Commitment to the Aging American Courthouse

2011 AAJ National Conference November 4, 2011 CT-05

Credits: CR | HSW | SD

Speakers

- Michael LeBoeuf, FAIA, Moderator
- Kevin Kampschroer, Director of the Office of Federal High-Performance Green Building, General Administration Services
- John Woelfling AIA, LEED AP BD+C, Principal, Dattner Architects
- Patrick McGrath, Acting Facilities Operations Manager, Judicial Council of California-Administrative Office of the Courts

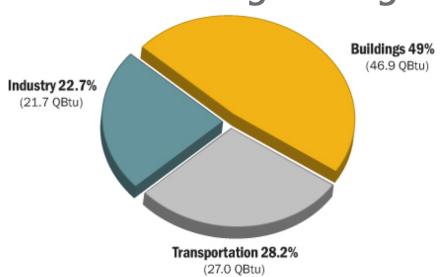
Learning Objectives

- Energy efficient building envelopes
- Recycling and Re-Use of existing building components
- Project phasing techniques and lessons learned
- Planning decisions that impact day lighting, security and efficiency
- Providing accessibility for outdated courthouses

Buildings: Half the Problem

 At nearly 50% of the U.S. Annual emissions, buildings are the single largest

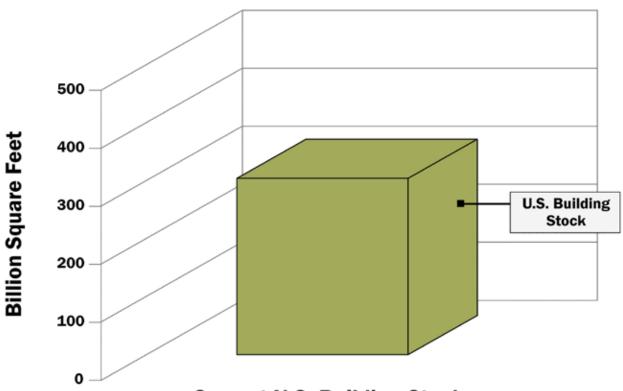
contributor to greenhouse gas production.



U.S. Energy Consumption by Sector

Source: @2010 2030, Inc. / Architecture 2030. All Rights Reserved Data Source: U.S. Energy Information Administration (2009).

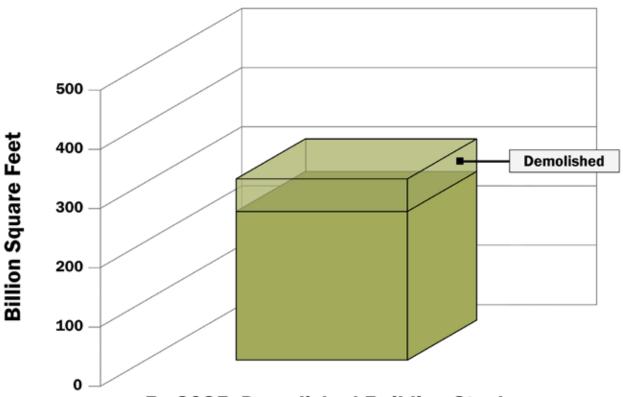
Buildings: A Historic Opportunity



Current U.S. Building Stock

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved. Data Source: U.S. Energy Information Administration.

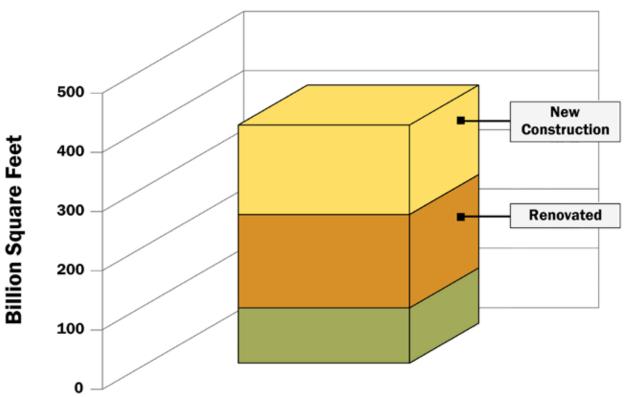
Buildings: A Historic Opportunity



By 2035: Demolished Building Stock

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved. Data Source: U.S. Energy Information Administration.

Buildings: A Historic Opportunity



By 2030, 75% of the built environment will be renovated or new.

By 2035: A Historic Opportunity

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved. Data Source: U.S. Energy Information Administration.

Total Building Stock in the U.S.

275,000,000,000sf

GSA Building Stock

5,000,000,000sf 8,300 buildings 377 courthouses

AOC Building Stock

20,000,000+sf 450 courthouses

Affects more than 2,000,000 people's work place environment

GSA Leadership: Reducing the cost of government by advancing energy efficiency

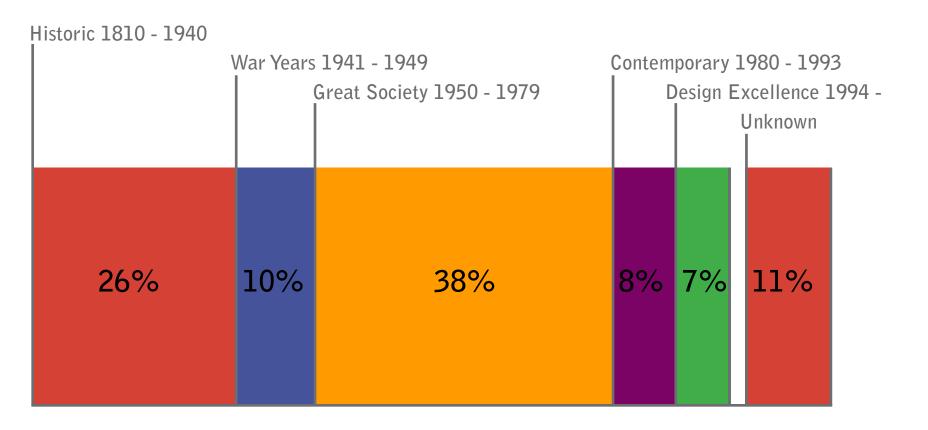
Motivation

- 40% of Annual US Energy Use
- 30% of CO₂ Production
- 40% of Ozone Depletion
- 35% of Municipal Solid Waste
- 30% of Wood and Raw Materials Use
- 25% of Water Use
- 30%+ of Buildings have poor Indoor Air Quality and most individuals spend about 90% of their time indoors.

GSA's Court-Related Buildings

	Bldgs	Age	Bldgs	Age	TOT
Courthouse (CT)	188	57	33	68	221
National Historic Landmark	3	91			3
National Register Eligible	9	76			9
National Register Listed	81	87	3	59	84
Not Evaulated	95	31	30	69	125
CT / Office	108	50	48	70	156
National Register Eligible	3	91			3
National Register Listed	25	82	2	93	27
Not Evaluated	80	40	46	69	126
Office Building	78	49			78
Evaluated - Not Historic	1	43			1
National Historic Landmark	4	89			4
National Register Eligible	4	83			4
National Register Listed	18	84			18
Not Evaluated	51	35			51
Grand Total	374	53	81	69	455

GSA Inventory



National Historic Preservation Act, 1966

"The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency. Prior to acquiring, construction, or leasing buildings for purposes of carrying out agency responsibilities, each Federal agency shall use, to the maximum extent feasible, historic properties."

For Future Generations

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Brundtland Commission

The preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, education, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations.

