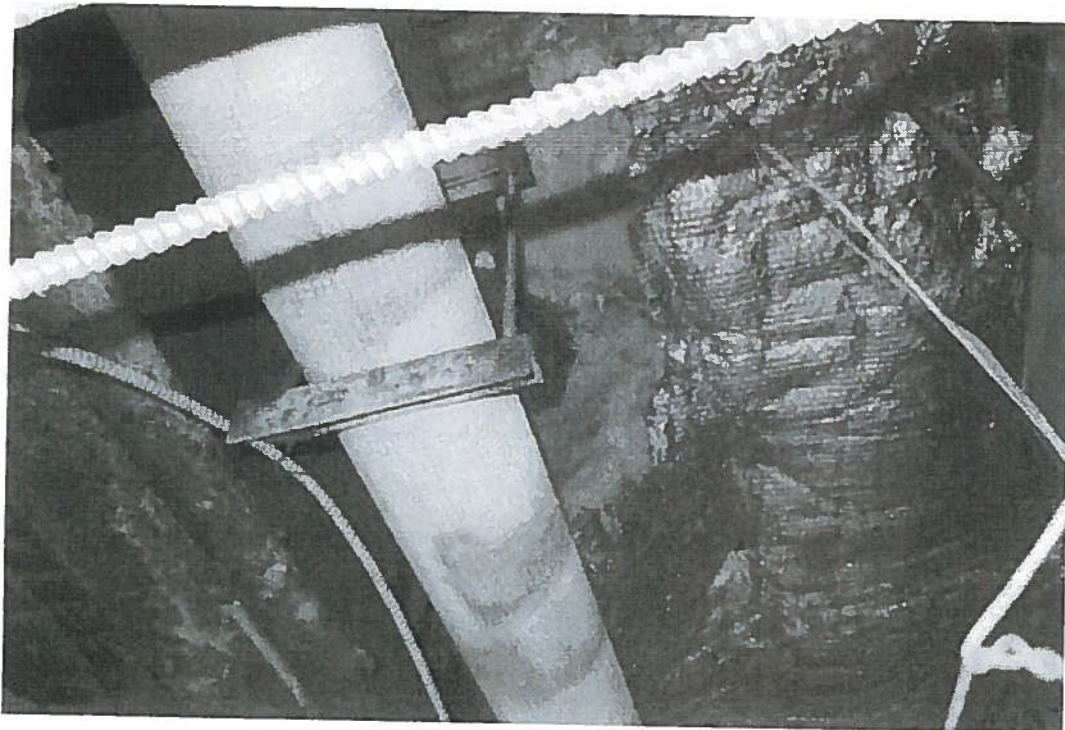
Picture 5: Impact at SW corner of Algo Inn at expansion joint.



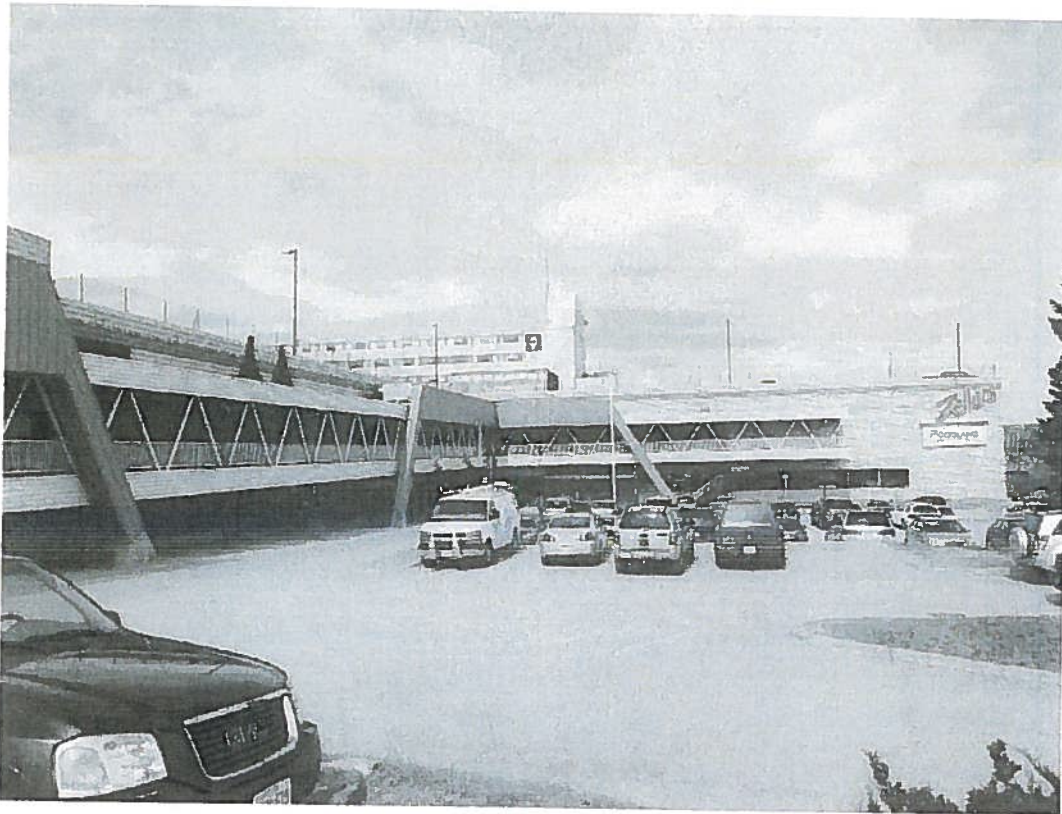
Picture 6: Expansion joint at SE corner of Algo Inn leaks in lottery ticket booth mall below.



