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UPCOMING ISSUES
Curating Culture, Emerging Urbanisms

COVER EXPLANATION
This cover of PRAXIS uses thermochromic ink, provided by Chromatic Technologies, Inc., which is designed to show color at normal temperature, and disappear when heated above 29 degrees celsius. The axonometric drawing of deCOi's Hyposurface project was produced by Saeed Arida.

SCRATCHING THE SURFACE

AMANDA REESER AND ASHLEY SCHAFER

It may well be that what we have hitherto understood as architecture and what we are beginning to understand of technology are incompatible disciplines. The architect who proposes to run with technology knows now that he will be in fast company and that, in order to keep up he may have to emulate the futurists and discard his whole cultural load including the professional garments by which he is recognized as an architect. Reyner Banham, 1960[1]

We were shocked by architecture's two extreme reactions to technology: technophobia, equating technology with loss–the loss of authenticity, the loss of space–and [technophilia, which] embraced technology without understanding its politics, putting out the idea that space is dead and that's good. Technology has to be contended with.... Technology is fabricated, and it's an instrument. It presents new opportunities. It's pervasive, it's undeniable and it's welcome. Liz Diller, 2002[2]

Incompatible or welcome? Architects have vacillated between enthusiastically embracing and reluctantly accepting technology's as yet another design problem. At the outset of the twentieth century, modern architects seized industrial technologies for both their functional efficiency and their forms. For Le Corbusier, the "Machine a Habiter" both performed as and represented a machine. Technologies were explicitly appropriated as much for their formal manifestations as for their functional capabilities. At the same time, Walter Gropius warned of the need to "give the lifeless machine-made product a soul."[3] By mid century, emerging electronic and mechanical technologies engendered a similar ambivalence, and were either entirely suppressed in the rational order of the modernist office tower's relentless grid, or, later, consciously and visibly expressed in techno-rationalist constructions like Rogers and Piano's Pompidou Center. The advent of digital technologies also fostered both architectural technophilia and technophobia, from Greg Lynn's computer animated dynamic simulations of the early 90s to the tactile, tectonic, and hand-drawn constructions of Glenn Murcutt.

So what is "new" now about architecture's relationship to digital technologies, in the second decade of their assimilation into the field? Undoubtedly, the relationship between architecture and technology is particular and specific to this moment in time and differs markedly from the production of the previous century. What distinguishes the latest technologies from previous innovations is their total integration into the work process, which has transformed the very means by which architects design and the way those designs are produced. While certain technologies remain extra-architectural, we are interested in the more systemic and "pervasive" effect of technologies and the ways in which architects are actively engaged in manipulating these technologies.

To be more specific, in our research and compilation of this issue, we questioned: is technology a tool, a device, a material, a product, or a result? Today it is alternately and simultaneously all of these things. It is precisely this multiplicity of roles that has allowed technology to profoundly transform contemporary architectural practice by radically and completely altering modes and standards of representation; by providing new materials and offering architects an ability to control and affect material production; and, finally, by enabling the architect to engage the design of highly complex building systems in ways never before possible.

