FACILITIES & CONSTRUCTION MANAGEMENT TASK FORCE

SELECTED PROJECT PROFILES

- Puck Building, 4th Floor- FAS, Sociology Department
- 838 Broadway, 6th Floor- School of Continuing and Professional Studies
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Puck Building, 4th Floor- FAS, Sociology Department (successful project)

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838 Broadway, 6th Floor
School of Continuing and Professional Studies

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Appendix- Puck Building History and Lessons Learned

Appendix- 838 Broadway SCPS History and Lessons Learned
1. **Project Information**

   **Project:** Puck Building 4th Floor- FAS, Sociology Department

   - **Area (SF):** 20,867 SF
   - **Use:** Academic/Faculty and Graduate Student Offices
   - **Scope:** Full gut renovation interior fit out with new HVAC equipment on floor.
   - **Number of Floors:** 1
   - **Property:** Leased (20 Years, w/ 18 years remaining at time of design)
   - **Property Age:** >100 years

2. **Client Information (Decision Makers/Stakeholders)**

   - **Primary Client:** Dean of Faculty Arts and Science (2 Decision Makers)
   - **Secondary Client:** Sociology Department (4 Faculty Members)
   - **Decision Process:** Faculty was presented with design options. Options were presented with cost in mind - low to high. Once costs were defined, the Dean decided on scope and this was conveyed to the Department. The Dean controlled the budget. The EVP’s Office also controlled the budget and was the final decision maker on the additional funding required. Detailed analysis indicating budget variance and the reasons for the proposed scope (MEP and architectural finishes) were required. The EVP’s Office also reviewed the design for compliance with the FAS Master Plan Study’s standards as well as the aesthetics.

3. **Milestone Dates for the Project:**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Initial Start</th>
<th>Weeks</th>
<th>Actual Start</th>
<th>Weeks</th>
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<td>Pre-Design (Arch Selection)</td>
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<td>18 Wks.</td>
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<td>10/7/05</td>
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<td>Move-in</td>
<td>12/01/05</td>
<td>--</td>
<td>02/14/06</td>
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   - **Budget Initiation Date:** 12/04—from FAS Master Plan Study. (Final study issued 2/05).
   - **No. of schedule changes since the project started:** 1
   - **Comments:** Selection of Architect and project start took several months. The delay in the design phase was due to vetting out the AC scope and reconciling the initial conceptual FAS Master Plan budget with the proposed scope estimates. Delay in starting the construction was the result of waiting for final approval on the additional funds required to complete the project.
4. **Bidding Information**
   - **Bid Date:** 09/1/05
   - **Type of Contract:** CM- Cost Plus. Selection of CM occurred during the design phase. Three (3) CM firms provided bids for fees only. The selected CM provided the lowest bid (7% GC; 2.75% fees, 1.65% insurance) and had just completed renovating the lower NYU floors (second and third).
   - **Construction Bid Price:** $4,024,269 or $192.85/SF

5. **Project Budget**

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<tr>
<th>Scope</th>
<th>Initial (FAS MasterPlan)</th>
<th>Final</th>
<th>Variance</th>
<th>Initial (FAS MasterPlan)</th>
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<td>Contingency</td>
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<td>$(29,748)</td>
<td>$ 15.20</td>
<td>$ 16.62</td>
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<td><strong>TOTAL</strong></td>
<td><strong>$4,956,359</strong></td>
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<td><strong>$237.52</strong></td>
<td><strong>$282.56</strong></td>
<td><strong>$(45.04)</strong></td>
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**NOTES:**