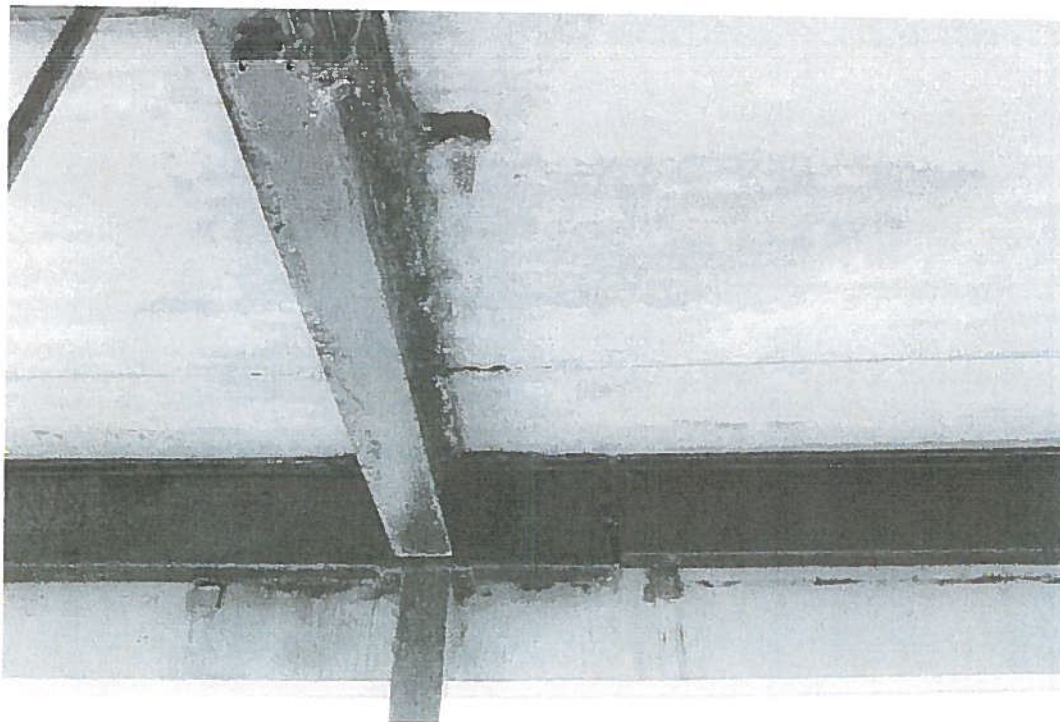
Picture 7: Rusting on steel beams in receiving of Zellers.



Picture 8: Rusting steel beams and drain pipe below parking deck above Zellers ceiling below Picture 2.



Picture 9: East side open walkways of Algo Mall.



Picture 10: Typical oxidized steel beams underside of deck of open walkways.



Picture 11: Rusting steel at base of diagonal HSS members of open walkway.



Picture 12: Rusting steel U/S of deck of open walkway.



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April 30, 2012

Ms. Rhonda Bear
Algo Centre Mall
c/o Eastwood Mall Inc.
151 Ontario Avenue
Elliot Lake, Ontario P5A 2T2

**Re: Parking Deck Waterproofing Repairs
Algo Centre Mall, Parking Deck**

Dear Rhonda,

As per our on-site review of April 12, 2012, ongoing parking deck waterproofing repairs are a requirement to protect the structure below. We have no structural concerns over the additional loading of caulking or waterproofing. We would be more concerned about ongoing maintenance not being completed this spring.

We would note that the deck was designed to working load design where dead and live load safety factors were the same. We now use limit states design that applies a lesser safety factor to dead loads. This later design increases the superimposed load by approximately 40 pounds per square foot.

We trust that the above alleviates any concerns of the City of Elliot Lake. This caulking is a temporary fix until a permanent solution is provided to waterproof this structure.

Yours truly,

R.G.H. Wood, President

G.J. Saunders, P. Eng.
Manager of Engineering.

cc: City of Elliot Lake
Attention: Mr. Bruce Ewald
Chief Building Officer



October 28, 2009

Ms. Henri McCleery, Manager
Algo Centre Mall
c/o Eastwood Mall Inc.
151 Ontario Avenue
Elliot Lake, Ontario P5A 2T2

DRAFT REPORT

**Re: Structural Review the Parking Deck Structure at
Algo Centre Mall, Elliot Lake**

Dear Henri:

As per your request we visited the above noted Mall Complex on Monday, October 5, 2009, to specifically review and report on concerns that water leakage through the parking deck may have created a weakening of the structure and damaged the required sprayed-on fireproofing of the steel structure.

The parking deck consists of a structural steel frame of beams and columns running east to west supporting 8 inch deep hollowcore, precast, prestressed, concrete slabs spanning between the steel beams with spans ranging between 27 to 31 feet. This parking level structure also acts as the roof for the majority of the upper mall level, other than in the north area where offices and a multi level hotel structure is above the mall level.