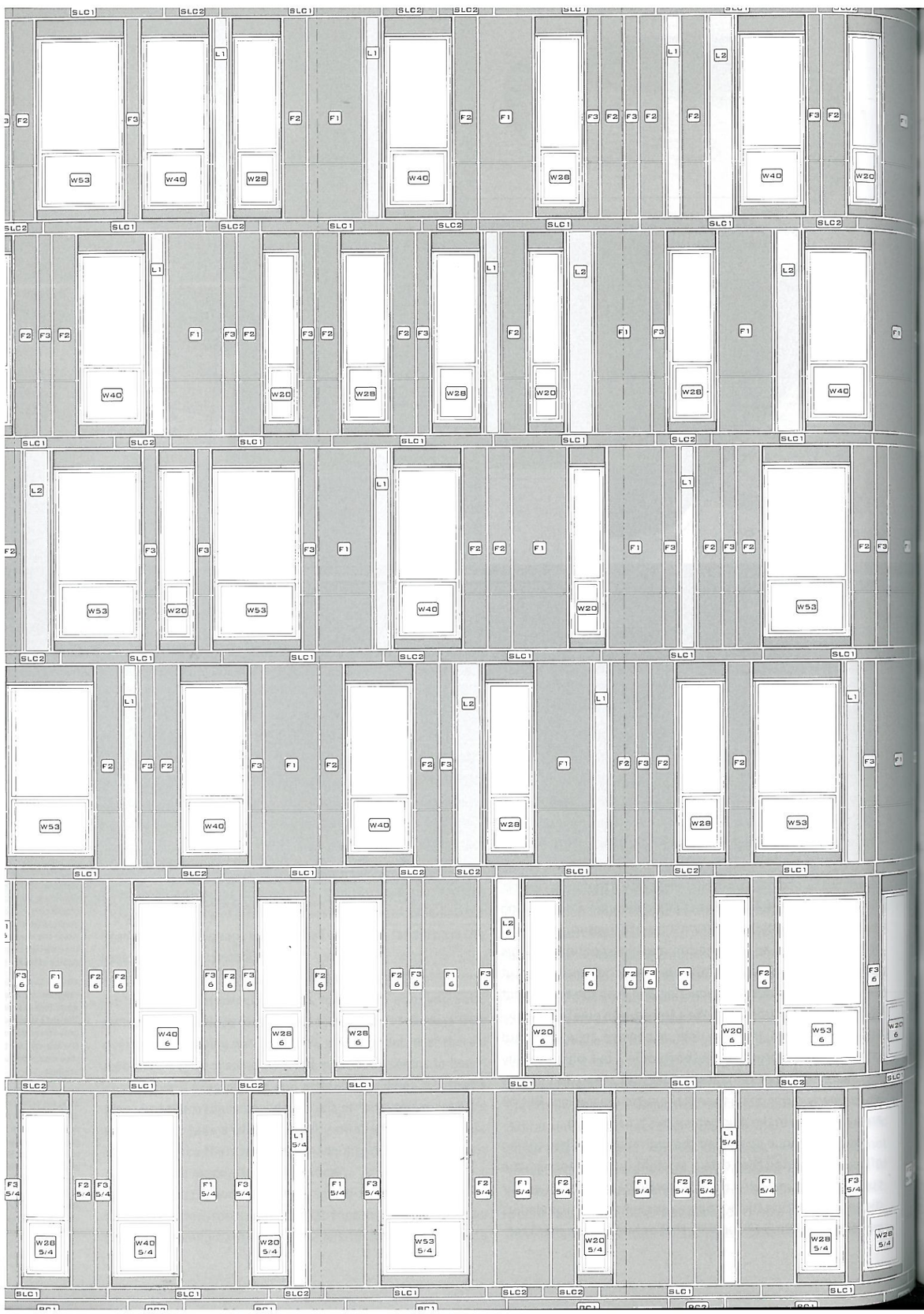
Incontestably, in the last ten years digital technologies have radically transformed the primary mode of architectural production–the drawing. Even the most technically disinterested offices have adopted CAD as a standard mode of project documentation, replacing the tools of the architect that have defined the profession since its inception. By now, we are all familiar with the formal implications and biases of computer-based design tools. As we've shifted from the T-square to NURBS-based modeling software, the default is no longer the straight line but the curve. To draw a box, ortho-snap has to be turned on. But for us, the more pressing question was how this switch from Mayline and pencil to software and plotter has changed the way we think about and make architecture.