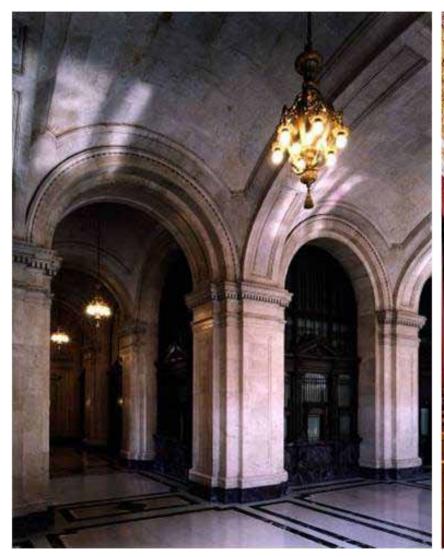
National Historic Preservation Act

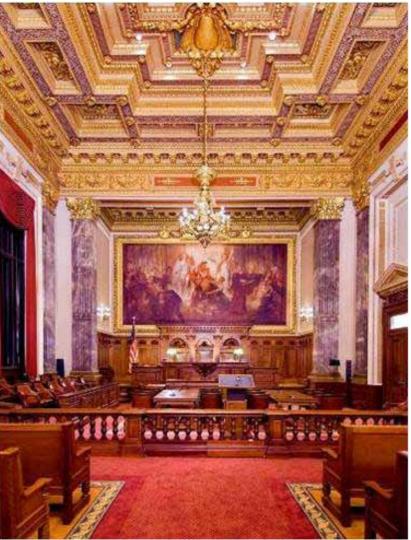
- 32% Water Use Reduction
- 95% Reuse of Historic Building Shell
- Green Housekeeping procedures employed

LEED-NC Rating out of	69
CERTIFIED	29
Sustainable Sites	06/14
Water Efficiency	04/05
Energy & Atmosphere	03/17
Materials & Resources	06/13
Indoor Environmental Quality	07/15
Innovation & Design USGBC LEED-NC rated April 19, 2006	03/05



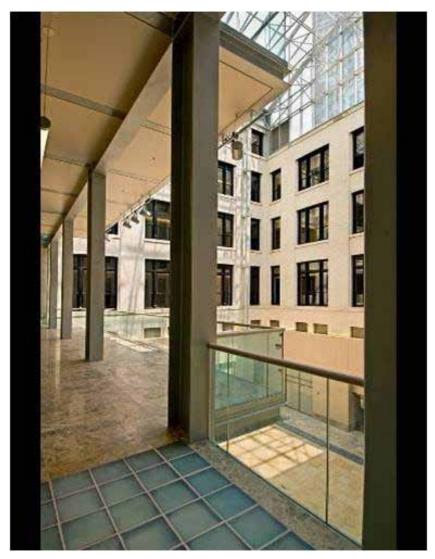
Arnold W. Brunner, 1910

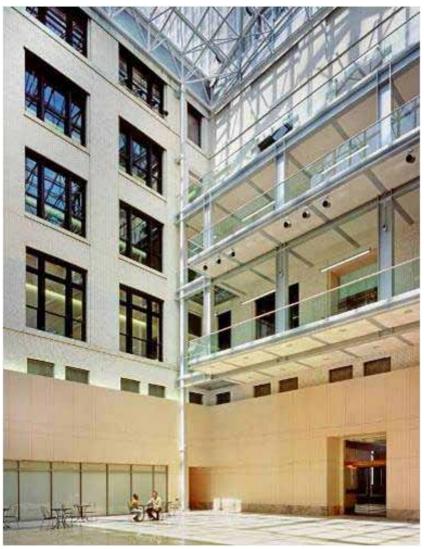




Historic Precedent: Brunelleschi







Investment Decisions

Net Present Value

U.S. Courts Priorities

- 30-year evaluation of growth
- 5-year planning window
- new construction vs. renovation

Asset Financial Performance

Rent

War Years - Federal Building & Courthouse, Sioux City, IA



Beuttler & Arnold, 1933



Ludwig Mies van der Rohe, 1964







Exceptional Significance: US Tax Court, Washington, DC



Victor Lundy, 1974

Exceptional Significance: US Tax Court, Washington, DC



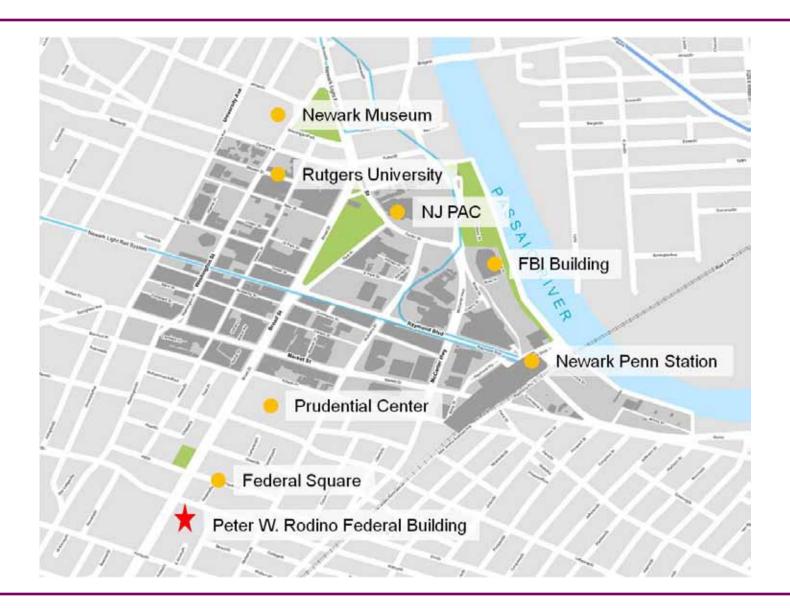
Strategic Goal

Create a clean energy economy that will increase our Nation's prosperity, promote energy security, protect the interests of taxpayers, and safeguard the health of our environment

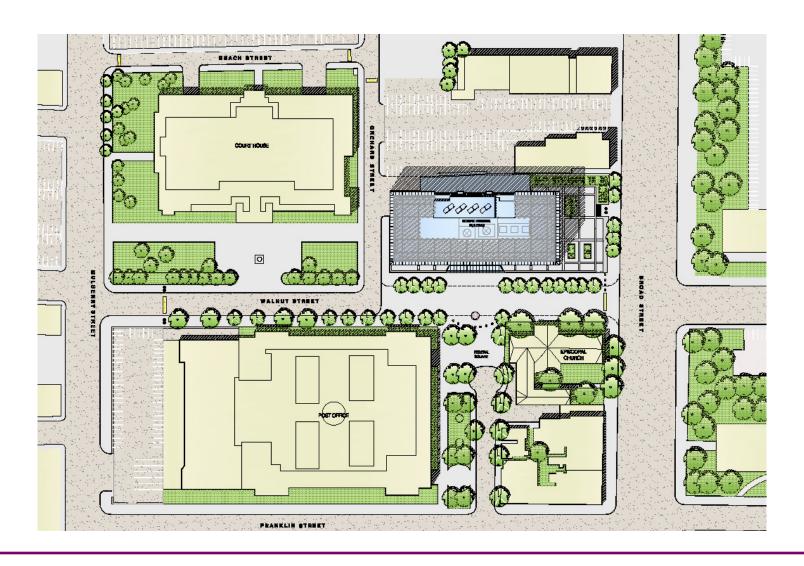
Case Study Peter W. Rodino Federal Office Building and Courthouse

- GSA Design Excellence Program
- High Performance Modernization
- Newark, NJ
- Designed by Dattner Architects with Richard McElhiney Architects

Project Location

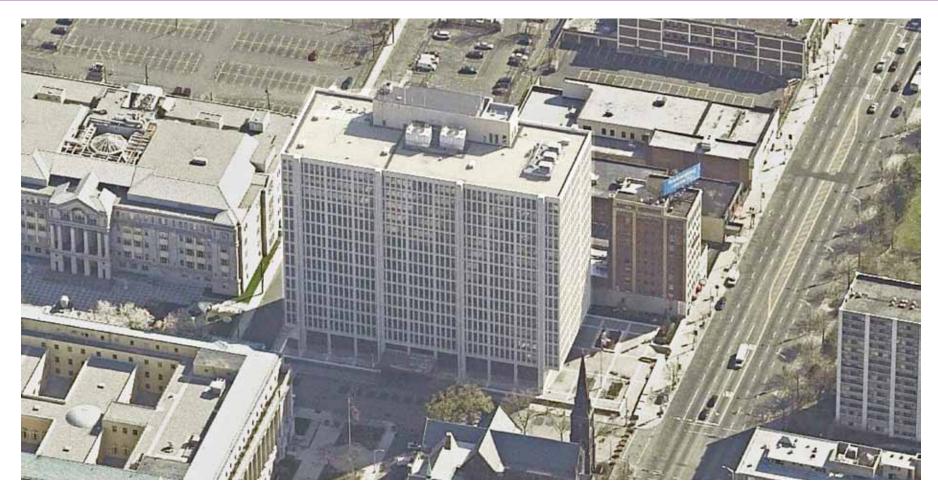


Site Plan



Implementation: Peter W. Rodino Building Modernization

Existing Building



W.E. Lehman & W.O. Beirnacki-Poray Architects, 1968

Scope of Work

Renovate 9 Floors

- Abate asbestos and apply new fireproofing and fire stopping
- Replace HVAC and plumbing within floor
- Lighting upgrades