The structural steel shop drawings indicate the steel structure of the parking level was installed at varying heights to promote drainage to the roof drains located on grid lines 4, 8, 12, 16 and 18.

A two or three inch thick concrete topping covers the precast concrete roof slabs. The original structural drawings indicate a one inch thickness of insulation between the topping and the precast slabs, whereas the Architectural Drawings indicates insulation below the precast slabs. The later appears to be the actual installation, but this should be verified.

The precast concrete and concrete topping provide a 2 hour fire resistance rating. To achieve a rated assembly however the supporting steel structure must also be fire rated. This fire rating is presently achieved through a sprayed on fireproofing material.

The review of the building consisted of a visual inspection in areas of significant leakage within the Mall below the parking deck. We have enclosed five sheets of photographs to illustrate our observations.

Drawings reviewed of the original 1979/80 construction were as follows:

- Architectural drawings prepared by James W. Keywan, Architect
- Structural drawings prepared by Beta Engineering
- Structural steel shop drawings prepared by York Steel Construction

At the time of our inspection the installation of additional caulking and waterproofing repairs were still in progress on the parking deck over the Zellers Store at the south end of the Mall. Inspection revealed that the concrete topping has been saw cut and caulked at 4 foot intervals north to south and along each beam location on grid lines. Efforts over the years appear to have attempted to waterproof the mall utilizing the concrete topping and the noted caulked joints located over joints in the precast slabs with no waterproofing membrane, See Pictures 1 and 2.

From the mall ceiling tile it is evident that many leaks have occurred over the years. We attempted through inspection to review the condition of structural steel and precast concrete in the most severe areas of leakage as follows:

1) Zellers Store (see Picture 3 & 4)

There are several leakage areas, within the Zellers Store predominately at grid lines. Our inspection revealed that grid line 5 was the most severe. At this location elaborate collection systems have been installed above the suspended ceiling to collect water infiltration through the roof structure. Picture 1 and 2 illustrate that water ponds on the parking area above this grid line beam and this appears to further aggravating the condition. It appears that the positive camber in the prestressed slabs is greater than the slope provided in structural steel frame, and thus water cannot flow to the drains on grid line 4.

The structural steel is not fire-rated throughout Zellers. The primer painted structural steel has surface rusting, but in all areas inspected no loss of steel section was observed.

2) Service Corridor North and West (see Picture 5)

Water leakage has occurred into the perimeter corridor structure around the upper mall mostly at steel beam support locations, where there is a joint in the precast slabs. Water has soaked the sprayed-on fireproofing and the fire proofing has fallen off the bottom flange in many areas as shown in the photograph.

The steel is rusting particularly on the top of the bottom flange, however, we are of the opinion that the rusting has not created any structural loss of beam capacity. We could not inspect the underside of the precast slabs, due to the covering of foil faced fibreglas insulation.

3) Main Mall at Ticket Kiosk (see Picture 6 & 7)

The steel beams along Line 16 are in a location of significant previous water leaks. A new roof deck drain appears to have been extended into this area to assist in the leakage control.

Similar to other areas inspected much of the exposed steel has only minor surface rusting with exposed original primer paint, where the fireproofing has fallen off due to water saturation.

In this area on the north side of the beams the insulation batts have fallen away exposing the underside of the precast slabs. Signs of leakage shown in Picture 6 appear to coincide with the 4 foot spacing of the joints in the precast concrete. No deterioration of the precast slabs was observed.

4) **Mall Area East of Hotel (See Picture 8)**

Beams in areas of leaks over the Bargain Shop have fireproofing missing on bottom flange of steel beams. No loss of section of the steel beams was observed

Based upon the above it is our opinion that our inspection revealed no visual structural concerns both with the structural steel or prestressed slabs. The positive camber on the slabs appear to inhibit surface drainage. This indicates structurally that the slabs have significant additional load carrying capacity.

Our major concern is the loss of fireproofing on the bottom flange of steel beams that are required to have complete fire protection. We are recommending that in areas where the original fireproofing has fallen away that the top and bottom surfaces of the bottom flange be cleaned off and suitably sprayed with a fireproofing product that is not water absorbent.

We have enclosed typical thickness required for 2 hour rating of a CAFCO fireproofing product used at the new Sault Area Hospitals for reference. Sprayed on fibre material may create significant disruption and it may be astute to consider an applied "thin-film intumescient coating" to the exposed steel to provide the required fire protection.

Even though the mall level is fully sprinklered, we must recommend that repairs to the sprayed-on fire proofing be conducted as soon as a contractor can be scheduled to complete repairs.

Yours truly,



R.G.H. Wood, P. Eng.

RGHW:tp

Encl.

