

## ROOF CANOPY CLAIM

The glass canopy structure on the roof of Olive 8 needed to be coordinated with the window washing equipment and monorail system. The 10/30/06 Construction Documents and 10/15/07 Conformance Set, sheets A4.58 and A4.59, show the rooftop sections and reference window washing details on sheet A6.08. In both sets of drawings, on all applicable sheets, the drawing notes state "window washing system by others". The Project Specifications, dated 10/30/06, Section 11242 Exterior Building Maintenance System, states "Subject to compliance with requirements," there are 4 available "manufacturers offering products that may be incorporated into the Work, but are not limited to the manufacturers specified". These manufacturers include:

1. Atlas Anchor Systems USA, Co.
2. Pro-Bel Enterprises Ltd.
3. Spider, Division of Safeworks, LLC
4. Thaler Metal Industries, Swingstage Division

Basis-of-Design: Monorail Systems, manufactured by Spider, Division of Safeworks, LLC.

Description: Track system that is designed to mount on the underside of the canopy of the building.

Track Lengths and Configurations: As indicated on Drawings.

Fabrication: Fabricate custom fabrications for mounting on building systems and maintaining watertight building integrity. Include mounting of trolleys on structural steel framing.

At the time the Construction Set was prepared by the architectural team, MG2 did not have a complete understanding of the window washing equipment and monorail system to be installed by Pro-Bel, so the Construction Documents do not correctly reflect, integrate, and coordinate the Pro-Bel system into the architectural and structural drawings. Consequently, when Pro-Bel's installation requirements became more fully known (see 2/27/07 Pro-Bel Shop Drawing, Sheet 2.02 For Review), the glass canopy structure, structural steel design and monorail supports, parapet and roof slopes, cable railing, roof drains, and mechanical equipment screen all needed to be redesigned and re-engineered, via ASIs and RFIs, to reflect and integrate this information with the building's design.

MG2 should never have designed the roof top glass canopy structure and window washing details with specific dimensions when they did not possess the necessary information to design such systems for the top of the building. Among those drawings affected were sheets A2.39 Tower Roof Plan, A4.01 East Elevation, A4.02 North and South Elevations, A4.02A West Elevation, A4.05 East Enlarged Elevation, A4.06 North Enlarged Elevation, A4.07 West Enlarged Elevation, A4.08 South Enlarged Elevation, A4.58 Building Section, A4.59 Building Section, and A6.08 Exterior Details.

MG2 failed to revise or update the Specifications, which continued to show the Basis of Design as Spider Monorail System (see 4/23/06 MG2 email re: Outstanding Items). MG2 could have indicated in the Construction Documents that the roof top glass canopy design and monorail system were still in the Design-Development or CD Phase, so that subsequent redesign of Shop Drawings and reconstruction of work already in place could have been avoided. Potentially, the AGS glass order for the rooftop canopy glass could have been delayed until the design for the window washing equipment was known and finalized.

To better understand the chain of events that lead to the Roof Canopy Claim, I have recreated the following timeline of correspondence and meeting minutes:

9/12/05- Meeting Minutes, MG2 presents short summary for window washing systems, explained by Anchor Systems and Spider Engineering. Much more interest in pursuing a system of continuous rail attached to the canopy framing system. RCHCO is open to presentations by Spider and others. This subject needs resolution soon to develop the roof top features. RCH 114850

4/11/06- Email from MG2, "I was dealing with Atlas Anchoring for window washing data, but they have dropped out of contention, so I have to start with Spider". RCH 011340

4/23/06- 4/23/06- MG2 in-house email re: Outstanding Items, "Because Spider Monorail System is specified as basis of design, this section will need to be updated if new system is to be selected." "Can't get answers" from Pro-Bel.