- Initial budget was prepared as part of the 2004 FAS Partners Plan- Master Plan Study (Final study was issued in 2/2005). Budget was prepared by Consultants and their Estimator finally it was reviewed by NYU.
- Initial budget was based on written outline specifications and diagrammatic blocking plans. Initial budget accounted for 10% design contingency and 7% escalation on construction costs at this planning phase. No contingency was accounted for increases in other scope- i.e. Telephone- need for new switches, etc.
- Initial estimate underestimated scope: i.e. 4 foot deep masonry openings since building is sub-divided in two halves, supplemental AC’s, miscellaneous steel, appropriate HVAC systems, and proposed level of finishes. Initial budget also underestimated certain costs. 10% design contingency proved inadequate at the planning phase to cover underestimated costs and the Client’s desired scope.
- This project was the first FAS Partners Plan renovation project. After the actual/final costs of this project and the second project was established, all Partner’s project costs including contingencies and escalations were re-evaluated in 1/2006. Subsequently, all Partner’s projects budgets were increased.
- **Final Soft Cost/ Final Total Project Cost:** 24.2%
- **Final Hard Cost/ Final Total Project Cost:** 75.8%
  (Hard Cost= Construction Cost + Contingency)
- **Final A/E Fees/ Final Construction Cost:** 10.8%
### Final Contingency/Final Construction Cost:

08.4%

#### Construction Cost Breakdown

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<th>Cost/SF</th>
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<td>Distinguishing Conditions</td>
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<tr>
<td>- Demolition</td>
<td>$ 76,309</td>
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<td>- New Electrical Switch</td>
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<tr>
<td>- Acoustical isolation of wood flr. above</td>
<td>$ 46,895</td>
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<tr>
<td>- AC Chiller + Infrastructure to support chiller (cost above base scope)</td>
<td>$ 412,000</td>
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<td>- Landmarks and DOB costs b/o this is a leased space (NYU does not typ. pay)</td>
<td>$ 49,000</td>
<td>$ 2.35</td>
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<tr>
<td>- Total Dist. Conditions</td>
<td>$ 624,204</td>
<td>$ 29.92</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$4,124,857</strong></td>
<td><strong>$197.67</strong></td>
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</table>

**Notes:**

The **Base Interior Fit-Out Costs @ $167.76** represents level of finishes/scope that NYU has been constructing for academic offices. In this project, the scope above and beyond “vanilla” construction includes: refinishing and replacing sections of existing of wood floor (estimated @ $10/SF above carpet cost); wood doors within aluminum frame (not hollow metal), glass clerestory at perimeter offices, metal and glass doors and windows at interior spaces, one VAV box per perimeter office (34 perimeter offices = 34 VAV boxes, when the typical is every three per office = 11 VAV boxes), new toilets and plumbing, and open ceiling with exposed painted conduits and minimal acoustic ceiling tiles (not the standard 2 x2 ACT).

6. **Scope Assessment during Design Phase**

- **AC System**. Refer to the attached Appendix for further information on the AC scope.
  - There were three options from least to most expensive:
    1. Replace (3) existing AC units with new (3) 25 ton split units. This was the base scope defined in the FAS Master Plan Study ($318,000)
    2. Furnish and install (4) DX units ($390,000)
    3. Furnish and install chiller with (4) air handling units ($730,000)
  - Cost difference from base scope to chiller is $412,000
  - Life cycle analysis indicated 15 year payback which is almost equal to the life of the 20 year lease. This analysis excludes the time value of money.
  - With chiller system, this allowed department to re-capture two needed perimeter offices, which could account for $175,000 savings over a 20 year lease (excludes time value of money). The cost of the chiller would then be $237,000.
  - Chiller allows for smaller ducts and higher ceilings (used water side economizer).
  - Chiller system allows for better noise control, excellent temperature controls, and energy cost savings. The DX system is installed on the 2nd and 3rd floor and has been proven ineffective in providing adequate cooling control to the tenants.

Page 5  June 10, 2008
- **New Boiler**
  - New gas fired hot water boiler and pumps (scope included in FAS Master Plan study). This was to provide control over heating since this is a leased building; heat could then be provided off hours since faculty work outside normal working hours. Estimated cost for boiler and associate infrastructure was $224,000. Scope was value engineered out. Lower NYU Wagner floors do not have heating issues during off hours.