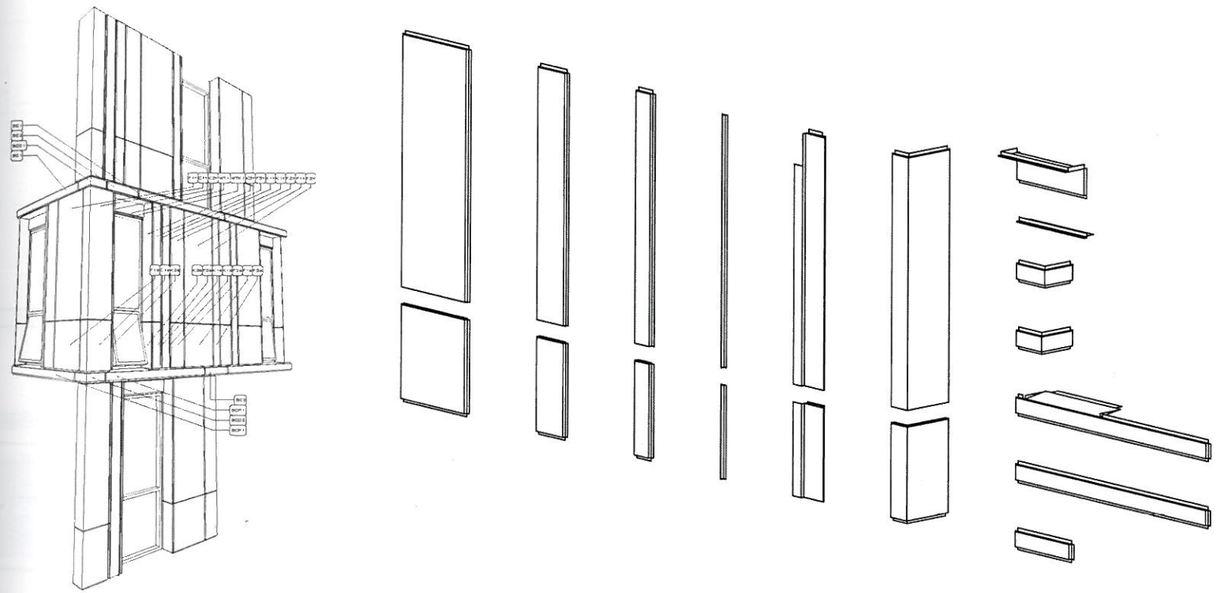
When we began to consider this question, a curious phenomena emerged. As compared to our first issue, produced four years ago, the quantity of material architects submitted increased exponentially. Rather than sending a definitive set of images and drawings for a project, designers now send hundreds of digital photographs, renderings, and drawings. Digital technologies facilitate the ready proliferation and delivery of images. Conventional plans and sections were more difficult to procure, and, when obtained, contributed little to the understanding of the project. Their effectiveness was more as an organizational diagram than as a description of the space. Unlike their modern predecessors, for whom the plan was supposedly "the generator,"[4] these architects designed through three-dimensional modeling, making a typical plan inadequate to clearly represent either the intention or the qualities of the design.

This anecdotal evidence suggests a larger phenomenon; while the primary tool of the architect remains the drawing, the means

COMPLEXITY AND CUSTOMIZATION: THE PORTER HOUSE CONDOMINIUM

SHARPLES HOLDEN PASQUARELLI (SHoP)





With backgrounds spanning art to business administration, New York architects Sharples Holden Pasquarelli (SHoP) bring a unique set of skills to each of their projects. As a result, creative problem solving has become a kind of signature. Where Eero Saarinan once called for a "style for the job," SHoP instead offers a "solution for the job." In the case of the recently completed Porter House Condominium, this attitude generated a design that incorporates innovative contemporary materials into a project with a limited budget by using and reconceptualizing technology – both material and digital.