Egress Improvements

Transfer corridors and horizontal exits



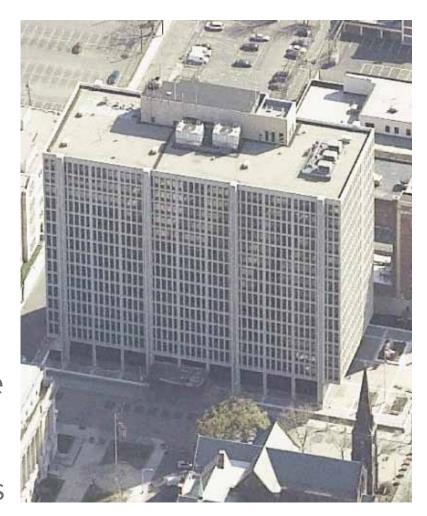
MEP Upgrades

Facade Upgrades and Loggia Enclosure

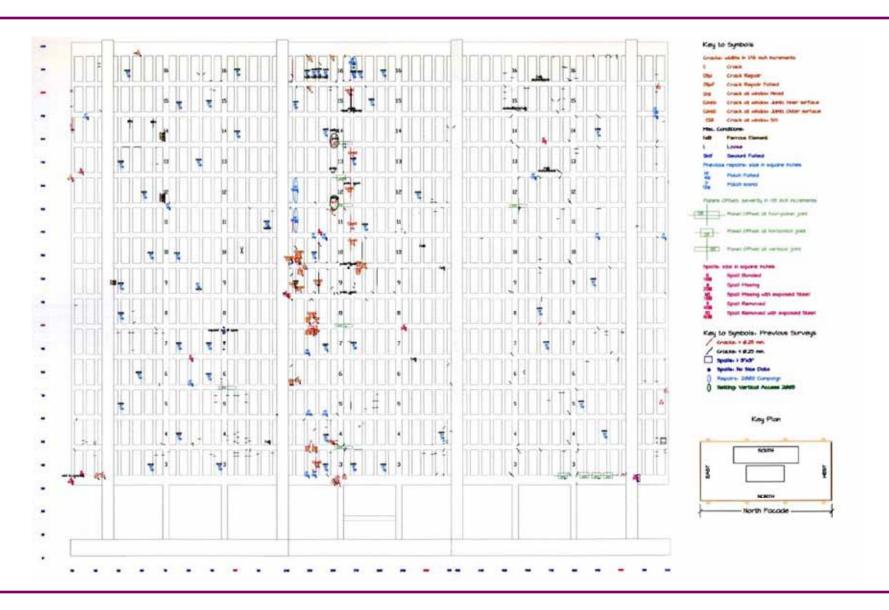


Facade Design Goals

- Improve Energy Performance
- Address Facade Degradation
- Enhance Civic Presence
- Increase Blast Resistance
- Improve IEQ
- Reduce Building Maintenance Costs
- Minimal Disruption to Tenants



Existing Facade Conditions Analysis



Four Options Studied

1. REPAIR Damaged Precast



2. REPLACE Damaged Precast



3. REPLACE Existing Facade



4. OVER-CLAD Existing Facade



Implementation: Peter W. Rodino Building Modernization

Option 1: Repair Damaged Precast Panels



Advantages

- Lowest First Cost
- Acceptable Construction Duration
- No Tenant Relocation Required

Disadvantages

- Defers Facade Remediation
- Requires Ongoing Maintenance
- Design Excellence Not Addressed
- Highest Life Cycle Costs
- No Improvement of Building Envelope Performance

70% Higher Life Cycle Costs than Option 4

Option 2: Replace Damaged Precast Panels



Advantages

Acceptable Construction Duration

Disadvantages

- Slightly longer Construction Duration
- Required Ongoing Maintenance
- Design Excellence Not Addressed
- Partial Tenant Relocation Required
- No Improvement of Building Envelope Performance

61% Higher Life Cycle Costs than Option 4

Option 3: Replace Existing Facade



Advantages

- Design Excellence Opportunity
- Improved Energy Performance

Disadvantages

- All Tenants Must be Relocated
- Extended Construction Duration
- Greatest First Cost

46% Higher Life Cycle Costs than Option 4

Option 4: Over-Clad Existing Facade



Advantages

- Design Excellence Opportunity
- Improved Energy Performance
- Acceptable Construction Duration
- No Tenant Relocation Required

Disadvantages

Higher First Cost than Option 1

Lowest Life Cycle Costs (25 years)

Wall Street awakes to find Lehman **Brothers, Merrill Lynch gone**

Last Updated: Monday, September 15, 2008 | 3:32 PM ET | Comments 🖵 21 | Recommend 🗸 40 The Associated Press





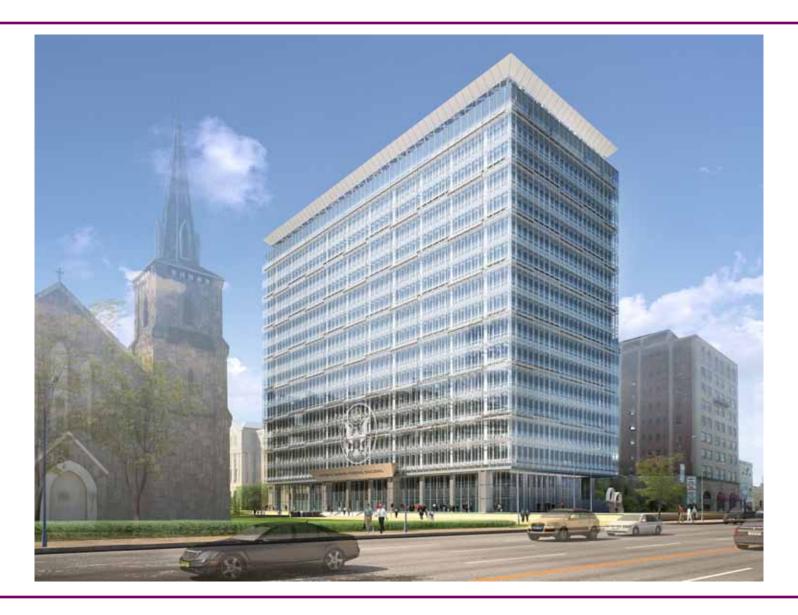
The Lehman Brothers world headquarters is shown Monday in New York. (Mark Lennihan/Associated Press)

Preferred Option: Over-Clad



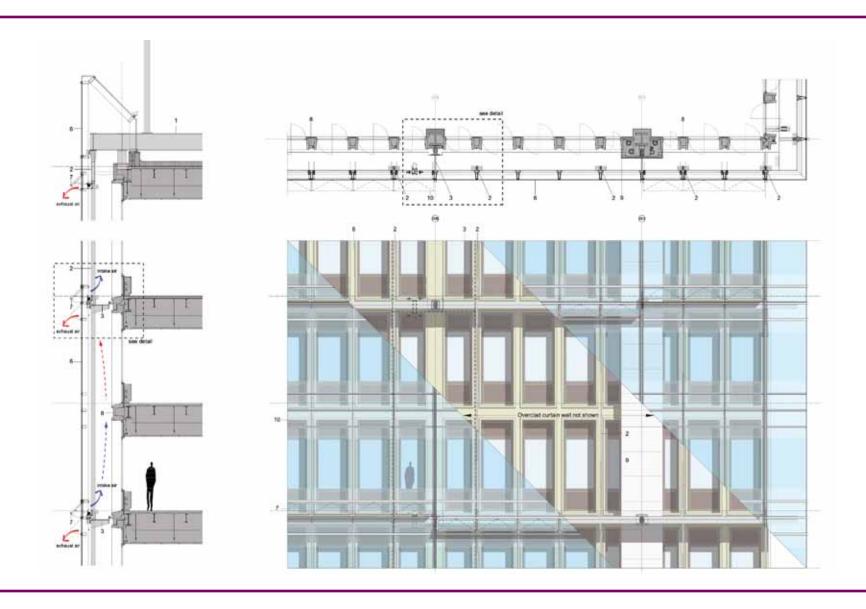
Implementation: Peter W. Rodino Building Modernization