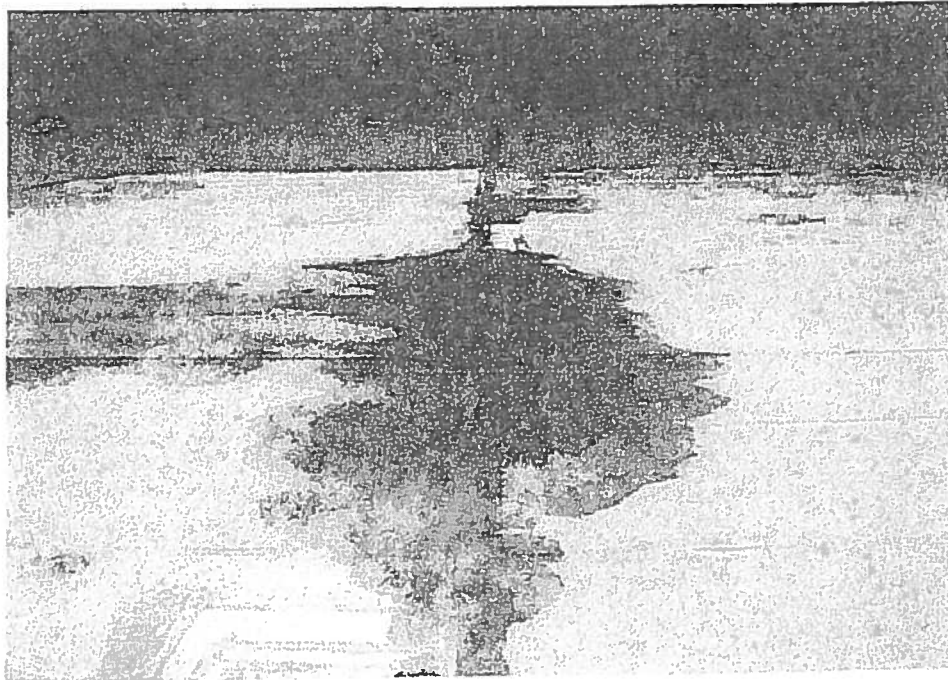
Copies to:

Bob Nazarian
Eastwood Mall Inc.

**Structural Inspection
Algo Centre Mall, Elliot Lake, Ontario**

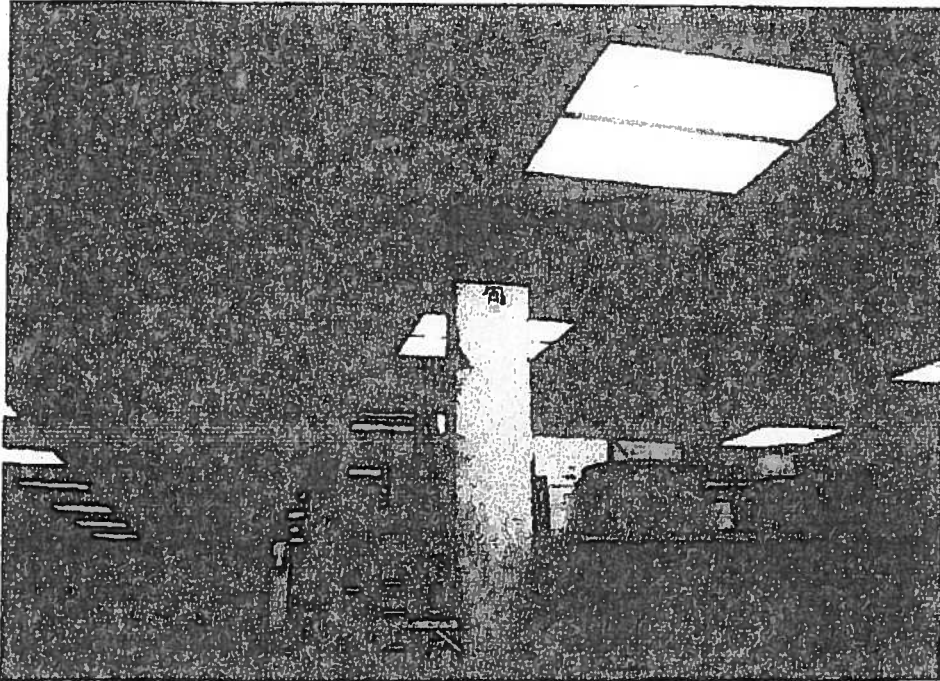


Picture 1: Grid Line 5 water ponding on parking deck despite the design in structure slope to drains on Grid Line 4 ponding appears to be due to positive camber of precast slabs.