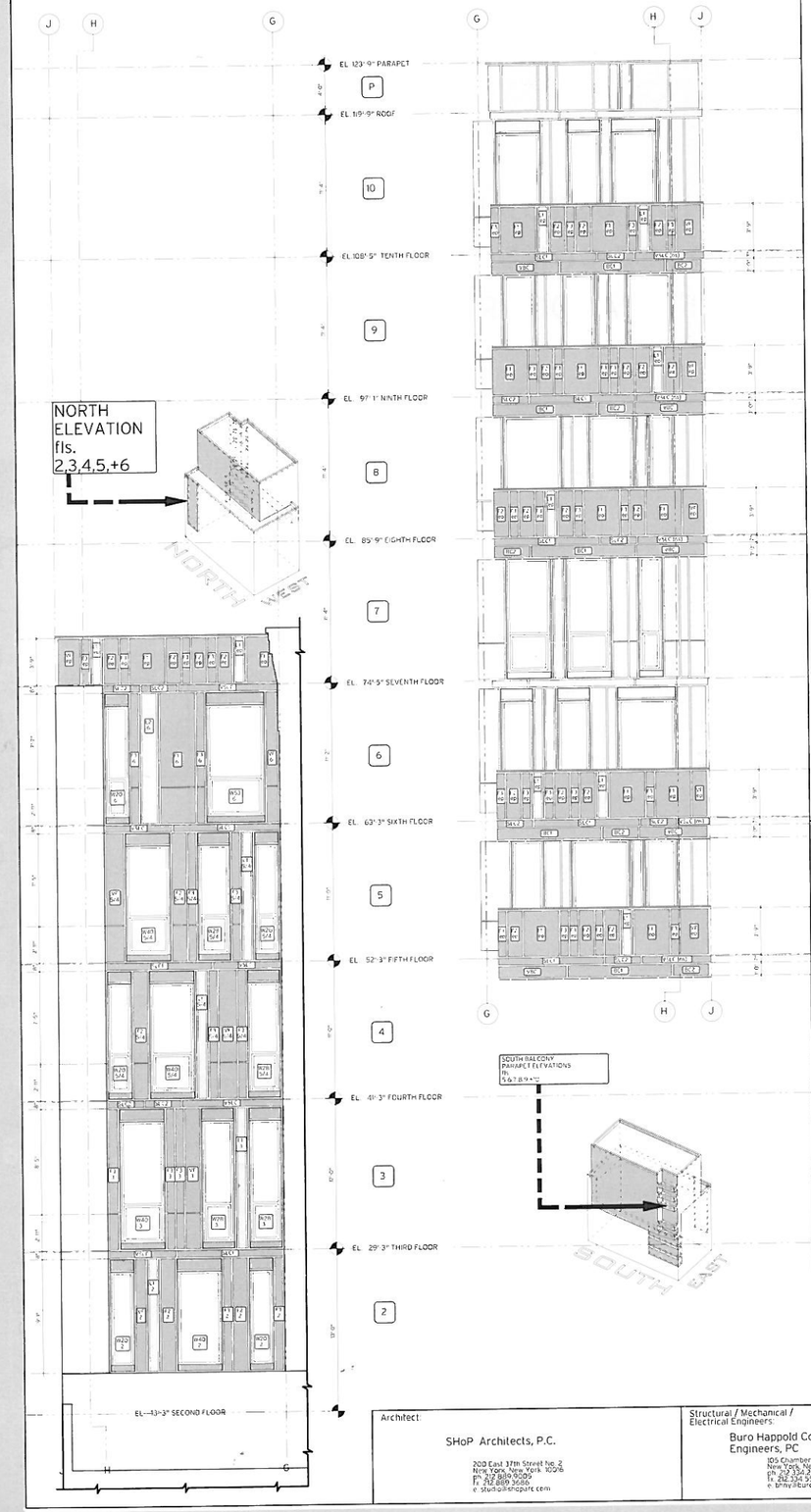
The Porter House is an addition to an existing warehouse in the Meatpacking district of Manhattan, which adds 15,000 square feet and four stories to the original yellow-brick structure. Working with developer Jeffrey M. Brown, SHoP bought the air rights from the adjacent building lots, enabling them to cantilever the addition eight feet to the south of the existing structure. While adding valuable square feet, this cantilever also helps define the new construction as an independent volume, rendered in a distinctive skin of zinc panels, floor-to-ceiling windows and translucent light boxes, which illuminate automatically each evening.