Rendering of Preferred Design

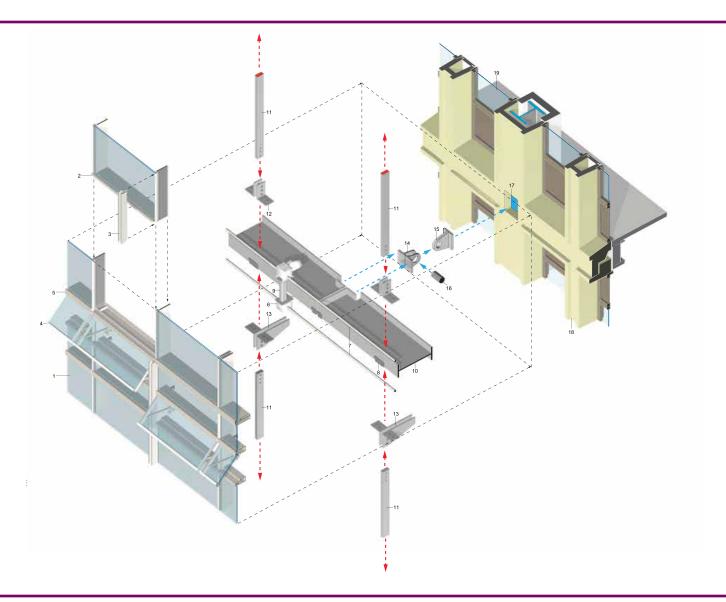


Implementation: Peter W. Rodino Building Modernization

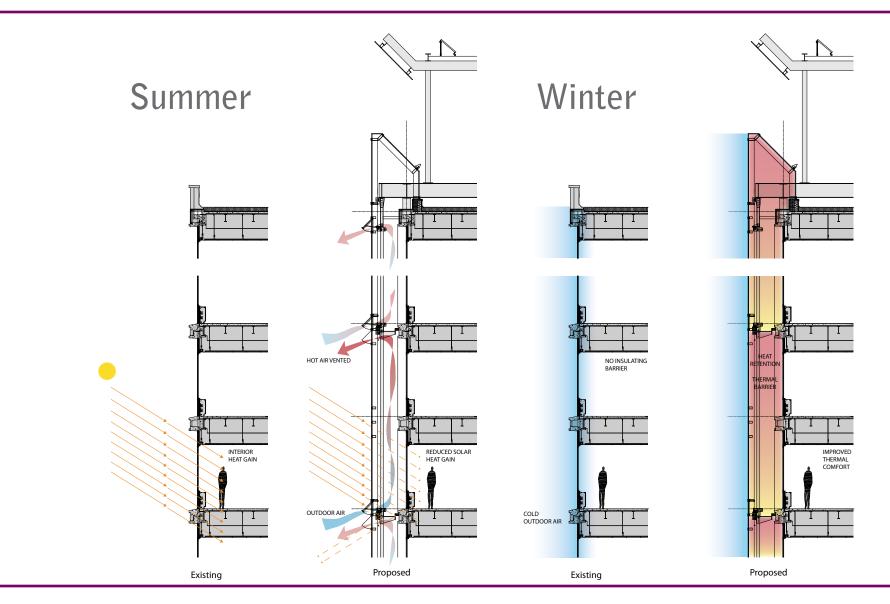
Typical Plan, Elevation, Section



Curtain Wall Assembly



Curtain Wall Performance Analysis



Implementation: Peter W. Rodino Building Modernization

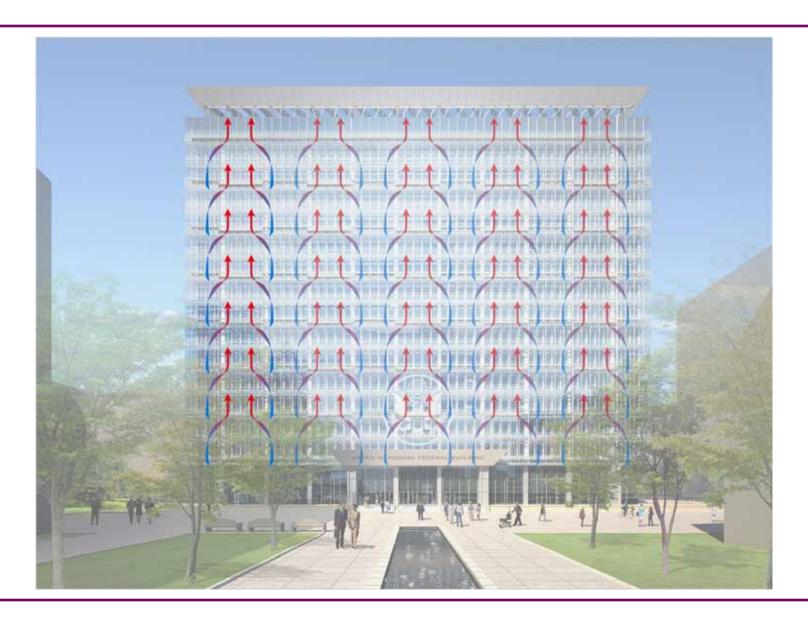
Detail of Over-Clad Curtain Wall





Implementation: Peter W. Rodino Building Modernization

Vented Overclad



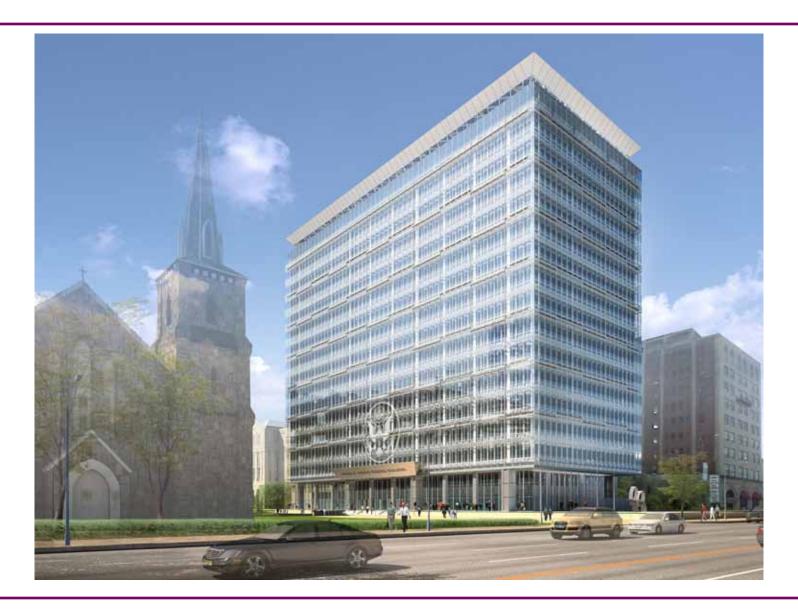
Implementation: Peter W. Rodino Building Modernization

