PRACTICAL ASPECTS OF IMPLEMENTING

SOUND ISOLATION AND NOISE CONTROL

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A suitable subtitle would be "The Frustrations of an Acoustical Consultant with Contractors". When the acoustical consultant is involved on an architectural project to assist with noise control or sound isolation design, it is because these aspects are critical. Usually a high standard of workmanship is as important or more important than the design itself, in achieving the desired results. It is often very difficult to get the "skilled trades" to properly build even the simplest designs that are specially configured for acoustical purposes. There are a variety of reasons:

- Total lack of understanding (e.g. thermal insulation materials used as sound absorption are often viewed as acting similarly, as "acoustical insulation"; that is, as an adequate sound barrier; small gaps, holes or cracks are often not viewed as important.
- Failure to pay attention to drawings and specifications (trades simply proceed in the normal fashion used on non-critical projects -- after all, they have been doing this for years!)
- Sloppy workmanship (e.g., even in attempting to build what is detailed, there may be inadequate care in fully caulking joints, use of gypsum board sheets with broken corners or edges; poor tolerances in fitting joints).
- Deliberate attempts at short cuts to save time and money.

Often many of important acoustical details will become hidden and inaccessible as construction proceeds. For many contractors "out-of-sight is out-of-mind". If the detail will be invisible or inaccessible, either they assume it is not important or they expect to get away with sloppiness. Therefore, construction errors must be caught at the right time to ensure proper results and resolve problems that might be blamed on poor design.

On projects with special requirements it is important to carefully review shop drawings of critical aspects prior to fabrication. A common occurrence is to submit such shop drawings only days before items are needed on site, putting the consultant and design team under heavy pressure. Even though the contractors may have had many months since contract award, the consultant may be deemed (unfairly) to be holding up the project. The solution, of course, is to take preemptive action and document a submission schedule and warn the owner and contractor when not adhered to. Sometimes shop drawings are submitted for approval after fabrication, or even after delivery to the site. When fabrication errors are then discovered, the construction schedule (which is usually as sacrosanct as the budget) is imperiled. This often leads to compromise solutions to save time.

On-site construction review should be done at strategic times. If too early, the details of concern may not be started; if too late, they may not be visible. Thus, there must be reliance on proper co-ordination and notice by either the contractor, the architect's site person, or the owner's project manager, to allow the consultant to schedule to be on site at the right time.

Example 1:

Gypsum board (GWB) partition between classrooms to extend to fluted deck above. GWB stopped at bottom of flutes and joint carefully caulked. Openings left through wall via flutes.

Solution: Close flutes with surface-applied GWB precut to flute profile.

Example 2:

Back-to-back fan coil units on common (GWB) wall between hotel rooms. Pipe penetrations to be specially sleeved and sealed to maintain acoustical and fire ratings. Contractor simply cut oversized holes and used thermal insulation over pipes. Very little working room between back of units and wall.

Solution: Cut proper pipe holes in GWB; cut in half through pipe holes; pre-caulk all joints; surface mount multiple layers on both sides of wall; seal all edges.

Example 3:

