FULL SERVICE
• Architecture
• Sustainability
• Master Planning
• Visioning
• Historic Preservation
• Interior Design
• Graphic Design
• Forensic/Testing

TEAM APPROACH
• Ownership throughout project lifecycle
• Success for all team members
  • Team goals
  • Neighborhood/stakeholders input
  • Funding and budget
  • Context
DIVERSITY OF PROJECTS

• Multi-family
• Mixed-use
• Mixed-income
• Environmentally sensitive
• Community outreach
• Socially responsible
• Educational
• Community/institutional
• Design conscious urban place makers
• Historic renovation
• Adaptive reuse

Over $3.5 Billion / 80,000 Multi Family Housing Units Successfully Completed

Diverse Contextual Design
Over 150 Design Awards
HAND – COST CONTAINMENT STRATEGIES IN AFFORDABLE HOUSING

PRE-DESIGN/PROGRAMMING

THOUGHTFUL PROCESS/INTELLIGENT PROBLEM SOLVING

• Team-based decision making - benefits to all involved
• Creating shared design values and goals
• Pick low-hanging fruit
• Ask for more and you will get it!

COST - BUDGET - IMPACT

• Know the funding program and its requirement
• Identify budget and update continuously
• Focus on well-thought design solutions
• Don’t settle for the quick and the easy

Our goals are your goals

• Budget control without giving up scope
• Good, well-thought out designs empower residents and neighborhoods
HAND – COST CONTAINMENT STRATEGIES IN AFFORDABLE HOUSING

PRE-DESIGN/PROGRAMMING

SUSTAINABILITY

- Know the sustainable program(s) you are operating under
- All-Hands Sustainable Goals Charette
- Prepare checklists and team goals
- Continuously update throughout project

LIFE CYCLE COST ANALYSIS

- First cost vs. on-going cost – a strong argument
  - Monthly and ongoing costs
  - Utilities
  - Operations
  - Maintenance
  - Longevity
  - Impact on Proforma
  - Impact on Residents
- Energy modeling as a decision tool
SELECTING THE RIGHT MECHANICAL _ SUSTAINABLE LIFE CYCLE COST ANALYSIS

• Selection the right consultants who do the right analysis can save major cost
• SIR Analysis led to PTAC’s with all electric strip heat
• New consultant looked at Life Cycle Cost Analysis as well as energy usage and first and ongoing costs
• Got much better system
• Added $2 Million in construction costs into proforma by using the more expensive first cost but less expensive life cycle cost system
PRE-DESIGN/PROGRAMMING

UNDERSTAND COMPARATIVE CONSTRUCTION COST

Wood Stud/Light Gauge Metal (Max 4-5 Stories)
- Open Web Wood Joist $115 - 145
- Hambro $145 - 185
- Add Concrete Podium (add 1-2 Stories) $195 - 215

Bearing Steel Stud (Max 7-8 Stories)
- Concrete Plank $130 - 165
- Hambro $140 - 180
- Epicor / Infinity $140 - 175
- Over Concrete Plinth (add 1-2 Stories) $205 - 245

Masonry Bearing Wall (Max 8 Stories)
- Wood Truss $135 - 150
- Concrete Plank $135 - 155
- Hambro $145 - 165
- Bar Joist $145 - 165

Concrete Frame (6 Stories and Above)
- Cast in Place $230 - 280
- Post Tensioned $240 - 300

- Correct system selection for market and product is key
- Know the cost limits of your funding program
- Know when wage scales come into play
- Costs vary dramatically due to various factors
  - Project size
  - Site conditions
  - Local markets
  - Economic climate
  - Selection of right system for Your project
### Pre-Design/Programming

**Know Current Jurisdictional NOFA Maximum Construction Costs**

#### District of Columbia – Maximum Construction Cost Per Square Foot (3/16)

<table>
<thead>
<tr>
<th>Type of Building</th>
<th>New Construction</th>
<th>Substantial Rehabilitation</th>
<th>Moderate Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townhouse</td>
<td>$170</td>
<td>$135</td>
<td>$95</td>
</tr>
<tr>
<td>Gardens Apts/Condo</td>
<td>$165</td>
<td>$115</td>
<td>$90</td>
</tr>
<tr>
<td>Elevator Bldgs. (&lt;5 Stories)</td>
<td>$200</td>
<td>$135</td>
<td>$120</td>
</tr>
<tr>
<td>High-Rise Bldgs. (6+Stories)</td>
<td>$255</td>
<td>$155</td>
<td>$135</td>
</tr>
</tbody>
</table>