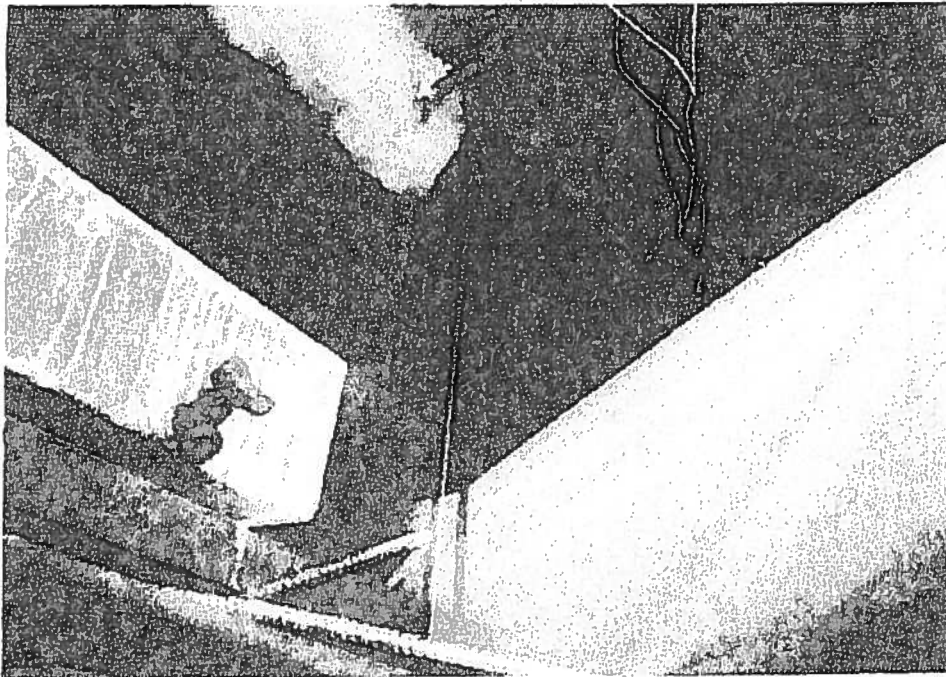


Picture 2: Typical water ponding on Line 5 over steel beam support for precast slabs. Observe black tarred joints every 4 feet.

Structural Inspection
Algo Centre Mall, Elliot Lake, Ontario



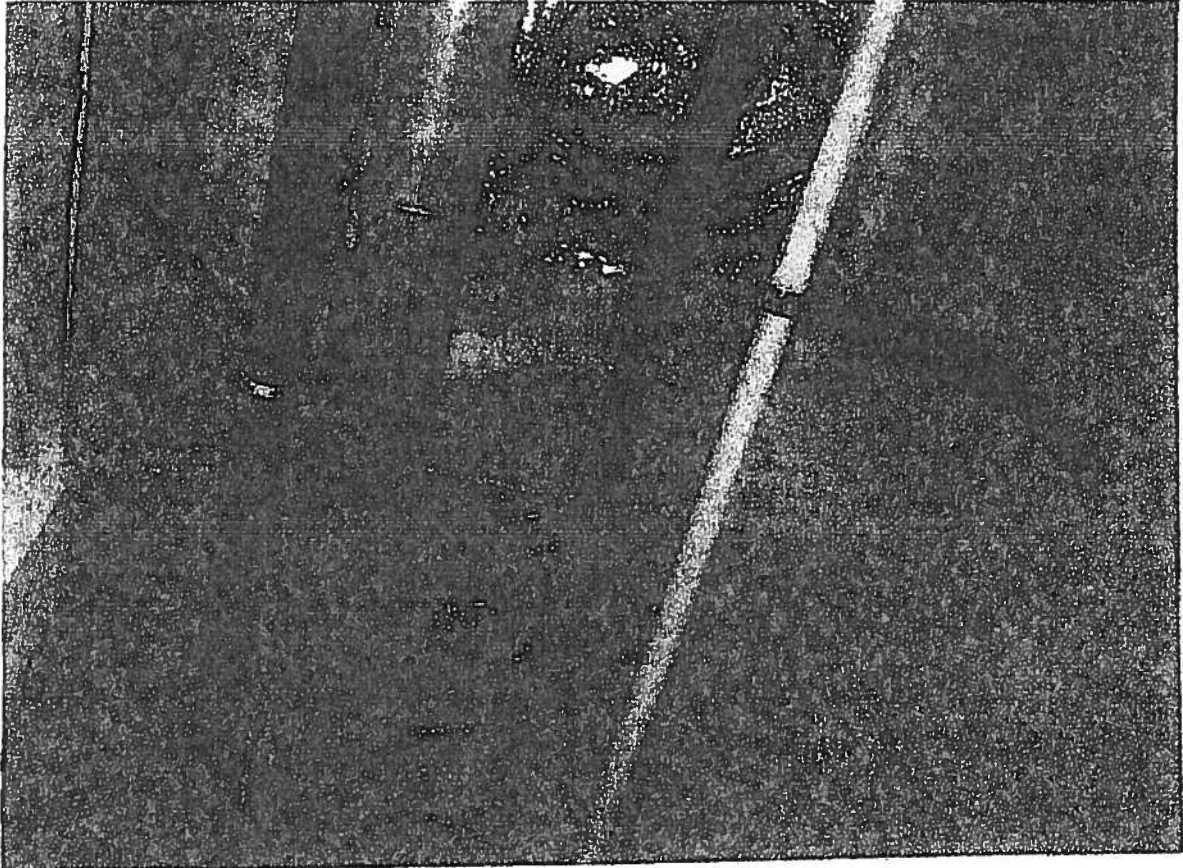
Picture 3: Line 5 in Zellers below water ponding in Picture 2. Top shelf brown storage bin right of column collects water, half full at time of inspection.



Picture 4: Yellow tarp and galvanized eavestrough with faucet to collect water penetration through slab steel not fire-rated in Zellers. Only surface rusting on beams.

Sheet P2

Structural Inspection
Algo Centre Mall, Elliot Lake, Ontario



Picture 5: Corridor west of hotel. Past leakage has resulted in removal of fire proofing. BTM flange still has primer paint. Minimal rusting on top of bottom flange.