4/24-27/06- Email from MG2 regarding Friday, April 28, 2006 meeting with Pro-Bel "to discuss options for window washing and davit connections, etc." and "probably help discuss changes to the top of the building screen with the monorail on it". RCH 011210 and RCH 011311

5/11/06- Email (with sketches attached) from James Lim with GMA, "Questions I have are mostly directed to the window cleaning equipment and how adaptable it can be. If we provide greater clear loading area, can we lower the canopy so that we minimize height of the steel posts. I think we need to investigate further the capabilities and limitations of the window cleaning equipment in general. Maybe we should rethink the idea of combining the track and canopy structure." RCH 011204

5/22/06- Email chain between GMA and MG2, "we need to start talking with the window cleaning contractor to get their input"; "On south side between E and L there is no window washing system shown nor does there appear adequate room for window washing"; "Pro-Bel from Vancouver is the current 'front runner' for window washing. I will try to contact Pro-Bel and see what the status is, and if they can give us better criteria". RCH 011276, 011278, 011182, 011183

6/1/06- Email from MG2, "Will be revising the high glass awning/window washing supports." RCH 011426

6/6/06- Email from MG2, "Window washing ("Spider") bidder-design status, as related to glass awning design etc"; hand-written note "Pro-Bel". RCH-MG2 114851

6/7/06- Meeting Minutes, "Roof canopy redesign needs to be completed by end of June to facilitate shop drawings and procurement as blue glass factory is located in Indonesia potentially resulting in long lead times", per AGS. RCH 011456

6/13/06- Meeting Minutes, "Plan/Design still needs to be finalized and/or agreed to at the Rooftop. Pro-Bel has been consulted and pursued to date. Method to wash windows needs to be communicated/confirmed", by MG2. RCH 011508

6/13/06- Email from MG2 to Pro-Bel, "Good morning Lee, you've talked with both Larry Reed and myself (Mike Rayburn) regarding our Olive 8 project for RCH. Skanska tells me you will be doing the window washing system so we wanted to get some updated sketches to you for your review and input. When you and I talked on phone you said you wanted 24" from face of building to centerline of your stage. As you can see on the attached sketches (GMA 6/12/06 sketches attached) we have 24" dimension at all locations except along west portion of south face. In order to obtain the 24" dimension the stage will need to be at various heights above roof line as well.

Can you please review the sketches and send us your comments so we can incorporate." I have not located Pro-Bel response comments. RCH 011499

6/15/06- Email from Skanska and AGS to RCH, MG2, GMA and KPFF, "Please provide a revised roof canopy design in order to facilitate procurement" of blue glass. We need to place our order for this next week. There is real urgency to this." RCH 011515

6/19/06- Email from MG2, "Attached are PDF updates of Roof Plan and Sections (A6.08) for the high glass canopy & framing. We have yet to be able to confirm final coordination requirements with Pro-Bel or any subsequent structural engineering input etc, but are providing this to expedite the AGS glass order, as requested by Glenn Allen's 6/14/06 correspondence. We intend the glass configuration to remain as indicated on these sheets, but variations in vertical elevations of the steel may result from coordination." RCH 011545

6/20/06- Meeting Minutes, "MG2 needs help from Pro-Bel to determine how the windows will be washed. MG2 to provide final drawing in order to confirm/release final glass size ordering. Any associated window washing and glass frame details to be worked on 'off-line' between MG2/ Pro-Bel/AGS/SKA. Unless further action is required, this item is closed." RCH 011563

7/13/06- RFI #70 from Skanska to MG2 re: RFI #11 from AGS regarding Roof Canopy Structure. "The layout on A2.36 is correct. MG2 and KPFF confirm the layout is correct regarding glazing. Exact structural support design is on hold pending specific requirements from the window washing company." RCH-MG2 114787

7/17/06- Email chain between Skanska and MG2 regarding Pro-Bel contract. Skanska spoke with Pro-Bel to confirm that there is currently insufficient funds to award them window washing equipment scope till mid-late October, at earliest. Pro-Bel mentioned they had received emails from MG2 regarding steel design, so Skanska is asking MG2 whether they have sufficient information to proceed until Pro-Bel is awarded contract. "Please let me (Susan Ulep) know if there is anything else you require from him (Lee Hughes) that cannot wait until the Phase II contract is awarded so that we can explore some alternate means to get them answered." MG2 replies "I believe we have enough for the upper roof canopy track system." RCH-MG2 059176