- **Furniture Millwork**
  - Bid to millworkers and furniture vendors to ensure best pricing. Furniture vendors were the lower bidders. Office furniture is customized but limited to three options. This allows flexibility and accommodates high shelving needs. Systems office furniture was not appropriate for needs and did not match the aesthetic standards. Faculty wanted wood veneer shelves and desk; the costs exceeded the budget. It was noted that the only the edge of the shelves would be visible and it would be advisable to spend money where you could achieve the highest value.

7. **Value Engineering Items**
   - Approved VE Items:
     - No new boiler system/no new gas service to serve boiler
     - Omit clerestory @ interior offices
     - Substitute full glass walls at south ends with “windows”
     - Replace wood veneer with plastic laminate at copy and pantry
     - Replace carpet tile to lower price broadloom at offices
     - Estimated Realized Savings = $290,000.

   - VE Items **NOT** taken:
     - Keep custom convector enclosures
     - Keep wood veneer doors in lieu of hollow metal doors or painted wood doors
     - Keep full height ceramic tile in restrooms in lieu of 4 feet high
     - Keep suspended ceiling tiles at perimeter offices in lieu of painted open ceiling
     - Keep refinishing of existing wood floor in lieu of carpeting in all public spaces
     - Estimated Unrealized Savings = $174,000

   - VE Items **NOT** considered:
     - Keep one VAV box per one perimeter office in lieu of one every two or three offices- FAS’s standard is one VAV box per one perimeter office
     - Keep metal and glass office front system in lieu of hollow metal

8. **Scope Changes During Design Process**:
   - Change: None. Scope was vetted out before decisions were made.
9. **Scope Changes (after decision approved) During Construction:**
   - **Change:** Modify perimeter offices to a more standard office size as directed by University Administration.
   
   - **Reason:** The FAS Master Plan Study indicated that the standard faculty office size is 125 SF. The proposed was within the average range of 140 SF. The larger size was the result of the Faculty’s request for a larger office size; also the floor layout dictated this optimal office depth- if not the corridor width would have increased from 6 feet to 10 feet. Because of the irregular 4 sided wedged shaped plan and the irregular spacing of windows, the office areas varied. The agreeable solution was to keep the larger office size of 140 SF but to make all as equal as possible.

   - **Change:** Relocate and re-configure Department Chairmen’s suite as directed by University Administration.
   
   - **Reason:** The location of the Chairmen’s office in the center of the corridor and the “bump out” of his administrative assistant’s office was not acceptable. The agreeable solution was to relocate the suite to the corner.

10. **Change Orders:**
   - Number of Change Orders: 75
   - Total Value of Change Orders: $349,578 (8.7% of construction trade costs)
   - Reasons for Change Orders:
     - Phased Approval (Base Scope): 13.50%
     - Conflict/Error in Documents: 16.09%
     - Field Conditions: 53.25%
     - Scope Change by FCM: 8.50%
     - Scope Change by Client: 8.66%
     - Miscellaneous: 0.99%

   - How are change orders to be submitted and who reviews?
     Change orders were issued to owner and design consultants for review, comments and approval prior to work being done. If time was of the essence, owner would request order of magnitude cost before directing this work. Owner would not approve design consultants proposed design changes during construction unless necessary and approved and acknowledged by client.

   - What type of claim avoidance procedures has been initiated?
     Design consultants and owner would confirm if a scope change was valid: if CO scope was documented on drawings, assess if scope is needed, evaluate the time and materials required, and confirm the associated costs. Design consultant, owner and CM would then review and come to common resolution.