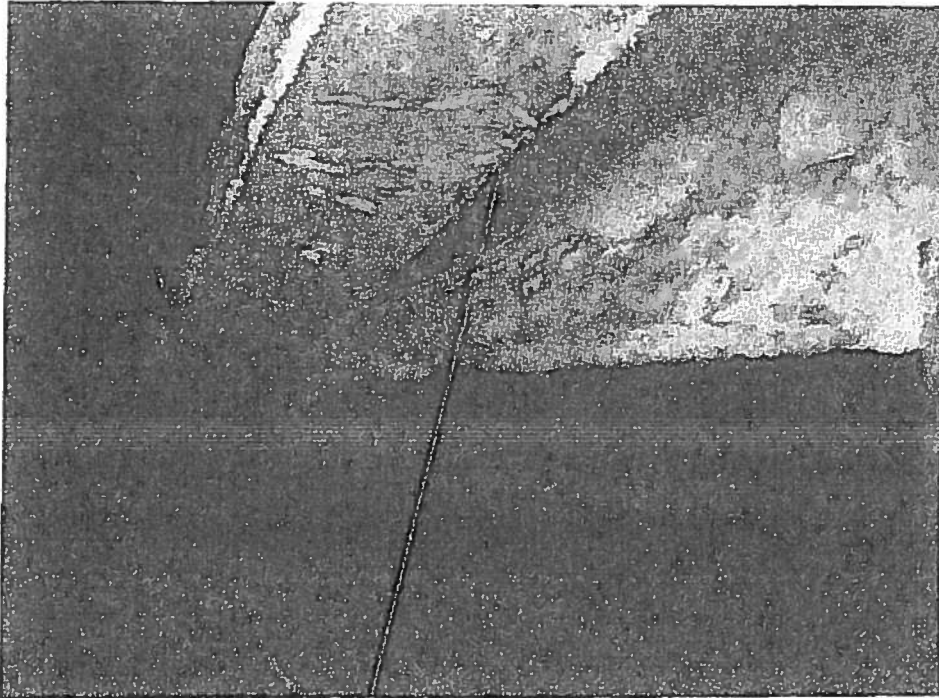
Structural Inspection
Algo Centre Mall, Elliot Lake, Ontario



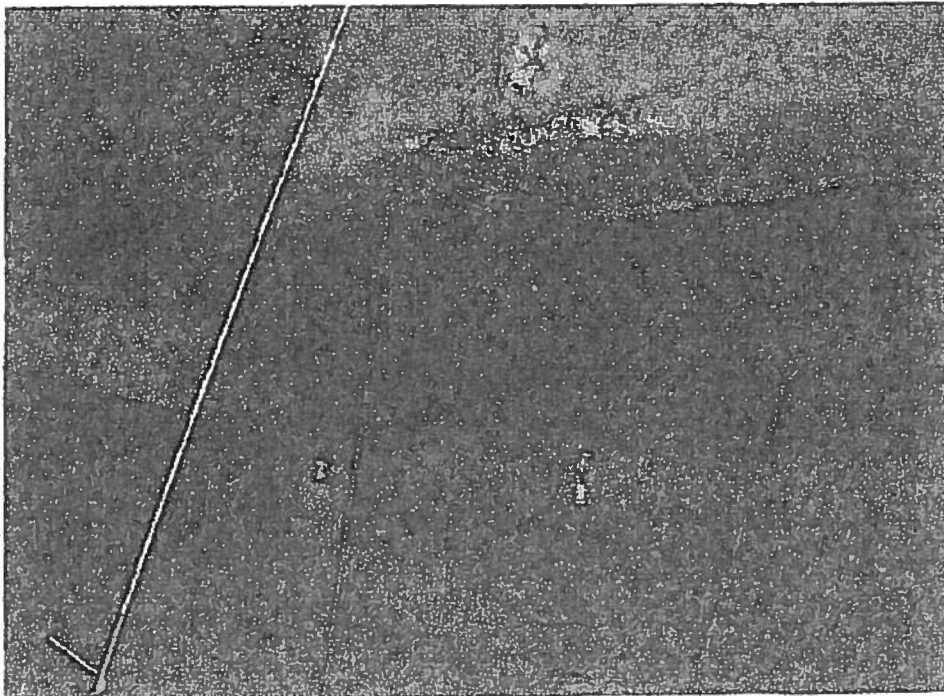
Picture 6: Exposed underside of right parking area. Precast slabs right of beam leakage location at ticket kiosk in Mall, Grid Line 16 efforescence stain at precast slab joints and fire proofing has fallen off bottom flange of steel support beam.