7/19/06- Email reply from MG2 to Skanska re: Pro-Bel Contract. "The timing is a bit of surprise as far as getting Pro-Bel available to give additional input or review, but I think our spec does have load criteria, and our current drawings have been revised to add unusual (and typical) load points for clearance and alignments that we are trying to achieve, plus input from GMA for aesthetics and glass sizing, so I think there is enough to progress on the structural design too." RCH-MG2 059175

8/28/06- Email from AGS, Although shop drawing submittal for roof canopy glass on hold pending specific requirements from window washing company, "since time is of the essence we have no alternative but to base the roof canopy glass sizes on the dimensions shown on the current A2.36 layout. Any change relevant to glass size, pattern or connection locations subsequent to 9/06/06 will result in a cost impact and may also delay order." RCH 011635

8/31/06- Email chain between MG2, RCH, AGS and Skanska re: window washing button locations (involving Spider- "We have not gotten specifics from Spider to put on drawings"). RCH 011609, 011632-33

9/7/06- Email chain re: confusion regarding window washing button locations. Pro-Bel input needed, but Lee leaving on vacation, so need to confirm with Pro-Bel later. RCH 011595-97

11/6/06- Final drawings by Architect issued by Skanska to Pro-Bel (3 floors added), "so please review thoroughly and assess whether or not your scope of work and/or bid has changed." No acknowledgement required or anyone copied. RCH-MG2 059162

Apparent gap in communication between 11/6/06 and 2/7/07

2/7/07- Notice to Proceed from JTM (not Skanska) to Pro-Bel for "design, fabrication and supply of Exterior Building Maintenance System scope of work as shown in Contract Documents, dated 10/30/06, as required to provide fully operational systems" in amount of \$206,336. "As we discussed, Pro-Bel will start preparing all required submittals and shop drawings by 2/28/07"; onsite meeting with Pro-Bel, RCH, JTM and design team scheduled for 2/20/07. RCH-MG2 059154

2/16/07- Pro-Bel emails JTM to "send architectural and structural drawings for Olive 8 ASAP"; need roof plan, building elevations, sections, and detail sections of where product will be ASAP." (See 11/6/06 email above re: final drawings sent to Pro-Bel.) Preliminary project schedule shows window washing equipment monorail tracks by 5/08. RCH-MG2 059152

2/20/07- Coordination meeting with JTM, MG2, RCH & Pro-Bel for 2/23 rescheduled to 3/2/07.

3/20/07- Pro-Bel emails (via JTM) 'preliminary' monorail reflected ceiling plan to MG2, KPFF, RCH for review and comment. RCH-MG2 059174

4/17/07- Pro-Bel emails JTM with attachment 'Spacing Requirement Detail', saying "As Lee has discussed in Olive 8 meeting a while ago, the current dimension from top of parapet to underside of canopy is 5'-3/8", we will need a minimum 7'-6" for the stage to work around the corners, please confirm this has been done and issue resolved..." RCH-MG2 059151

6/6/07- Email from JTM to Pro-Bel re: RFI to design team regarding clearance of the window washing to the building parapet. Design team considering options to raising/revising roof parapet from which equipment is suspended, but requires more information. RCH-MG2 115958

6/7/07- Canron shop drawing with proposed canopy frame details and sketch showing original beam location modified to 7'-6" (90") from bottom of swing stage platform to trolley at underside of canopy. RCH-MG2 116060-62

6/8/07- Email from Pro-Bel to JTM regarding clearance requirements of stage, informing them washing receptor will not work ("we do not believe this design will work"). RCH-MG2 115957-59

7/20/07- RCH email to Skanska & AGS re: 3" gap between panels for glass attachment v. 1/2" shown on AGS shop drawings. RCH-MG2 178618

7/31/07- Meeting Minutes, "Pro-Bel had provided info to design team to assist in researching solution to allow 10' stage to clear parapet." Another meeting scheduled for 8/10/07 to review options. RCH-MG2 051378

8/14/07- Meeting Minutes, "Pro-Bel is researching revised stage to accommodate height conflict at rooftop canopy. JTM contacted Spider (window washing equipment provider), who had no suggestions. RCH provides list of potential window washing equipment companies, if needed. Probel able to lower stage by just 9", not 3' needed. RCH-MG2 051294

8/19/07- "Per 8/10/07 review with RCH: Per today's Pro-Bel meeting, Probel is to design a system to work with the current structure and present at a later date. KPFF has been able to reduce the upturned beam depth by 6".