#### MD CDA – Maximum Construction Cost Per Square Foot (9/16)

<table>
<thead>
<tr>
<th>Type of Building</th>
<th>New Construction</th>
<th>Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cottage, Semi-Detached, Town</td>
<td>$159</td>
<td>$164</td>
</tr>
<tr>
<td>Gardens Apts</td>
<td>$134</td>
<td>$102</td>
</tr>
<tr>
<td>Non Elev./Elev. (&lt;4 Stories)</td>
<td>$145</td>
<td>$119</td>
</tr>
<tr>
<td>Elev. Bldgs. (5+Stories)</td>
<td>$159</td>
<td>$124</td>
</tr>
</tbody>
</table>
## HAND – COST CONTAINMENT STRATEGIES IN AFFORDABLE HOUSING

### PRE-DESIGN/PROGRAMMING

## KNOW CURRENT JURISDICTIONAL NOFA MAXIMUM CONSTRUCTION COSTS

**VHDA– MAXIMUM TOTAL DEVELOPMENT COST NOT PER SQUARE FOOT BASED (11/16)**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>New Construction</th>
<th>Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner Northern Virginia (Arlington County, Fairfax County, Alexandria City, Fairfax City &amp; Falls Church City)</td>
<td>New Construction/Adaptive Reuse - $390,136 + (up to) $43,349 per unit for underground or structured parking (TDC)</td>
<td>Inner Northern Virginia (Arlington County, Fairfax County, Alexandria City, Fairfax City &amp; Falls Church City): Acquisition/Rehabilitation - $340,595 (TDC)</td>
</tr>
<tr>
<td>Prince William County, Loudoun County, &amp; Fauquier County</td>
<td>New Construction/Adaptive Reuse - $289,816 + (up to) $43,349 per unit for underground or structured parking (TDC)</td>
<td>Prince William County, Loudoun County, &amp; Fauquier County: Acquisition/Rehabilitation - $204,357 (TDC)</td>
</tr>
<tr>
<td>Balance of State</td>
<td>New Construction/Adaptive Reuse - $216,743 + (up to) $43,349 per unit for underground or structured parking (TDC)</td>
<td>Balance of State: Acquisition/Rehabilitation - $167,201 (TDC)</td>
</tr>
</tbody>
</table>
PRE-DESIGN/PROGRAMMING – CASE STUDY

THE AVENUE – SELECTING THE PROPER CONSTRUCTION TYPE

• Used bearing steel stud and precast concrete plank construction
• 8” thick floor ceiling system achieved a full story and 18 units more vs similar building just blocks away that used 24” deep Hambro system - lost over 12’ of available height
• Built at a lower price per square foot than the other building
A 100% affordable award winning building maximized allowable density achieving lower development costs and success for all!
SCHEMATIC DESIGN

CONCEPT OF SQUARE FOOTAGE VS AMENITIES

- Square footage costs **BUT** kitchen and baths per square foot cost more
- Urban trend smaller units more amenities
- Suburban trend larger units result lower amenities
- Impacted by local funding regulations
- W+A’s perceived value concept
- Resident and market acceptance
- All parties meet regularly updating scope and budgets
- Sign off on design and cost
- Build in cost contingencies
SCHEMATIC DESIGN – CASE STUDY

TECHNICAL INNOVATION - COST SAVINGS

- Automated structured parking
- Driven by site specifics and constraints
  - $17,000 - $35,000 / space
- Needs to be team decision early on

CONSIDERATIONS

- Typically in podium or below grade situations
- Site constraints, size, geotechnical, Etc.
- Operations and maintenance costs
- Educate residents
- Various levels available

REDUCTION IN SHEETING SHORING, EXCAVATION COSTS AND RESULTANT TIME SAVINGS
NCBA Estates Major Renovation

- Changing from central system to new individual systems without resident displacement/relocation costs!
NCBA Estates Major Renovation

- Unique mechanical/systems fin design enhanced building appearance while incorporating all new systems
- Location of fins allowed for all systems to be fully roughed-in without disturbing residents
SCHEMATIC DESIGN – CASE STUDY

NCBA Estates Major Renovation

- Instantaneous hot water heaters save energy not only in hot water heating but providing heating through water coil in HVAC
SCHEMATIC DESIGN – CASE STUDY
NCBA Estates Major Renovation

W+A’s goal of innovative solutions that solve a multitude of issues at once was achieved, lowering total development costs dramatically.
HAND – COST CONTAINMENT STRATEGIES IN AFFORDABLE HOUSING

DESIGN DEVELOPMENT

GLAZING AND SHADING DECISIONS

Design saves cost

• Clever design of standard window systems can save thousands over storefront and curtain walls while achieve similar design results

Sustainable Considerations

• Exposure/orientation
• Shading, absorbing and reflecting films
• Color and clarity
• Different decisions for different exposures