Sheet P4

Structural Inspection
Algo Centre Mall, Elliot Lake, Ontario



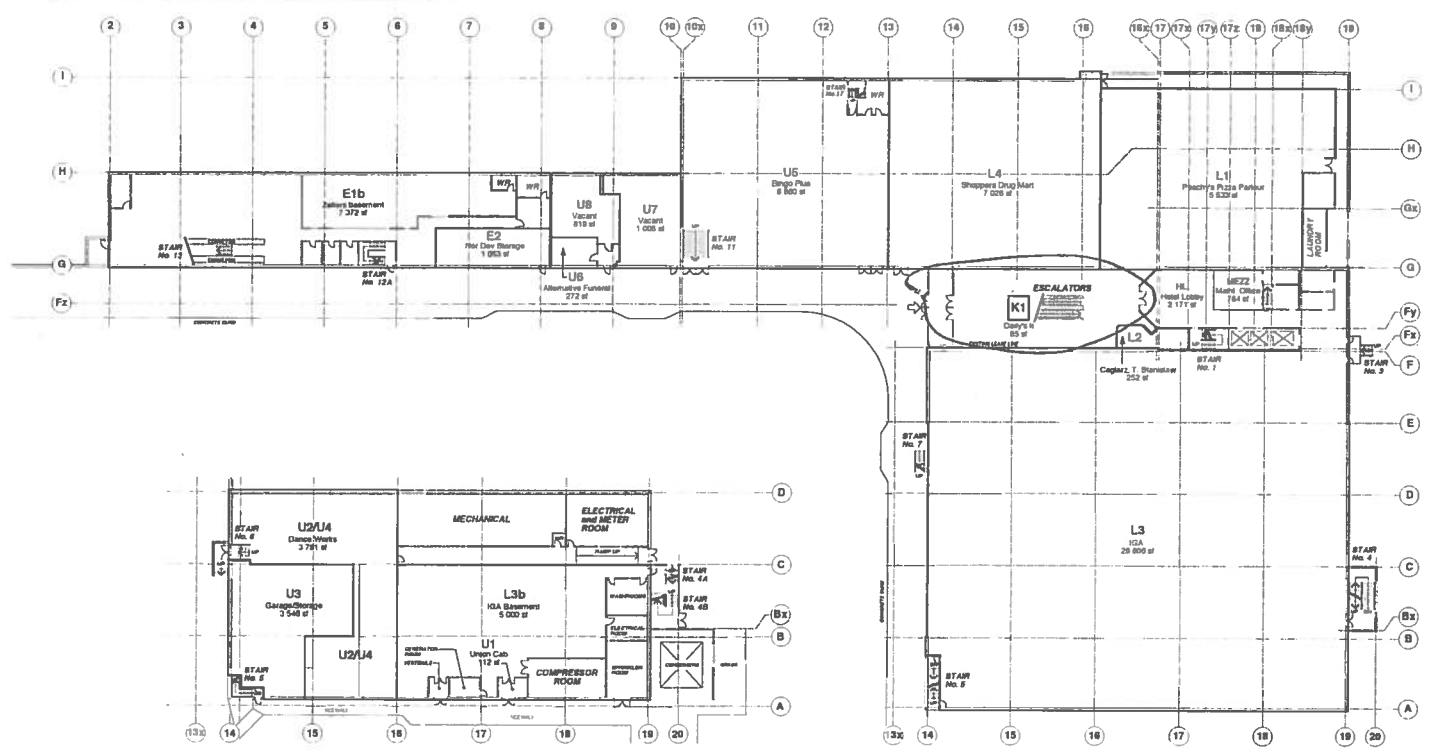
Picture 7: Missing fireproofing bottom flange of beam at Ticket Kiosk in mall. Insulation fallen off precast slabs.



Picture 8: Fireproof missing bottom flange steel beams in Bargain Shop.

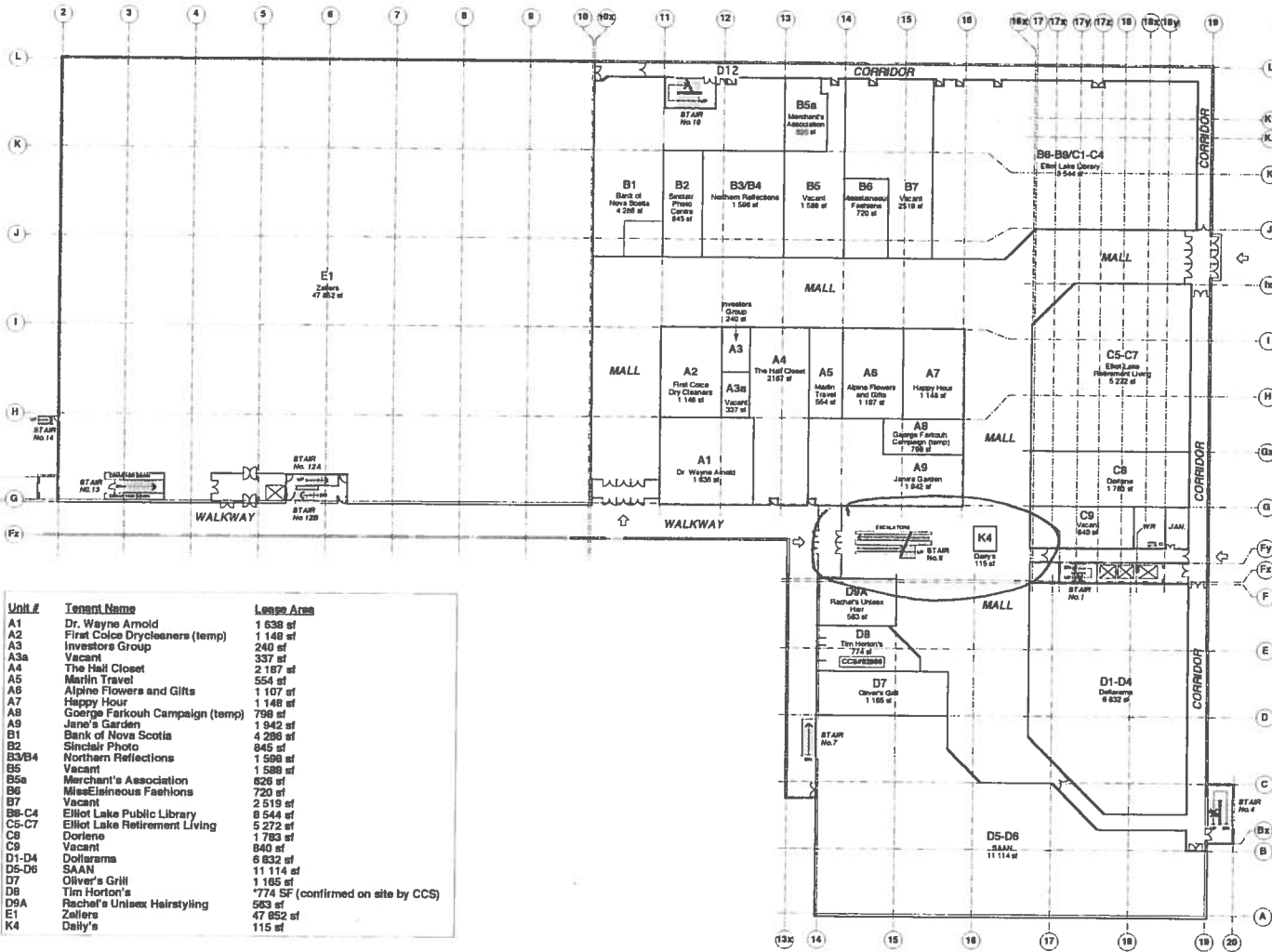
ALGO CENTRE MAL
RETAIL UNIT PLU
LOWER MAL
 LAST UPDATED 04/11