8/28/07- 9/4/07- Meeting Minutes, Pro-Bel unable to obtain added clearance (30" needed) due to stage height, weight, etc. RCH-MG2 051281

9/11/07- Meeting Minutes, JTM sends window washing monorail to Sunwest for additional opinion. RCH-MG2 051281

9/20/07- JTM issues summary of Rooftop Canopy Redesign for Window Washing Equipment. Because stage height is significantly taller than clearance between rooftop canopy and top of roof parapet, canopy structure must be modified to allow window washing stage to pass between canopy and roof slab at corners. Modifications include spacing between glass canopy panels, redesign of upturned beams at 4 corners of roof, raising rooftop canopy approximately 34", provide structural support where stage returns to roof (not shown), provide added glass at SW corner of canopy, where architectural drawings do not match correct structural drawings (glass fabricated per architectural). ASI to incorporate all required changes. RCH-MG2 115955

10/9-23/07- Meeting Minutes, KPFF designing attachment to canopy structure for monorail, and working on structural revisions; MG2 to review. All changes via ASI. RCH-MG2 051210

10/30/07- Meeting Minutes, KPFF provides structural connection detail, JTM to push Pro-Bel to review, MG2 to analyze corner conditions to determine how much to raise canopy. RCH-MG2 051192

11/7/07- Email re: RCH comments (supply v. installation of components) on 4/17/07 Pro-Bel Agreement. RCH-MG2 112947

12/4/07- Meeting Minutes, JTM notes Window Washing/Canopy Redesign extremely critical, MG2 to provide corner sections by 12/11/07. RCH-MG2 051152

1/2/08- Craig Davenport proposes 2 possible solutions for roof canopy redesign. ASI with final design needed ASAP.

1/7/08- Email re: deadline needed for rooftop canopy, per RCH. "Lost a couple of weeks already", may impact crane removal. RCH 011798

1/18-21/08- Emails re: MG2 revised rooftop canopy sections for KPFF and Pro-Bel to review. RCH 011792

2/8/08- Emails & Meeting Minutes re: deflection issues and glass movement. RCH 011803-06, 011785-87, RCH-MG2 051098

2/25/08-3/17/08- ASI #72 for revisions to level 39 roof canopy. RCH-MG2 059149, RCH 011818-23

3/8-20/08- ASI #72 (Revised) RCH-MG2 059150

4/21/08- tower crane scheduled to be dismantled around end of August. RCH-MG2 054081

4/25/08- ASI #80, Structural revisions to L38 and L39 slabs, framing, slab openings, upturned beams, floating slab, and beam schedules. RCH 010697-98, 017475-97

4/28/08- Monorail Track Section Information from Pro-Bel. RCH-MG2 059172-3

5/14/08- RCH memo (Craig Davenport) approves Additional Services for MG2 in amount of \$12,500 to revise rooftop canopy to accommodate fabricated AGS glass and required clearances for window washing equipment because "Although MG2 had marked the submitted AGS shop drawings for the required clearance between glass panels to accommodate the window washing monorail system, their marks were ignored by Skanska and/or AGS, and the glass was fabricated without a way to suspend the monorail. As a result, the entire rooftop framing system had to be revised to spread out the supports, yet maintain the already fabricated glass panels. In addition, during the original design phase of the project, the window washing equipment supplier had not been selected, and as such companies were not eager to provide accurate information to MG2 for the original canopy design. Based on the information they had, the clearances that were established in the design ended up being inadequate. This resulted in raising the entire rooftop canopy structure. As a result, new plans, sections, and elevations for the canopy were required." RCH-MG2 114778