11. **List of Attachments**
   - NYU- Project Information- Selected Academic Projects (Puck- 4th Floor)
   - Floor Plan of Renovation (Puck- 4th Floor)
NYU- PROJECT INFORMATION- SELECTED ACADEMIC PROJECTS

Puck, 4th Floor

School: Faculty Arts & Science
Department: Sociology
Program: Faculty Offices, Seminar Rooms
Architect/Engineer: Rogers Marvel Architects/ FMC Engineers
Contractor: Plaza Construction (CM)
Construction Start: 1/2005
Construction Completion: 3/2006

- Client representative and faculty committee provided design direction at bi-monthly meetings. NYU review provided.
- Original Masterplan project budget of $230/SD incl $187 for cast concrete + $20 for SF, understated by $4/5 per square foot. Add'l funding of $490,000 requested. Overbudget issue delayed schedule. Final funding allowed 8.4% contingency and not the typical 10%. CCM agreed to work towards 8.4% contingency.
- Selective demolition of raw space. Restoration of existing wood floors, floating ceiling panels, clerestory at perimeter offices, wood doors and millwork at major public spaces, glass fronts at interior spaces, new toilets, and one VAV per perimeter faculty office (FAS standard). FSR 2 to 4 are 20 year leased space.
- Perimeter offices will be new perimeter radiation system, suspended drywall ceiling to isolate noise from floor above (half of 4th floor area), new switchgear, selective demolition of internal 18" thick masonry walls (to ensure contiguous and flowing circulation). Landmark fees required on project.
- Chiller & DX (all) AC system priced; chiller system is approx. $300,000 more than DX, but 2nd & 3rd Flr DX system cannot provide adequate cooling, and chiller system provides energy cost savings, better temperature control, smaller ducts (reduction of masonry wall openings = cost savings) and recapture of two perimeter offices ($175,000 savings over 20 year lease excluding time value of money). Life cycle analysis shows 15 year payback.
- Perforated desk surface and smaller number of offices (37 offices) increased millwork office costs. TOTAL $256,000.
- Project is over budget by $26,000. NYU supervision fee covered over budget. Contingency was only 8.4%.
- At a recent chair and director's meeting, the DEAN observed to me that he and his fellow deans had not yet had a chance to see our wonderful new quarters at Puck.
1. **Project Information**

Project: **838 Broadway, 6th Floor**  
School of Continuing and Professional Studies

- Area (SF): 8,400 USF  
- Use: Faculty and Administrative Offices  
- Scope: Full gut renovation interior fit-out with new HVAC equipment on roof.
- Number of Floors: 1  
- Property: Leased  
- Property Age: >110 years

2. **Client Information (Decision Makers/Stakeholders)**

- School Client: School of Continuing and Professional Studies  
- Administration Client: Office of the Executive Vice President  
- Decision Process: 1st level – SCPS (Assist Dean, Assoc Dean-Finance, Sr Dir Facilities Admin); 2nd level – EVP’s Office. EVP Office approved all funding amounts.

3. **Milestone Dates for the Project:**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Initial Start</th>
<th>Weeks</th>
<th>Actual Start</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Kick-Off</td>
<td>7/30/07</td>
<td>1 Week</td>
<td>7/30/07</td>
<td>1 Week</td>
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<tr>
<td>Design (SD, DD)</td>
<td>8/6/07</td>
<td>5 Weeks</td>
<td>8/03/07</td>
<td>7 Weeks</td>
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<td>Const Documentation</td>
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<td>8 Weeks</td>
<td>9/18/07</td>
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<td>Bid Issue</td>
<td>10/8/07</td>
<td>5 Weeks</td>
<td>10/08/07</td>
<td>3 Weeks</td>
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<tr>
<td>Construction Start</td>
<td>11/05/07</td>
<td>7 Weeks</td>
<td>11/05/08</td>
<td>16 Weeks</td>
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<tr>
<td>Move-in</td>
<td>1/11/08</td>
<td>--</td>
<td>03/14/08</td>
<td>--</td>
</tr>
</tbody>
</table>

- Budget Initiation Date: October 15, 2007
  - Lease signing was July 2006.
  - The space was originally considered for Finance during 2006 but was rejected by the client. Space was vacant for approximately 1 year.
  - SAPD informs OCM of SCPS as tenant on June 22, 2007; program information issued on July 17, 2007. Design kick-off was on July 30, 2007, which leaves a very aggressive 8 month schedule for design and construction.
  - SCPS project was driven by March 31, 2008, lease termination at 110 Fifth Avenue, the temporary space for ITS. ITS needed to move to 10 Astor, 5th floor, to be adjacent to existing ITS. SCPS needed to vacate 5th floor in time for construction to occur for ITS.