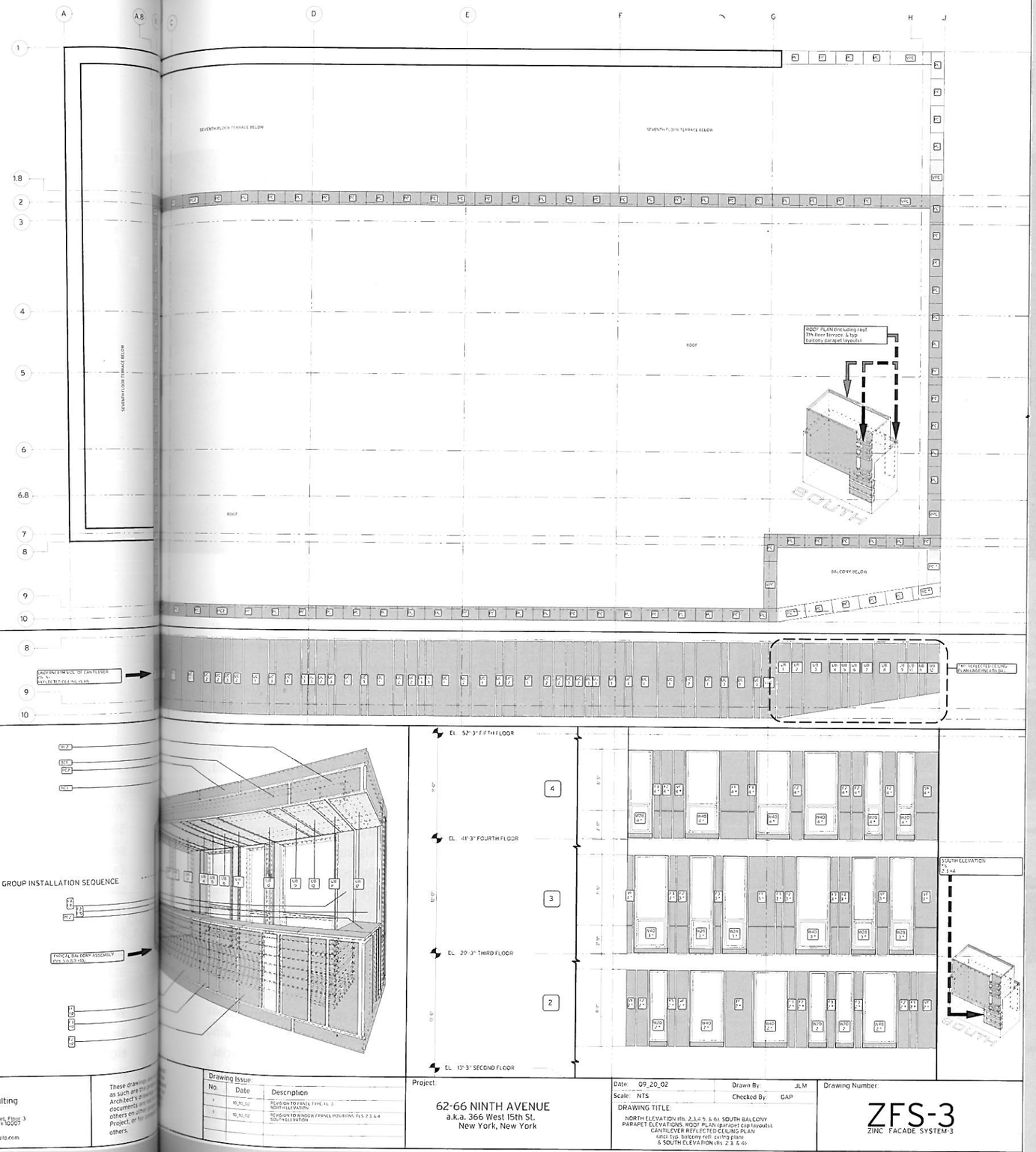
FACING PAGE: The building façades are comprised of a variable grid of zinc panels, floor-to-ceiling windows, and light boxes.

ABOVE: An axonometric detail of a building corner describes the different panel sizes, as well as their installation sequence and location.

LEFT: The addition is cantilevered to the south of the existing structure, adding four stories and 15,000 square feet to the original brick warehouse building.

RIGHT: An installation map for the zinc façade system. Assembly was facilitated by laser-scoring each panel with its part name, and by cutting a particular hole layout in the panel to ensure that it was fastened in the correct location.





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These drawings and... as such are the ... Architect's co... documents are ... others on other ... Project, or for ... others.

Drawing Issue:

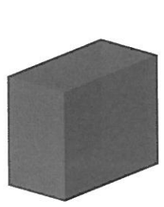
No.	Date	Description
1	10_10_02	REVISION TO PANEL TYPE FIL 3 NORTH ELEVATION
2	10_10_02	REVISION TO WINDOW / PANEL POSITIONS FLS 2 3 & 4 SOUTH ELEVATION

Project:
62-66 NINTH AVENUE
a.k.a. 366 West 15th St.
New York, New York

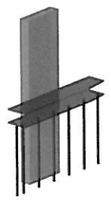
Date: 09_20_02 | Drawn By: JLM
Scale: NTS | Checked By: GAP