Enclosed Loggia



Implementation: Peter W. Rodino Building Modernization

Dignified Civic Presence

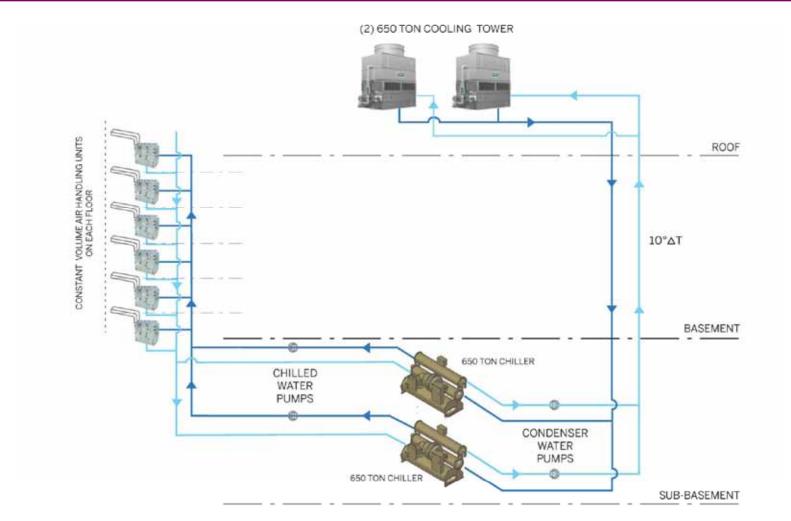


Implementation: Peter W. Rodino Building Modernization

Photo-voltaic Panels Crown Roof

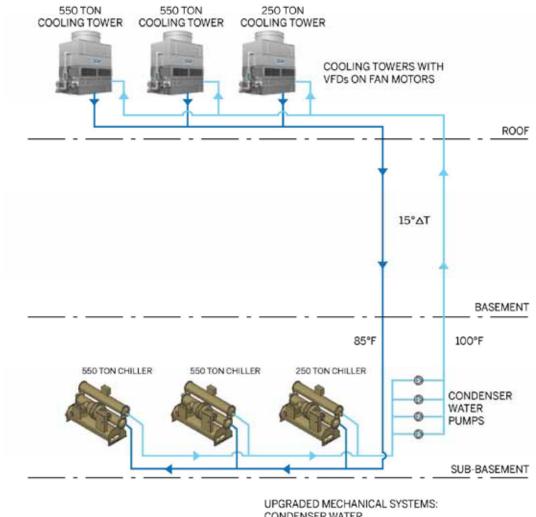


Existing Mechanical System



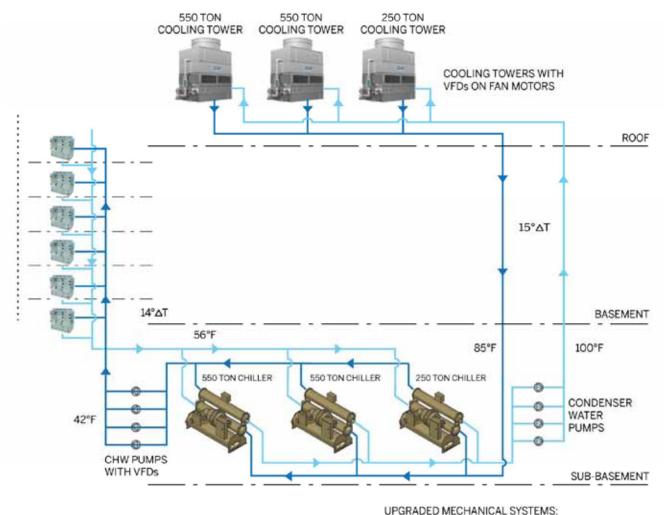
EXISTING CONDENSER WATER, CHILLED WATER, AND AIR HANDLING UNITS

Proposed Mechanical System



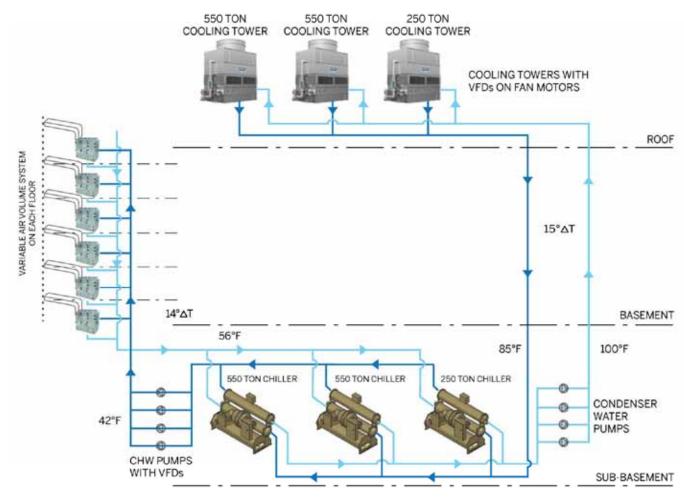
CONDENSER WATER

Proposed Mechanical System



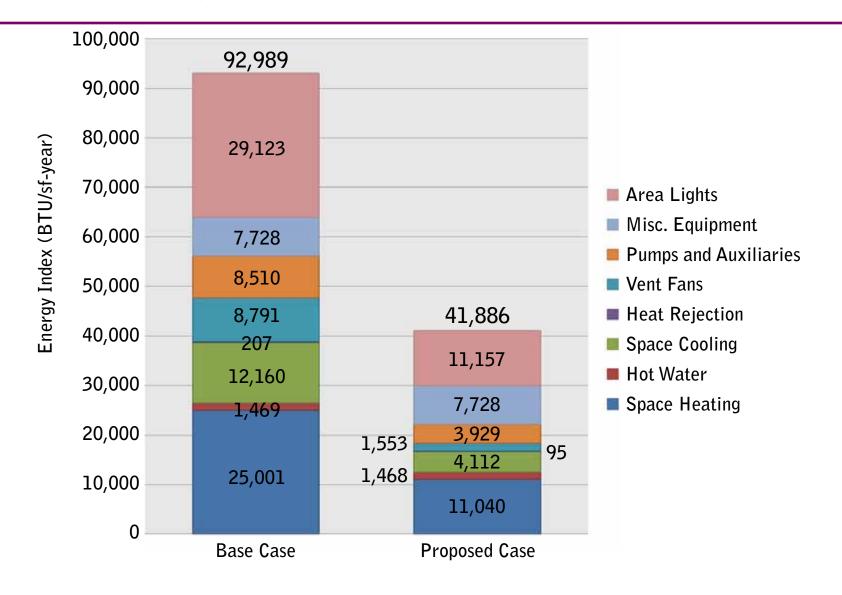