- No. of schedule changes since project started: 1
- Comments: Selection of Gensler as architect was immediate, given their success on previous fast track renovation projects. Delay in the design phase was because of the vetting out the AC scope and multiple costing scenarios requested of CM. Delay in
starting construction was the result of waiting for final client approval on the AC scope and additional cost projected for the project. In order to expedite the project, bidding was done at 75% CD’s. The major trades were awarded. Other trades were shortlisted and awarded after issue of 100% CD’s. Schedule delay impacted the ITS move to 10 Astor Place, 5th Floor. This resulted in overtime costs for the ITS 10 Astor project.

4. Bidding Information
   - Bid Date: 10/05/07 (75% CD’s due to fast track schedule; 100% CD’s issued as Bulletin)
   - Type of Contract: CM. StructureTone selected by bid waiver due to extremely short timeframe. (6% GC; 3% Fee; 1.25% Insur.)
   - Construction Bid Price: $3,226,921

5. Project Budget

<table>
<thead>
<tr>
<th>Scope</th>
<th>SAPD Initial Budget</th>
<th>JLL Recommend ed Budget</th>
<th>Revised Budget</th>
<th>Final Cost</th>
<th>Variance btw Revised and Final</th>
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<tr>
<td>Contingency</td>
<td>$254,447</td>
<td>$441,392</td>
<td>$186,945</td>
<td>$30.29</td>
<td>$52.55</td>
<td>(22.26)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>$4,900,000</td>
<td>$2,500,000</td>
<td>$2,400,000</td>
<td>$583.33</td>
<td>$297.62</td>
<td>$588.8</td>
<td>$158.94</td>
<td></td>
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</tr>
</tbody>
</table>

NOTES:
- SAPD Initial Budget was $4.9M.
- Budget was set to $2.5M by EVP’s Office through recommendation of Jones Lang LaSalle. OCM had projected a possible $4 to 5M budget. The project cost was to be shared between EVP’s Office ($1.5M) and SCPS ($1M). There was concern that the $2.5M would not be sufficient. The understanding was that Funding would be increased once CM budget was done (if needed), but with the directive from EVP’s Office not to exceed $3M.
- Jones Lang LaSalle had been hired by EVP Office to assist in value engineering the costs; due to the age of the building, hidden conditions, and the client’s program, there were no significant suggestions which could be implemented.
- The funding was increased 3 times:
  - 1st Supplemental $3.6M. CM budget based on 75% CD’s demonstrated that the project was initially under funded.
  - 2nd Supplemental $4.9M. Based on distinguishing conditions as noted in construction cost breakdown below, like replacement of entire ceiling.
- 3rd Supplemental $4.95M. Additional funding from SCPS for graphics design & installation.
  - Landlord reimbursement for $23,463 is not reflected in the above costs.
  - There is $174,674 remaining unspent in the Final Contingency.
  - Final Soft Cost/ Final Total Project Cost: 23%
  - Final Hard Cost/Total Project Cost (Hard Cost = Constr Cost + Contin): 77%
  - Final A/E Fees/ Final Construction Cost: 13.7%
  - Final Contingency/ Final Construction Cost: (Note- Not all spent) 13.1%