DRAWING TITLE:
NORTH ELEVATION fls. 2,3,4,5, & 6+ SOUTH BALCONY PARAPET ELEVATIONS, ROOF PLAN (parapet cap layouts), CANTILEVER REFLECTED CEILING PLAN (unit type, balcony refl. ceiling plans) & SOUTH ELEVATION fls. 2 3, & 4+

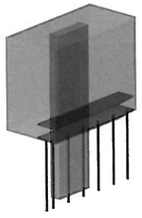
Drawing Number:
ZFS-3
ZINC FACADE SYSTEM-3



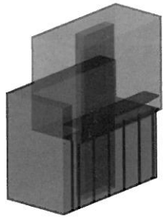
existing brick volume



new structure



new volume and structure



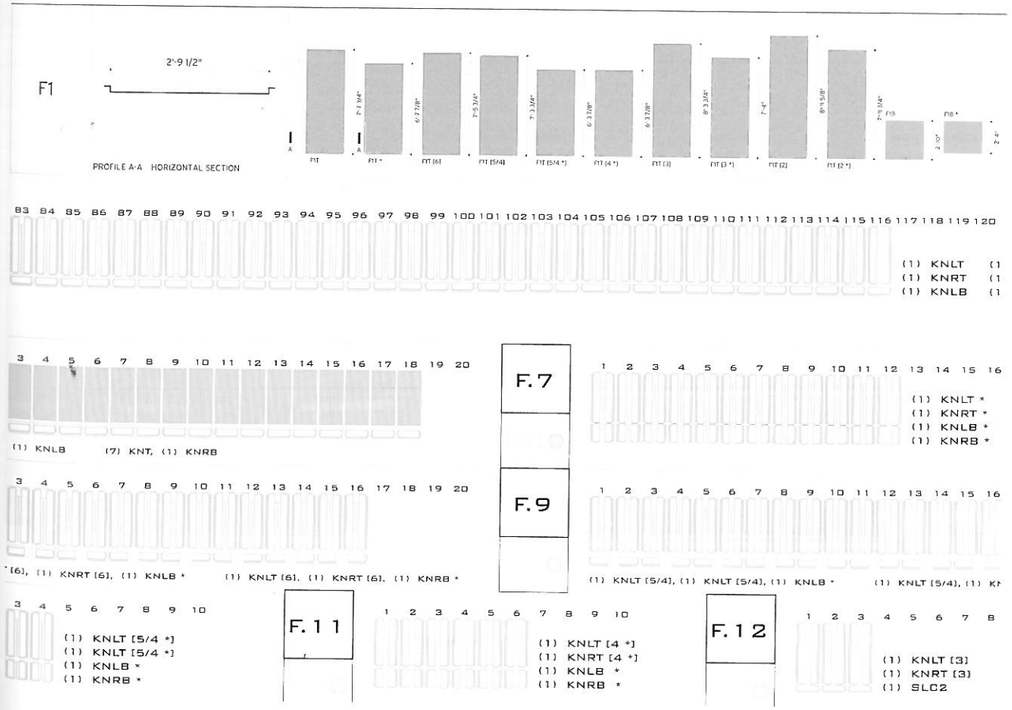
composite system

This zinc panel system was custom-designed in collaboration with the engineer Buro Happold. Zinc was chosen for its high durability and rich material qualities, as well as its industrial aesthetic. A sharp contrast to the yellow brick of the original structure, zinc also appears on a new awning designed at street level.

After SHoP learned that outsourcing fabrication would be prohibitively expensive, they decided to manufacture the panels themselves. Beginning with a standard one meter by three meter sheet of zinc material, SHoP devised a system of three typical panel widths, such that the original zinc sheet could be cut into either one large, two medium sheets, or three small sheets. From this seemingly simple starting point, 4,000 uniquely shaped panels were generated to accommodate various design specificities. Many of the panels were bent to perform three-dimensionally (as return profiles at windows, or as parapet caps, etc.) while others were designed to account for the varying floor heights and idiosyncrasies of the existing building.