UPGRADED MECHANICAL SYSTEMS: CONDENSER WATER + CHILLED WATER

Proposed Mechanical System

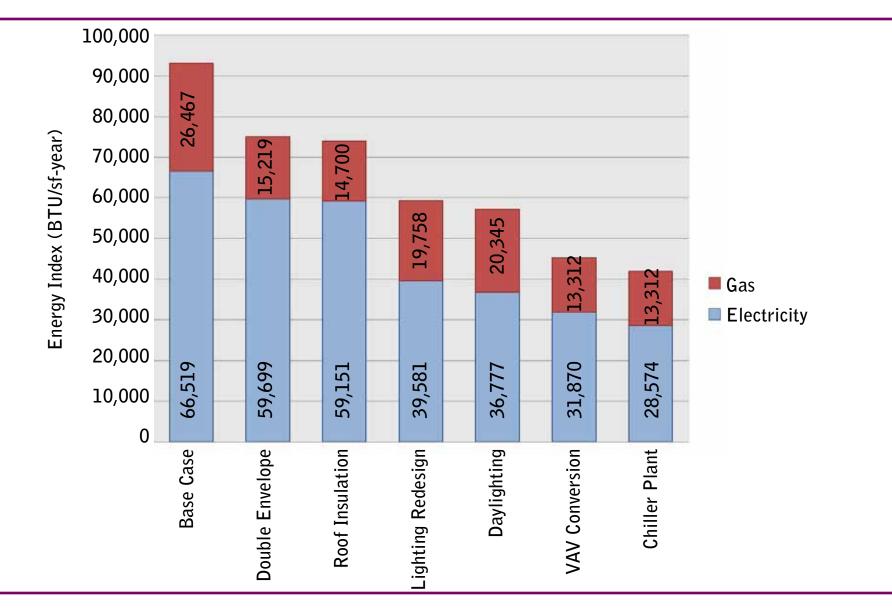


UPGRADED MECHANICAL SYSTEMS: CONDENSER WATER + CHILLED WATER + AIR SYSTEMS

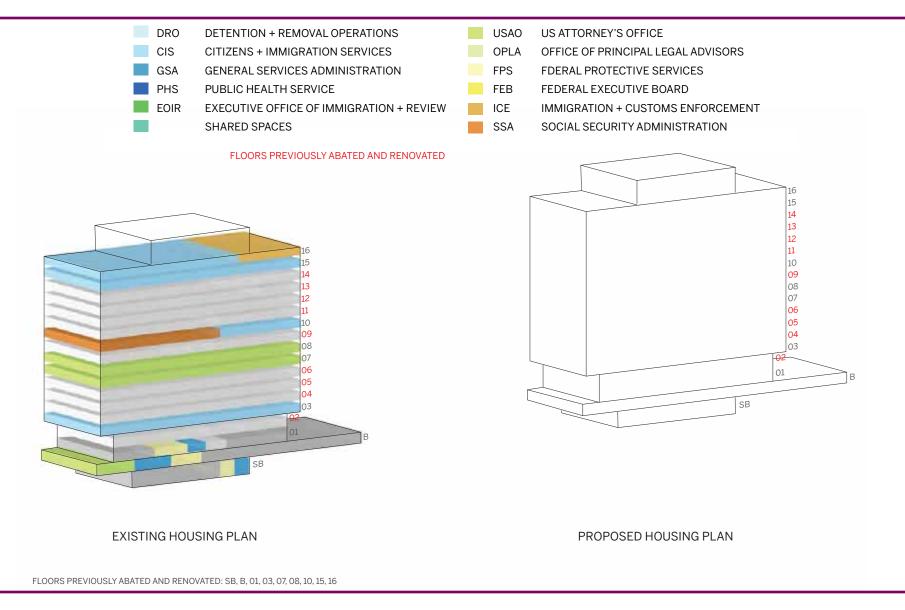
Energy Use Components



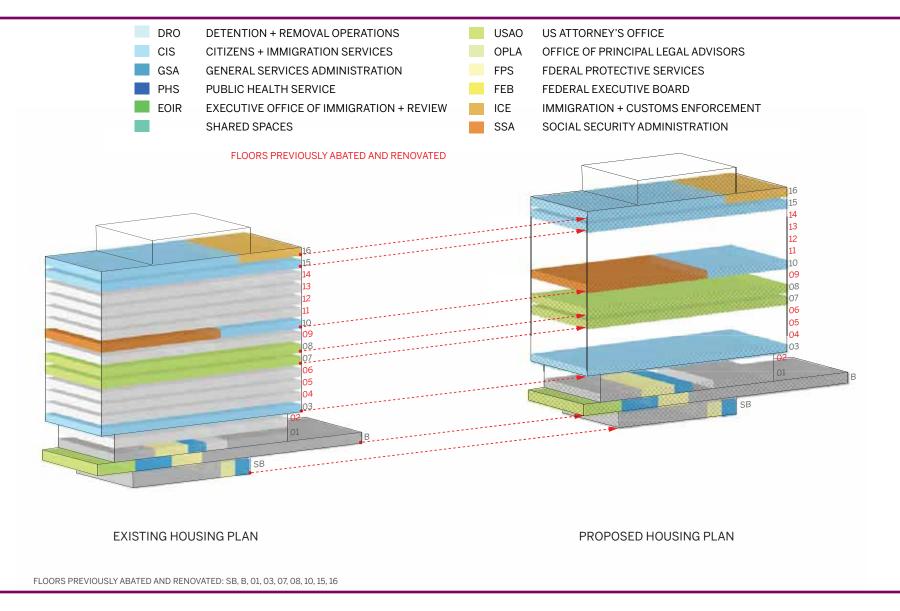
Energy Use Index for All Cases



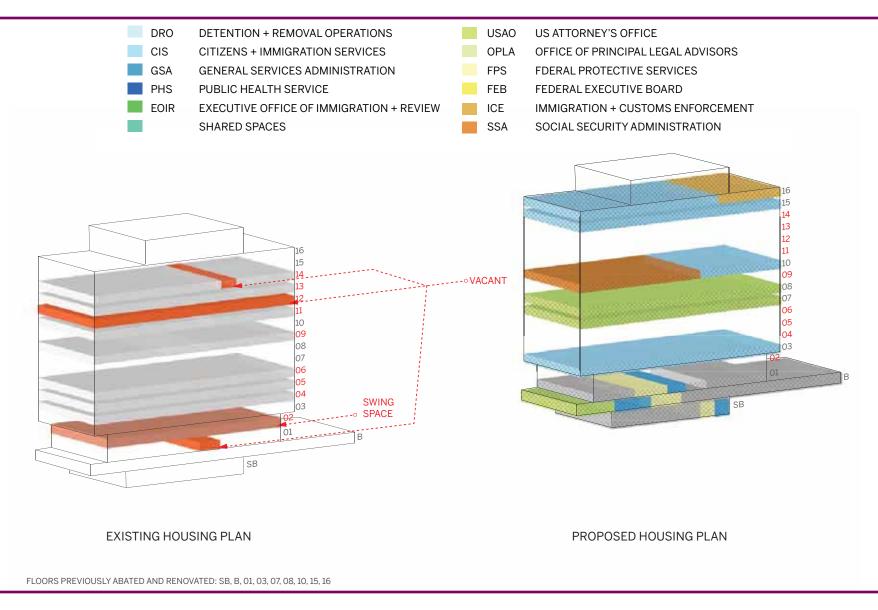
Existing Housing Plan



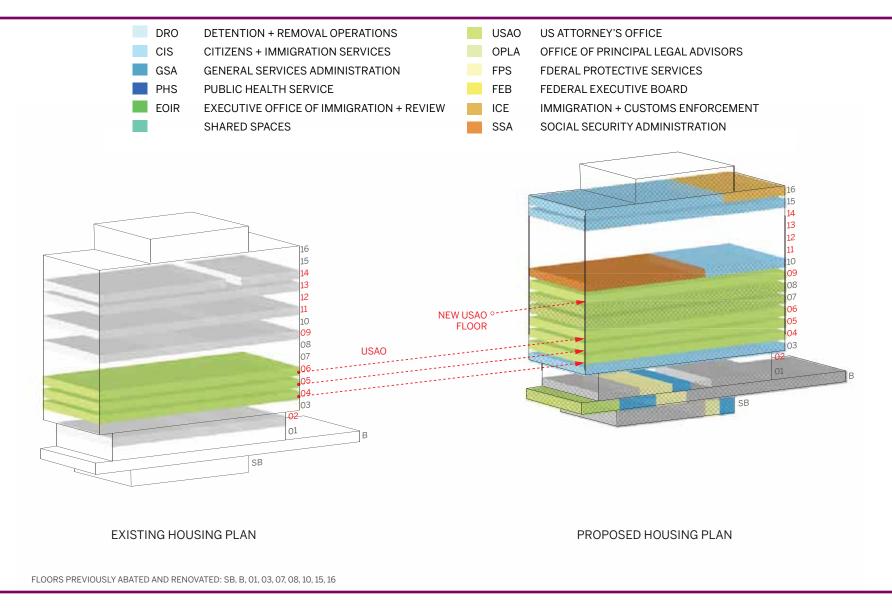
Floor Previously Abated and Renovated



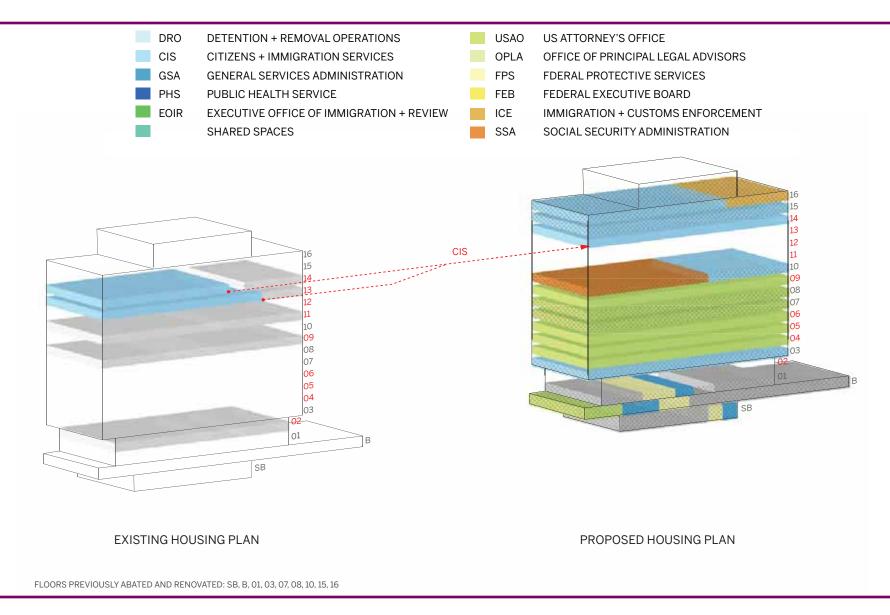
Swing Space



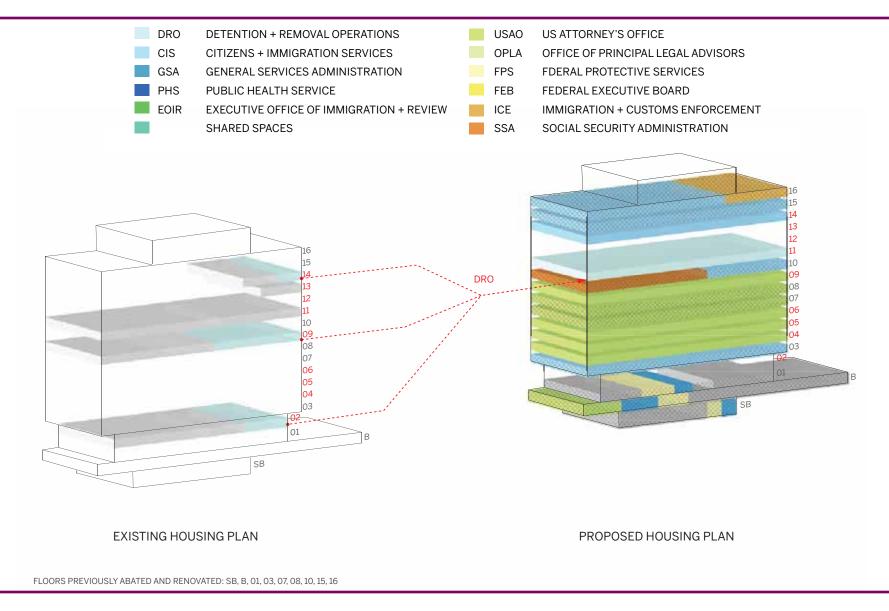
US Attorney's Office (USAO)