6/18/08- RFI #1734 references ASI #72 and RFI #1521, Canopy structure & monorail support system conflicts arisen, details and dimensions needed. KPFF and MG2 supplied details, as needed. RCH-MG2 024817-18, 027538-40

7/23/08- ASI #92, Revised level 39 roof curb. RCH-MG2 059147

8/12/08- Meeting minutes, rooftop steel canopy steel erection start. RCH-MG2 052500

8/26/08- RFI #1925 to address rooftop glass mounting tabs at monorail entrance. RCH-MG2 025062

8/26-27/08- rooftop blue canopy glass installation using tower crane (dismantling date scheduled for 8/30/08). Scheduled completion of 8/30/08. Crane start removal on 9/22/08; completed 9/27/08. RCH-MG2 052362

7/3/09- Final executed Pro-Bel Change Order for ASI #71 to JTM. RCH-MG2 034631

#### Applicable Contract Provisions:

Pro-Bel's Trade Contract Agreement with RCH, dated 4/16/07, includes Exhibit 'A' Description and Scope of Work, dated 4/19/07, and Exhibits 'C' Supplemental Conditions to Trade Contract, and 'D' Document List dated 1/30/07. The Exhibit A, 'Description of Work and Scope of Work Clarifications & Qualifications', states "It is the intent of this Trade Contract Agreement to provide for the furnishing and installation of all necessary items to construct complete and working systems as outlined below and on all related applicable drawings and specifications issued with the Contract Documents. It is further understood that all appurtenances, related scope of any kind and scope implied by the intent of the specifications are included. The Contract Documents listed in Exhibit D may not be fully developed and that the Trade Contract Agreement Price will include whatever is required beyond same to provide a complete and functional installation to the satisfaction of the Owner and Contractor."

In addition, Exhibit A 'Scope of Work' states "This Subcontractor shall provide all design, engineering, supervision, coordination, manufacturing, fabrication, labor, materials, tools, equipment, and appurtenances of every kind for the complete execution to furnish and provide onsite instructions for the complete installation of Exterior Building Maintenance Systems per the contract drawings and specification sections: 11242 Exterior Building Maintenance Systems"

Also in Exhibit A, under 3. Coordination "Subcontractor shall comply with all Contract Documents to fully coordinate the Work with other Trades, This Subcontractor will provide all information and criteria required, whether in formal technical submittals or separate correspondence, to properly coordinate Subcontractor's Work with the work of other Trades, Contractor and Owner", and "This Subcontractor is responsible for review of drawings and submittals of other Subcontractors and Trades to ensure the correct services, sizes, and locations are provided where work interface points occur."

Finally, Exhibit A, item 4. Design-Build Services, Design Responsibility states "design to requirements of the Contract Documents".

Exhibit C, Supplemental Conditions to Trade Contract states in item 1. Deviations "No deviations from the contract plans, specifications, or approved submittals will be allowed without prior written consent of Architect and Owner." Exhibit C also shows the date of anticipated tower crane operation to be approximately through August 2008.

Exhibit D is the Construction Document List, dated 1/30/07, which references the Project Specifications, dated 10/30/06, and Construction Drawings, also dated 10/30/06, which includes sheets A4.58, A4.59, and A6.08.

At the time the Owner-Architect Agreement was finalized on 10/19/06, the Exterior Building Maintenance System Subcontractor (Pro-Bel) had not been designated in the Agreement, Section 1.1.3.3, list of Owner's consultants and contractors. Per the Agreement, the Architect is responsible for "coordination between the Architect and the consultants and contractors listed in Section 1.1.3.3", and "The Architect shall be entitled to rely on the accuracy and completeness of services and information furnished by the Owner" (section 1.2.3.7). Also, "the Owner shall provide full information in a timely manner regarding requirements for and limitations on the Project" (section 1.2.2.1).