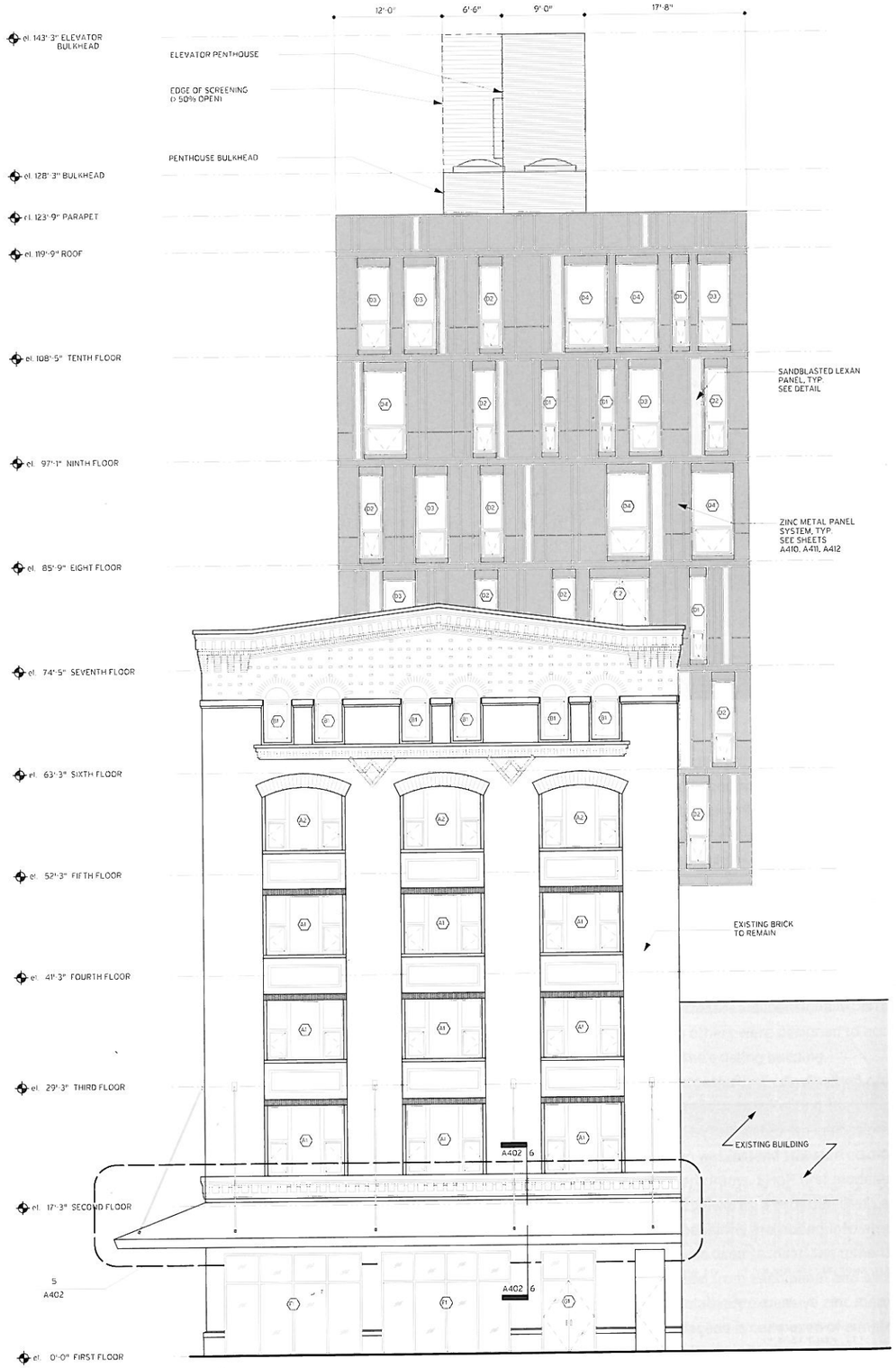
Perhaps the most significant aspect of the entire design and construction process was the absence of traditional shop drawings. Instead of transferring the design to dimensional drawings which describe each piece to be fabricated—an impossible task given the number and variation of parts—the design was instead transferred directly to the cutting machine through various software programs. SHoP first modeled the project in RHINO, then brought their design into Solidworks, a program that can re-model a three-dimensional object when new dimensions are added into an excel worksheet. Finally, a different software program was used to 'nest' the dimensions onto panels, optimizing the amount of material used from each panel and allowing the firm to purchase nearly exact amounts of the relatively expensive zinc material.