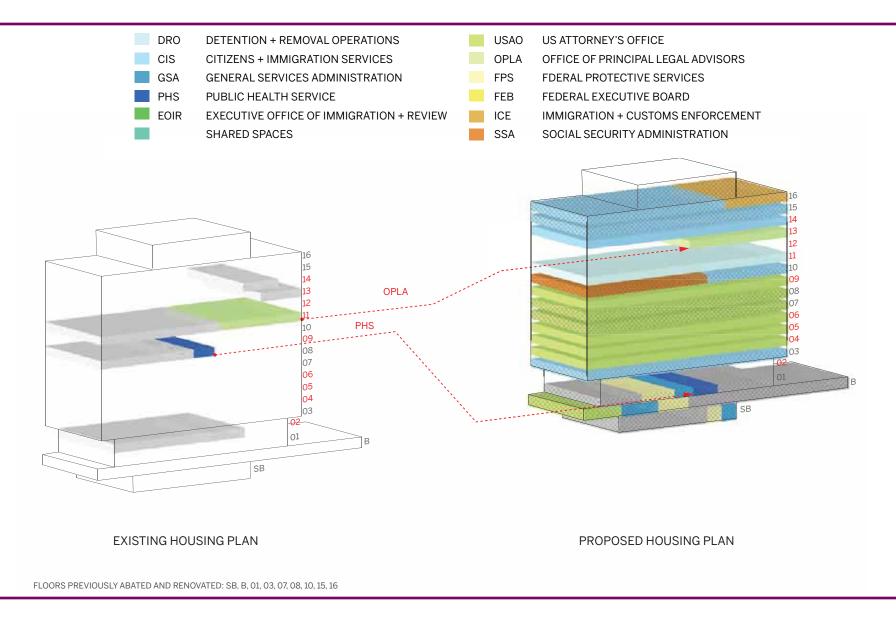
Citizens & Immigration Services (CIS)



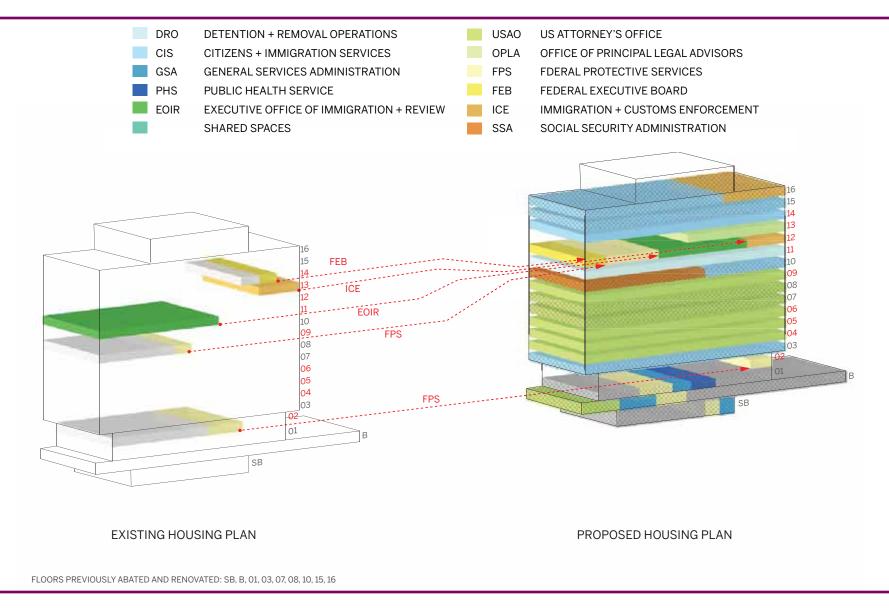
Detention & Removal Operations (DR0)



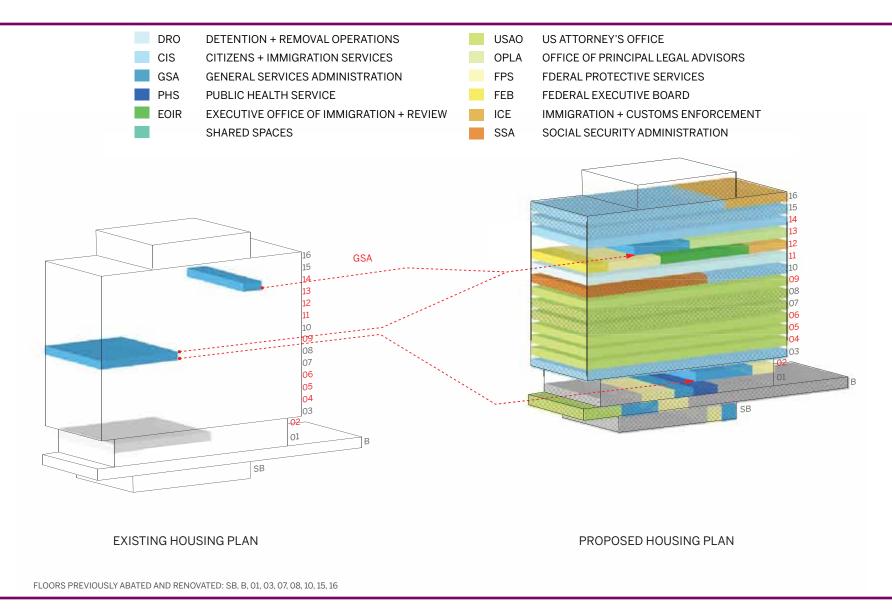
OPLA and PHS



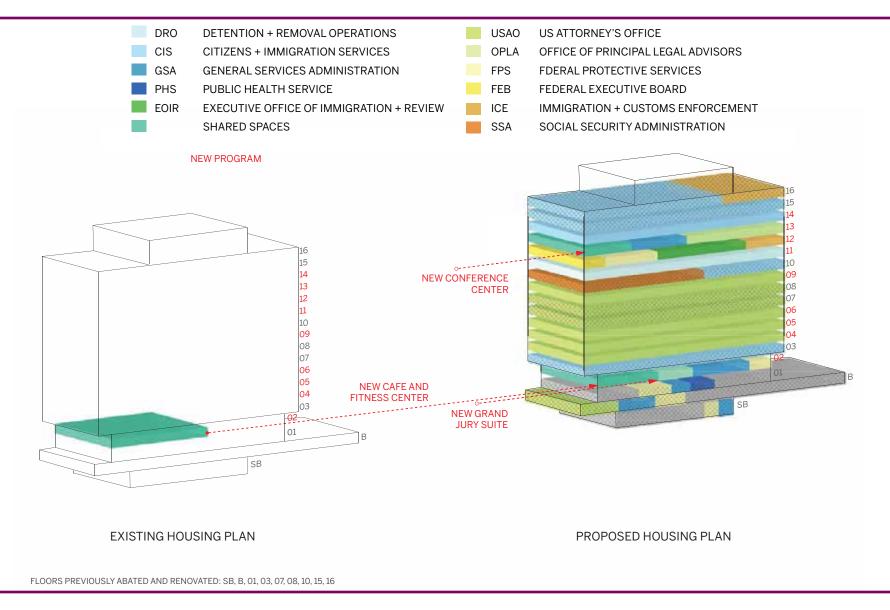
FEB, ICE, EOIR and FBS



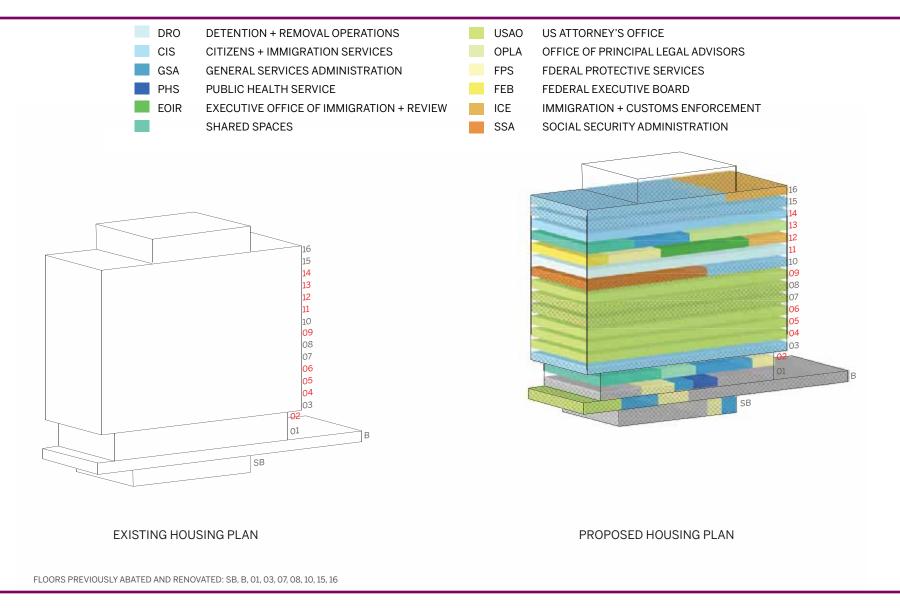
General Serivces Administration (GSA)