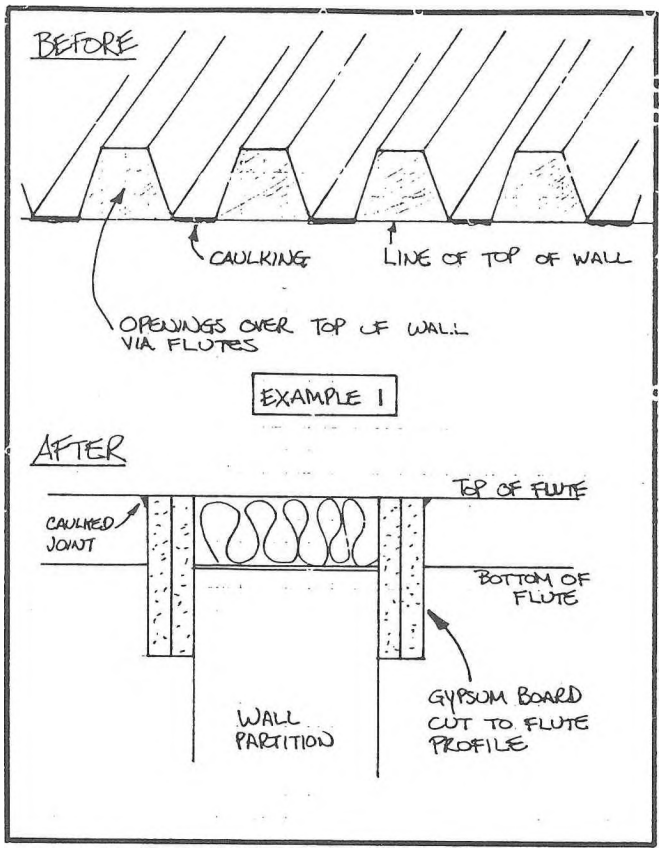
Floating concrete floor for tv studio, on concrete parapets (on isolators) to match existing floor level. Section of isolated parapets poured directly against existing structure, forgetting perimeter isolation board.

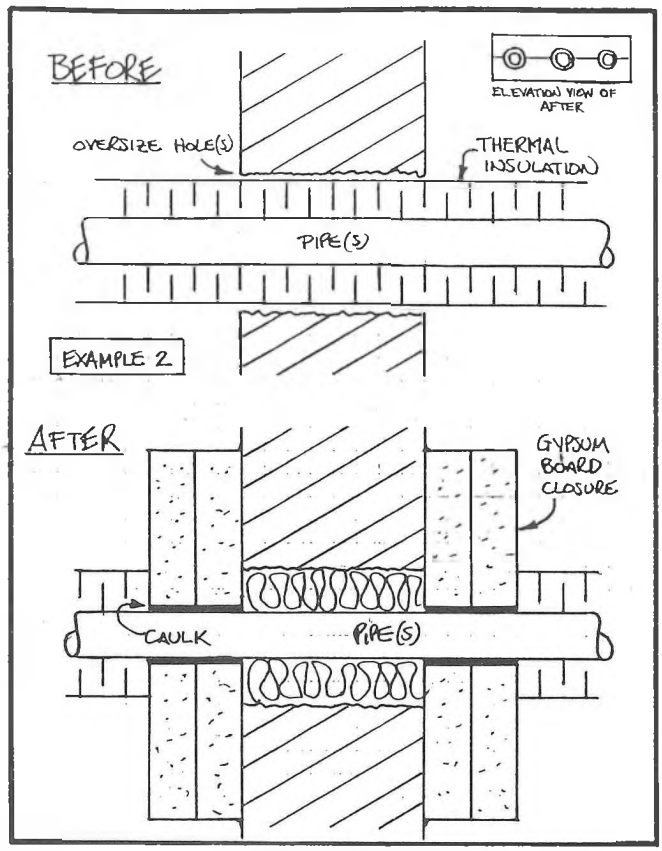
Solution: Saw cut joint; clean out; insert isolation board.

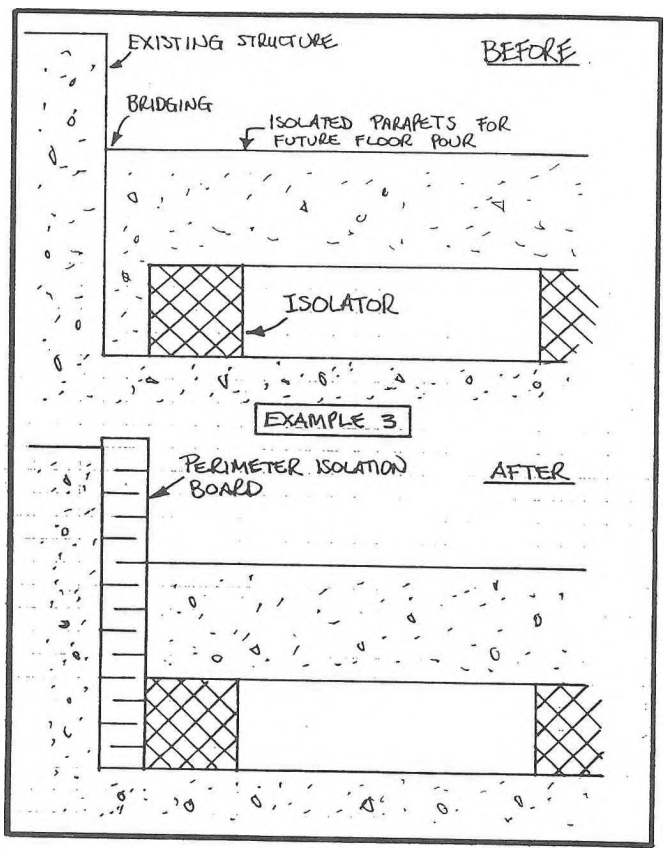
Example 4:

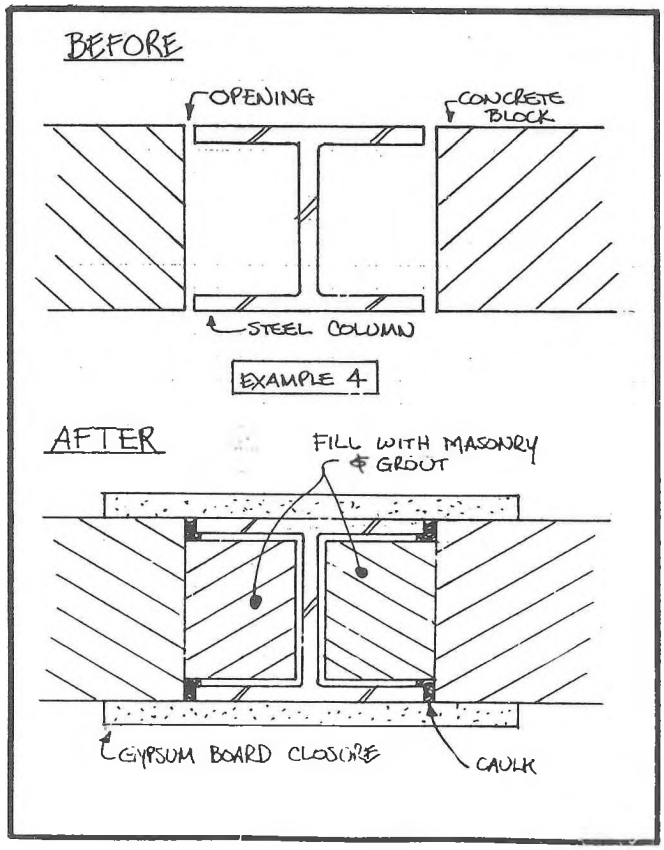
Concrete block wall integrated with steel columns. As built - gap between vertical edges of concrete block and columns, leaving openings through wall around columns.

Solution: Fill cavity with sawcut block, rubble, and grout solid. In some cases, build out column cap of concrete block or GWB.


BEFORE
CAULKING
LINE OF TOP OF WALL
OPENINGS OVER TOP OF WALL VIA FLUTES
EXAMPLE 1
AFTER
TOP OF FLUTE
CAULKED JOINT
BOTTOM OF FLUTE
GYPSUM BOARD CUT TO FLUTE PROFILE
WALL PARTITION


BEFORE
ELEVATION VIEW OF AFTER
OVERSIZE HOLE(S)
THERMAL INSULATION
PIPE(S)
EXAMPLE 2
AFTER
GYPSUM BOARD CLOSURE
CAULK
PIPE(S)


EXISTING STRUCTURE
BEFORE
BRIDGING
ISOLATED PARAPETS FOR FUTURE FLOOR POUR
ISOLATOR
EXAMPLE 3
PERIMETER ISOLATION BOARD
AFTER


BEFORE
OPENING
CONCRETE BLOCK
STEEL COLUMN
EXAMPLE 4
AFTER
FILL WITH MASONRY & GROUT
GYPSUM BOARD CLOSURE
CAULK