As it was ultimately realized, the Porter House façade is composed of a matrix of zinc panels (three widths), floor to ceiling windows (four widths), and lightboxes (two widths); this design and construction was possible only through innovative use of digital and material technologies. –AMANDA REESER



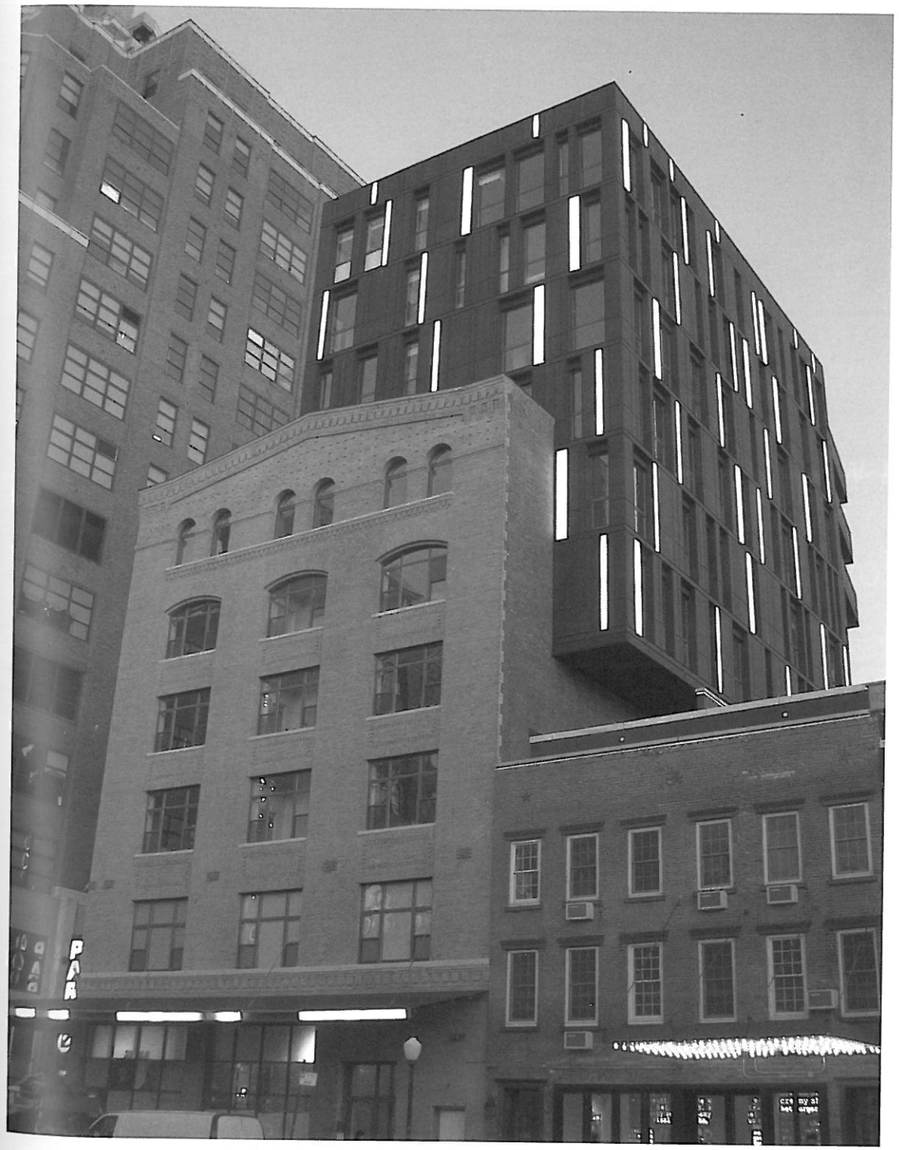
ABOVE: Photos show the pane installation process, which was completed in less than ten wee

LEFT: By designing the unfolde panels to fit with maximum effi ciency on the sheets of raw ma ial (one foot by three foot zinc panels), SHoP was able to use 9 of the material.



RIGHT: The east elevation shows the façade of the 1902 brick warehouse, with SHoP's new addition cantilevered to the south.

FACING PAGE: The unusual shifting floor plates of the design resulted in eight different unit types within the 22 condominiums. The varying glazing and light boxes obscure the program and structure behind, in contrast to the Italian Renaissance Revival Structure below.



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