**Construction Cost Breakdown (Excluding Contingency)**

<table>
<thead>
<tr>
<th>SF: 8,400</th>
<th>Cost</th>
<th>Cost/SF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td><strong>Final</strong></td>
<td><strong>Final</strong></td>
</tr>
<tr>
<td>Base Interior Fit-Out Costs</td>
<td>$2,367,435</td>
<td>$ 281.84</td>
</tr>
<tr>
<td>Distinguishing Conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Demolition</td>
<td>$ 34,754</td>
<td>$ 4.14</td>
</tr>
<tr>
<td>- Replace Ceiling &amp; Sprink.</td>
<td>$ 150,000</td>
<td>$ 17.86</td>
</tr>
<tr>
<td>- Roof Top AC Units</td>
<td>$ 220,000</td>
<td>$ 26.19</td>
</tr>
<tr>
<td>- Structural, Roof and Clg Work for Roof Top AC</td>
<td>$ 275,319</td>
<td>$ 32.78</td>
</tr>
<tr>
<td>- OT to meet schedule</td>
<td>$ 176,733</td>
<td>$ 21.04</td>
</tr>
<tr>
<td>- Electrical Svc from 4th Fl.</td>
<td>$ 37,544</td>
<td>$ 4.47</td>
</tr>
<tr>
<td>- Scaffold work- 20” Clg Ht</td>
<td>$ 70,568</td>
<td>$ 8.40</td>
</tr>
<tr>
<td>- ITS Infrastructure</td>
<td>$ 30,797</td>
<td>$ 3.67</td>
</tr>
<tr>
<td>- Total Dist. Conditions</td>
<td>$ 995,715</td>
<td>$ 118.54</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$3,363,150</strong></td>
<td><strong>$ 400.38</strong></td>
</tr>
</tbody>
</table>

Note:
The $281.84/SF for the Base Interior Fit Out scope includes additional costs incurred because of the 20 foot high ceilings- i.e. 6” heavy gage metal studs in lieu of 2 ½ metal studs, additional supports required for ductwork, etc. Refer to attached Appendix for further detail on the distinguishing conditions.

6. **Scope Assessment During Design Phase**- Refer to Appendix for further detail on scope noted below.
  - Examined 4 options for AC systems
    - Reuse of existing Rooftop Units
    - Rooftop Chiller
    - 2 Rooftop AC Units
    - 6 Rooftop AC Units
Examined 4 options for AC placement
- Rooftop
  - Acoustical requirements
  - Structural requirements
  - Landlord requirements
- Interior
  - Not feasible due to Client space requirements.

Examined 3 structural designs for 2 Rooftop AC’s
- Steel platforms on east and west bearing walls
- Steel beams spanning east and west bearing walls
- Steel beams spanning only west bearing walls

Examined 3 types of acoustical ceiling options
- Composite fiberglass/gypsum ceiling tile with batt insulation and vinyl barrier
- Acoustical Tile with batt insulation and vinyl barrier
- GWB ceiling with batt insulation

Examined 2 types of interior infrastructure support
- Post and beam stud structure with 10’ high corridor walls to conceal infrastructure
- Hung from underside of wood roof deck with 12’ high corridor walls to conceal infrastructure

Examined 4 types of office fronts
- Aluminum and glass storefront
- Paint grade wood doors with vision panel
- Paint grade HM door with side lite
- Paint grade HM door with knockdown HM frame

7. **Value Engineering Items**

   - Approved VE Items
     - Deleted VAV system
     - Deleted motorized Shades
     - Leave existing window frames
     - Factory built reception desk instead of millwork
     - See item 6 above for various options

   - VE Items **NOT** taken
     - Install AC on the floor
     - Furniture workstations instead of offices
     - Remove fabric panels in corridor
     - See item 6 above for various options
8. **Scope Changes During Design Process:**
   - **Change:** None. Scope was vetted out before decisions made.

9. **Scope Changes (after decisions approved) During Construction:**
   - **Change:** Add Closet, Modify Millwork in Copy Room.
     - **Reason:** Client request.
   - **Change:** Signage design and installation.
     - **Reason:** Client request.
   - **Change:** Add HVAC to ITS Room.
     - **Reason:** Delay in full information from ITS.
   - **Change:** Revise structural design for Rooftop units twice.
     - **Reason:** Landlord change.
   - **Change:** Add Steam Isolation Valves on risers.
     - **Reason:** Omission.