#### Summary:

Because the MG2's Construction Documents misrepresented the design requirements of the Exterior Building Maintenance System (window washing equipment), and they were responsible for the coordination of Pro-Bel's services, the Architect bears responsibility for the cost of redesigning and reworking the rooftop glass canopy structure and related work, including structural steel design and monorail supports, parapet, roof slopes and drains, cable railing, and mechanical equipment screen. However, both Pro-Bel and Skanska share responsibility, as well, because they both failed to identify conflicting information (deviations) in a timely manner, before it became an unavoidable problem. While it is clear the project team was aware of coordination issues between the building's rooftop canopy design and window washing system (see 7/19/06 email from MG2 to Skanska where Larry Reed expresses "surprise" regarding the timing of retaining Pro-Bel months later), MG2, Pro-Bel, and Skanska failed to communicate and coordinate in such a way to resolve the conflict.

[It may worth noting that the 5' 3-3/8" ("current dimension") shown in Pro-Bel's 2/27/07 shop drawing, sheet 2.01, revised to 7'-6" min. req'd. ("new canopy drawing not yet"), is less than the 5' 11-1/2" shown in Spider's brochure for "Work Cages", but I am not a window washing equipment expert.] Relates to Plaintiff statement that "we have seen no documentation from Spider indicating that Spider's window washing equipment would actually work in the space MG2 allotted for it." Also, "Indeed, from our review of MG2's drawings, we cannot see how any window washing trolley could have navigated the building perimeter on the monorail system designed and specified by MG2 without hitting the building parapet at each corner."

The decision to work "off-line" between MG2, Pro-Bel, AGS and Skanska in the 6/20/06 Meeting Minutes, and declare "Unless further action is required, this item is closed" contributed to the failure by all parties to resolve this issue in a timely manner. Skanska failed to adequately communicate and coordinate between Pro-Bel and MG2 to ensure that both parties shared correct project and product information. AGS's insistent demand to order the roof canopy glass (6/7/06, 6/15/06, 6/19/06, and 8/28/06 emails) before the rooftop canopy design was complete also contributed to this claim. MG2's acquiescence to the project team in order to expedite the AGS glass order (6/19/06 email) and erroneous or naive ("lacking critical ability or analytical insight") belief that they possessed sufficient information to design the upper roof canopy design system (7/17/06 and 7/19/06 emails) is a major contributing factor as to why the Construction Documents (and Conformance Set) misrepresent the Exterior Building Maintenance System or window washing equipment design.

Pro-Bel's apparent failure to respond to MG2's request to review their preliminary design sketches (6/13/06 email), failure to acknowledge receipt of MG2's final construction drawings (11/6/06 email) and respond accordingly, and delayed request for construction drawings ASAP (2/16/07) explains why it wasn't till 3/20/07 that Pro-Bel delivers their preliminary monorail reflected ceiling plan to JTM, and 4/17/07 that Pro-Bel acknowledges a conflict between their clearance requirements (7'-6") and those shown in MG2's construction drawing set (5' 3-3/8"). The apparent gap in communication (no written correspondence found between 11/6/07- 2/7/07) among all parties involved with the rooftop glass canopy and window washing equipment design, until Pro-Bel receives a Notice to Proceed from JTM, indicates that "the ball was dropped" by Skanska (who was soon relieved of their responsibilities), MG2 and Pro-Bel during this period of time.

Although AGS failed to revise their shop drawings, per MG2's corrections, for the required clearance between glass panels to accommodate the window washing monorail system, and the glass was fabricated without a means to suspend the monorail system (see RCH 5/14/08 Memo), presently, it does not appear this error or omission by AGS has been included in RCH's cost of repair for the Roof Canopy Claim. However, by ordering the rooftop canopy glass before the rooftop canopy design was completed by MG2 and Pro-Bel (see 6/19/06 and 6/28/06 emails), AGS assumed much of the risk for ordering the final glass sizes, based on the A2.36 roof canopy layout shown on 8/30/06. At this time, it does not appear RCH has included any additional costs for glass fabrication due to inaccurate sizing or configuration.

Consequently, I have apportioned responsibility for all costs associated with the Rooftop Canopy as follows: 50% MG2, 40% Pro-Bel, and 10% Skanska.