Sustainable, Energy, First, & Long-Term Cost Considerations
DESIGN DEVELOPMENT – CASE STUDY

SKYHOUSE TOWERS EAST AND WEST

- Façade design saved $7 million/tower
- Team-based success
DESIGN DEVELOPMENT - CASE STUDY

SKYHOUSE TOWERS EAST AND WEST

- 3 colors of blues high glazing and 1 color of dark gray glazing define the building
- High index glass on all facades
- Glazing on south and west facades have significantly higher shading coefficient
  hieratical banded design allowed conventional windows designed and detailed to appear as curtain wall
Adaptive reuse of office building as housing is a trend to follow as the cost of acquisition and conversion are proving again and again to be no more or even less than the high acquisition/rehab costs of existing multi-family projects.
Floor to ceiling interior glazing is again indistinguishable from a curtain wall system. Operable window sections were specially designed to eliminate the double thickness usually associated with window systems.
DESIGN DEVELOPMENT – CASE STUDY

NORTH HILL MASTER PLANNING AND SITE DESIGN

• Under building parking become site retaining walls
• Reduced heat island
• Significant cost savings with less regrading of 110’ hillside
• Major tree save of mature forest for County sponsored parkland
Reduced footprints = reduced storm water management, grading, retaining wall costs, increased tree save, transitional cooling

Clever design of garage level reduces a 5-story, high rise wage scale job to 4-story low rise definition
CONSTRUCTION DOCUMENT– CASE STUDY

THE OVERLOOK AT OXON RUN–ABANDONED SHELL / COMMUNITY HIGHLIGHT

• Throughout the design and construction documentation the team continuously checked the cost/benefit of retaining a dilapidated shell or replacing it
• Testing at all phases proved the gut renovation and repair of the major skin problems was still $2.5 million cheaper than demolition and replacement with a 2 new 4-story wood construction buildings

The bane of the community was transformed with the VISION that this revitalized building could be accepted as new market rate in NOMA!
CONSTRUCTION DOCUMENT– CASE STUDY

THE OVERLOOK AT OXON RUN–ABANDONED SHELL / COMMUNITY HIGHLIGHT

• Repairing and saving 90% of the existing masonry with new relieving angles/contrasting new brick banding and over 24,000 new spiral brick ties
• Enclosure of balconies added significant square footage, BY-RIGHT due to W+A Zoning investigation increasing unit count and income by over 55 units
• During the occupied renovation and revitalization, previously encased ground floor concrete columns were found to have significant fracturing - potentially affecting their ability to carry the building load
• Initial design-build solutions required shoring the entire height of the building to relieve the load on the columns and then making repairs
• Costs exceeded $1.3 million EXCLUDING required relocation
CONSTRUCTION ADMINISTRATION - CASE STUDY

THE REPROGRAMMING AND RENOVATION OF MEMORIAL SENIOR APARTMENTS

• W+A and our structural engineer came up with an innovative solution to encase the damaged columns with new reinforcing and additional concrete
• This solution negated the shoring, saving over $700,000 as well as precluding the need to relocate ANY residents while performing the work
• The entire team came together to innovate, design, analyze and price the creative solution, creating a win-win for all involved

Each column carries 400,000 pounds / 200 tons of weight

Innovative solutions saved millions in construction, delay, & relocation costs. Neighbors are surprised to see what they perceive as a “new” building.

This is W+A’s mission: cost effective, award winning designs creating a sense of pride and home!
CONCLUSIONS

COST CONTAINMENT IS AN ON-GOING TEAM CONCEPT

- A strong communicative team
- Focused on great design and budget constraints throughout every phase
- Know who needs to be involved and when (Utilities, Governments, etc.)
- Know the other stakeholders and their concerns
- They document all decisions and processes
- They continuously test decisions affecting the schedule and budget

Cost Containment and Good Design are Achievable at Any Level. Selecting the Right Team Ensures Your Success!
CONCLUSIONS

REMEMBER YOUR GOALS AND KEY VALUES

- Create a *home*. Residents *are* proud of their home!
- An asset to the community
- Positive and identifiable presence that influences and catalyzes change in the neighborhood
- Affordable and market rate MUST be indistinguishable
- Let’s get rid of an ALL AFFORDABLE CONCEPT!

*Mixed-Income Communities, Developed Through a Strong, Cooperative, Iterative, Teaming Approach are the Key to a Successful and Cost Effective Future!!!*

JANUARY 24, 2017

MICHAEL A WIENCEK, JR. AIA, NCARB, LEED AP BD+C
A THOUGHTFUL, KNOWLEDGEABLE, COOPERATIVE TEAM IS THE BEST COST CONTAINMENT STRATEGY

THANK YOU!