10. **Change Orders (Construction Only):**
    - Number of Change Orders: 56
    - Total Value of Change Orders: $262,369 (or 8.2% of Construction Trade Costs).
    - Reasons for Change Orders:
      - Phased Approval (Base Scope): 41%
      - Conflict/Error in Documents: 9%
      - Field Conditions: 32%
      - Scope Change by FCM: 0%
      - Scope Change by Client: 16%
      - Miscellaneous (Landlord): 2%
    - How are change orders to be submitted and who reviews?
      CO’s submitted simultaneously to PM, Consultants and Commissioning Agent for review and approval. Clients were consulted on CO’s which directly impacted functionality, aesthetics, or which were significant additional cost to the project. Administration held final approval on large CO’s which necessitated supplemental funding. For many Change Orders, PM requested order of magnitude estimate in order to maintain schedule.
    - What type of claim avoidance procedures has been initiated?
      Design consultants and PM confirmed if scope change was necessary. Bulletin was issued by A/E for CM to price and provide schedule impact. For larger changes, Consultants, PM and Clients made joint decision on how to proceed.

11. **List of Attachments**
    - 838 Broadway – Final Furniture Plan 1-08
    - Existing Conditions and New Space Photos
Upon entering into a lease for the occupancy of the second, third and fourth floors of the Puck Building, NYU negotiated and accepted the installation of several Direct Expansion (DX) air conditioning units (air cooled) on each floor. The installation of the new HVAC equipment would be the sole responsibility of the owner of the building. The owner was required by the lease agreement to obtain approval for the equipment from NYU before installation. NYU objected to the installation of an unknown brand name Polair of the DX air conditioning. NYU was informed that the units had been ordered and the landlord would not cancel the order and substitute NYU’s suggested brand for the units. NYU was informed that the units would not be tested due to insufficient electrical service to the floors. NYU was informed that the warranties would not be extended past a year from delivery. The installation of louvers on the exterior of the building was not included in the installation. Louvers would be required to allow fresh air to the space and cooling air for the DX air conditioning units.

NYU renovated the second and third floors of the building for the Wagner School of Social Work. Upon completion of the project and occupancy of the space, NYU was unable to sufficiently control the environmental conditions of the space. The equipment that was installed (Polair units) had a high rate of failure due to the configuration of the louvers. Hot air was recycling back into the system thereby providing insufficient cooling for the proper operation of the equipment. NYU was limited on the location and quantity of louvers on the exterior of the building due to landmark requirements. NYU implemented some non-traditional repairs which improved the performance of the systems but continue to require a high degree of monitoring and maintenance. Polair went out of business and therefore replacement parts became difficult to obtain.

NYU installed Variable Air Volume (VAV) units for the environmental control of the rooms and spaces. The experience of installing a VAV system with a DX air conditioning system proved to NYU that the two systems were incompatible.

NYU renovated the fourth floor for the Sociology Department within the Faculty of Arts and Sciences (FAS). NYU/FCM utilized its experience, both good and bad, from the 2nd and 3rd floors renovation to improve upon the fourth floor renovation. Based on the bad experience on the second and third floors NYU made a decision to remove the newly installed (now over two years old) Polair units on the fourth floor and keep components for spare parts to facilitate repairs on the second and third floor units. NYU designed a VAV system with an air cooled chiller to maximize the environmental controls for the office spaces. NYU followed the de facto mechanical standards with regard to VAV distribution within the space as established by the technical services group of FAS.
Appendix- 838 Broadway SCPS History & Lessons Learned

In June 2007 it was determined that the School of Continuing and Professional Studies Hospitality Group and several SCPS programs would be relocated from 10 Astor Place to 838 Broadway sixth floor. In addition, the NYU ITS group who was temporarily located at 110 Fifth Ave would be relocating to 10 Astor Place fifth floor. Since the lease at 110 fifth Ave expired on March 31, 2008 (several attempts to extend the lease failed), both the 838 Broadway project and minor renovations to the 5th Floor of 10 Astor were required to be completed in conjunction. The original budget estimated of $4.9 Million or approximately $500/sqft (all-in-cost hard and soft cost) to complete the renovation of 838 Broadway was formulated by NYU’s Strategic Assessment Planning and Design Group (SAPD). SAPD formulated their budget estimate using historical data supplied by NYU’s Office of Construction Management, and by applying a contingency risk based on the condition of the property.