Unit #	Tenant Name	Lease Area
E1b	Zellers basement	7 372 sf
E2	Nor Dev Storage	1 053 sf
HL	Hotel Lobby	2 171 sf
K1	Daily's II	85 sf
L1	Peachy's Pizza Parlour	5 533 sf
L2	Ceglaz, T. Stanislaw	252 sf
L3	IGA	28 808 sf
L3b	IGA Basement	5 000 sf
L4	Shoppers Drug Mart	7 028 sf
MEZZ	Maintenance Office	784 sf
U1	Union Taxi	112 sf
U3	Garage Storage	3 548 sf
U4	Dance Works	3 781 sf
U5	Bingo Plus	6 880 sf
U6	Alternative Funeral	272 sf
U7	Vacant	1 008 sf
U8	Vacant	819 sf



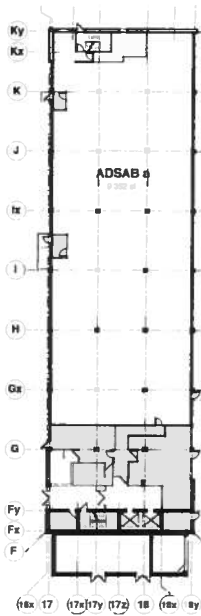
October 2003
 PROJECT # 02840
NOR
 Scale in feet
 1" = 10'
 0 5 10 20
 Legend:
 - Change Consulting Services Inc.
 - Architectural & Engineering
 - Civil & Mechanical

ALGO CENTRE MALL
RETAIL UNIT PLAN
UPPER MALL
 LAST UPDATED 04/1/12

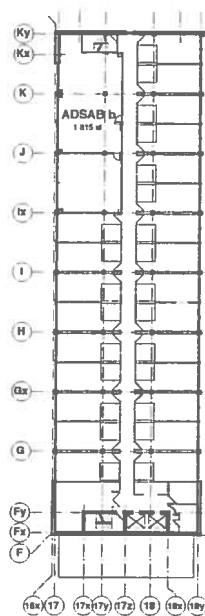


Unit #	Tenant Name	Lease Area
A1	Dr. Wayne Arnold	1 638 sf
A2	First Choice Drycleaners (temp)	1 148 sf
A3	Investors Group	240 sf
A3a	Vacant	337 sf
A4	The Hat Closet	2 187 sf
A5	Martin Travel	554 sf
A6	Alpine Flowers and Gifts	1 107 sf
A7	Happy Hour	1 148 sf
A8	George Farouh Campaign (temp)	796 sf
A9	Jane's Garden	1 942 sf
B1	Bank of Nova Scotia	4 286 sf
B2	Sinclair Photo	845 sf
B3/B4	Northern Reflections	1 588 sf
B5	Vacant	1 588 sf
B5a	Merchant's Association	828 sf
B6	MisElineous Fashions	720 sf
B7	Vacant	2 519 sf
B8-C4	Elliott Lake Public Library	8 544 sf
C5-C7	Elliott Lake Retirement Living	5 272 sf
C8	Dorlene	1 783 sf
C9	Vacant	840 sf
D1-D4	Dollarama	6 832 sf
D5-D6	SAAN	11 114 sf
D7	Oliver's Grill	1 185 sf
D8	Tim Horton's	*774 SF (confirmed on site by CCS)
D9A	Rachael's Unisex Hairstyling	563 sf
E1	Zellers	47 852 sf
K4	Daily's	115 sf

October 2009
 PROJECT #22343
 NORTH
 Scale in feet
 1" = 10'
 0 5 10 20 30
 Caught Consulting Services Inc.
 engineer - architect
 5450 Main Street



FIRST FLOOR



SECOND FLOOR