During the same timeframe a study was conducted by Jones Lang LaSalle (JLL) regarding the cost of capital improvements at NYU. Based on JLL’s historical data, JLL estimate that the cost of the project should be approximately $2.5 Million (about $250/sqft all-in-cost.)

The initial kick-off meeting with the client included the following understanding of the project scope of work:

- Faculty offices would be enclosed and open office would not be acceptable
- SCPS Hospitality Group would be located in the space
- The project must be completed by mid January of 2008 before the start of the spring semester
- A VAV Air Conditioning (AC) system with a roof top chiller was preferred due to a historically bad experiences with the constant volume AC system located in the presently occupied space at 10 Astor Place fifth floor.
- HVAC equipment would be located on the floor in the space within mechanical equipment rooms
- Finishes would be nominal
- Upgrades to the electrical systems serving the floor would be required
- Upgrade to the local area network serving the floor would be required
- A Construction Manager would be retained due to the condition of the space and a aggressive schedule.

Considerations and investigation were as follows:

- Wall construction from ceiling to floor would be compared to creating a ceiling system including a structural wall system to support the services to the spaces (HVAC, Electric, lighting, etc)
- Duct installation of HVAC would be hung from the ceiling and compared to increasing the structural integrity of the walls to support the required duct work.

After further development of the program, considerations/investigations and value engineering the following changes were required:
A VAV system would be deleted and a constant volume direct expansion air conditioning system would be installed with two zones. The HVAC equipment would be relocated to the roof to provide for additional program space.

- The HVAC equipment would require dunnage (structural steel support platform) which would span the entire length of the building (parapet to parapet) due to concerns of the structural engineer and building owner.
- The HVAC equipment was required to meet the newly approved NYC noise level code. Meeting the code added cost and narrowed the available vendors. The equipment cost increase by at least 100%.
- The HVAC equipment became a critical path item and was pre-ordered before contract drawings were completed.
- Upgrade to the local area network would be required and therefore additional AC added to the existing location of the equipment.
- Due to the extensive/expanded scope of work and field conditions, the requested scheduled deadline could not be achieved and the deadline would be extended to the mid semester. This change in the deadline increased the cost of the renovation for the ITS space located at 10 Astor Place fifth floor. Some preparatory renovations were completed over the winter break. This fast track renovation increased the cost of the overall combined projects.

**Unforeseen Conditions**

Due to the location of the HVAC equipment, associated dunnage and roof penetrations, NYU was required to determine the structural components of the roof in order to evaluate the roof load capacity. During the normal course of the investigation sheet rock was removed from the ceiling exposing the lower section of the roof beams for visual inspections. After the inspection was completed, debris began to drop from the ceiling from locations not disturbed by NYU. The debris was the plaster separating from the roof beams (the ceiling began to fall). NYU considered permanently removing the ceiling however the landlord required NYU to replace with plaster or materials of equal quality.

In order to facilitate roof penetrations, NYU investigated the roofing material for asbestos containing materials (ACM). The results were positive for ACM, therefore NYU was obligated to abate those sections that would require penetrations for supply and return air duct and/or fasteners for equipment located on the roof of the building. Asbestos complicated the process of construction and coordination of work, adding to construction costs and fees. All probes used to identify final exact duct and equipment locations had to be coordinated with the abatement contractor and construction contractor. Due to A/C and steel design changes, roof penetrations had to be revised twice.