New Program



Final Housing Plan



Final Design—Now Under Construction



AOC Commitment

Overview

Facilities Assessments

Commissioning

- Enhanced Commissioning
- Retro-Commissioning

Building Efficiency

- Energy
- Functionality

Renewal Standards Mirror Capital Construction

- Energy Efficiency
- LEED Silver

Assessments

Third Party Assessments

- Targeted for court presence >10,000sf
- Life Cycle Assessment
- Detailed Condition Assessment

In-house Assessments

- Target for smaller facilities <10,000sf
- Mirrored Standards

Program Status

- 186 Facilities Completed AOC & County Space
- Total Assessed CRV \$4,044,000
- Deferred System Renewals \$718,000,000

Commissioning

Enhanced Commissioning

- Capital Construction Remodels
- Large Scale System Renewals

Retro-Commissioning

- High Complaint / Failure Rates
- High Energy Consumption
- Facilities not used as designed

Third Party Assessment

- Leverage existing Commissioning Agents
- Internal engineering support

Building Efficiency

Energy

- 41% of Total 0&M Budget
- Many buildings never renovated
- Average System Age 24 years

Functionality

- Compares Current Ops to Original Design
- Segregation of Functions
- Security Major Program Deficiency
- Code Compliance

Sustainability Standards

Energy Efficiency

- Project Goal Exceeded Title 24 by 10%
- Rebates or Alternate Financial Incentive
- Must Meet Multiple Program Goals

LEED

- Typical for Large Building Renovations
- LEED Principles Followed
- Target of LEED Silver

Case Study Fresno County Courthouse Sisk Building

- Functional efficiencies
- Energy efficiencies
- Lessons learned

B.F. Sisk Courthouse

- In service since 1967
- Built / Designed as a Federal Courthouse
- Contained 8
 Courtrooms and associated support space



- Well-maintained infrastructure
- Federal Court Design no well suited for California Superior Court Operational Requirements

Program Challenges

- Court Room Design Insufficient
- Poor Operational Adjacency
- Seismic Level V Rating
- Aged Infrastructure
- Hazardous Materials
- Code Deficiencies

Program Goals

Create 15 Courtrooms and Support Space

Upgrading Infrastructure

- Seismic
- Electrical
- Mechanical

Code Compliance

- ADA
- Fire
- In Custody Holding

Functionality

Create Courtroom Flexibility

Simplified Way-Finding

Durable Finishes

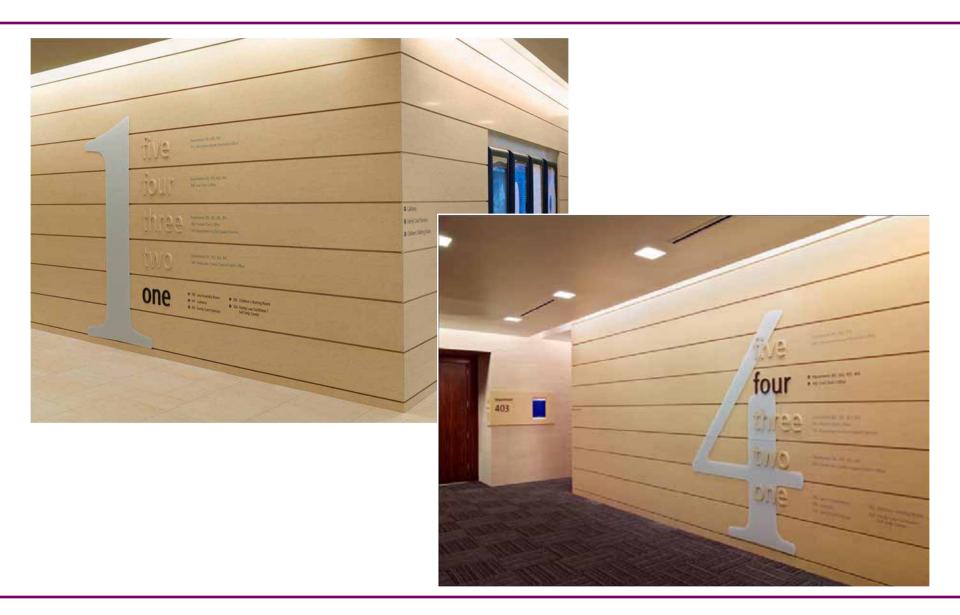
Workplace Adjacencies

- Functional areas located based on ease of public access
- Courtroom holding serving multiple courtrooms
- Security Separations

Functionality—Flexibility



Functionality—Way Finding

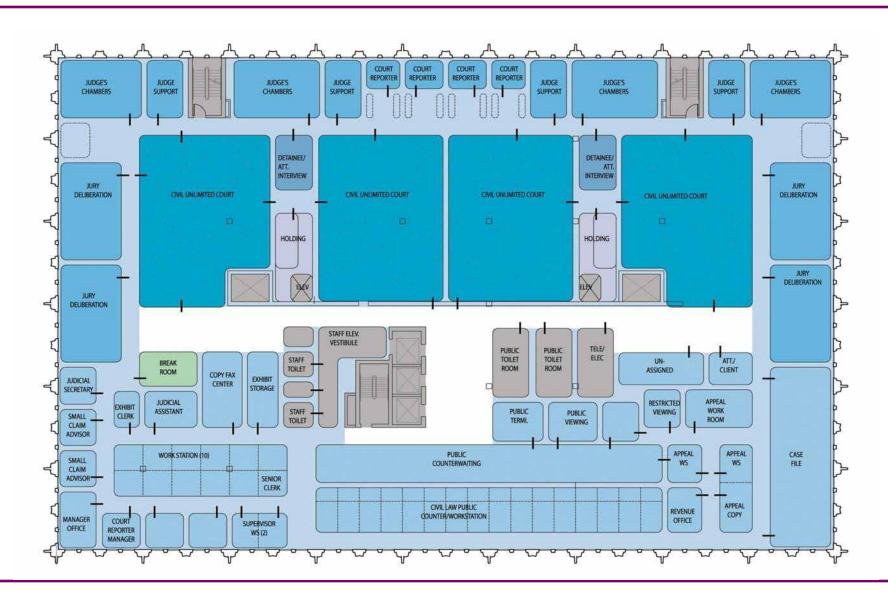


Implementation: B.F. Sisk Courthouse

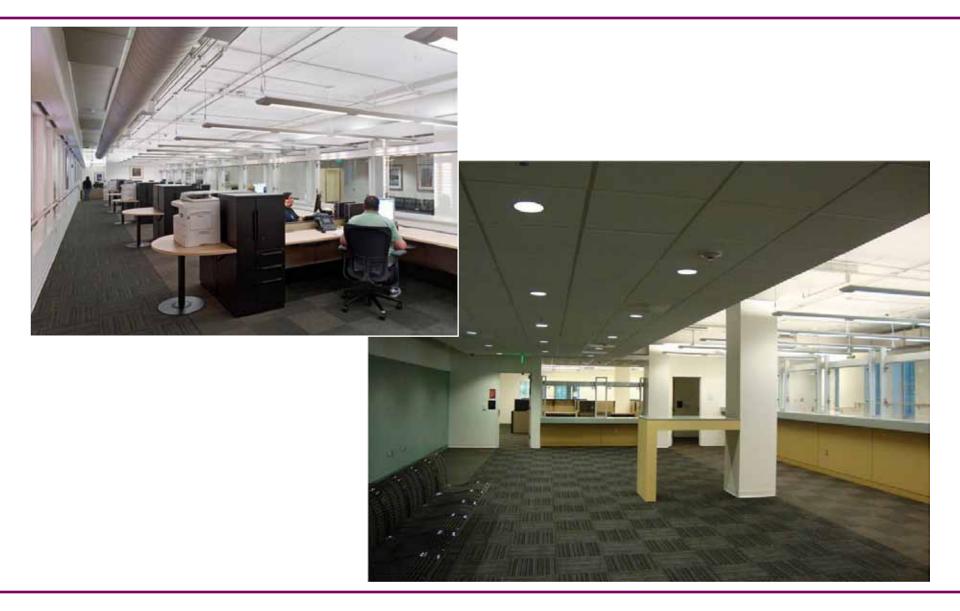
Adjacency



Adjacency



Functionality—Separation



Sustainability

Energy Efficiency

- Replace existing Boilers
- Install BAS and Lighting Controls
- Exterior Lighting

Sustainability

- LEED Silver
- Energy Consumption Goals

Sustainability—Energy

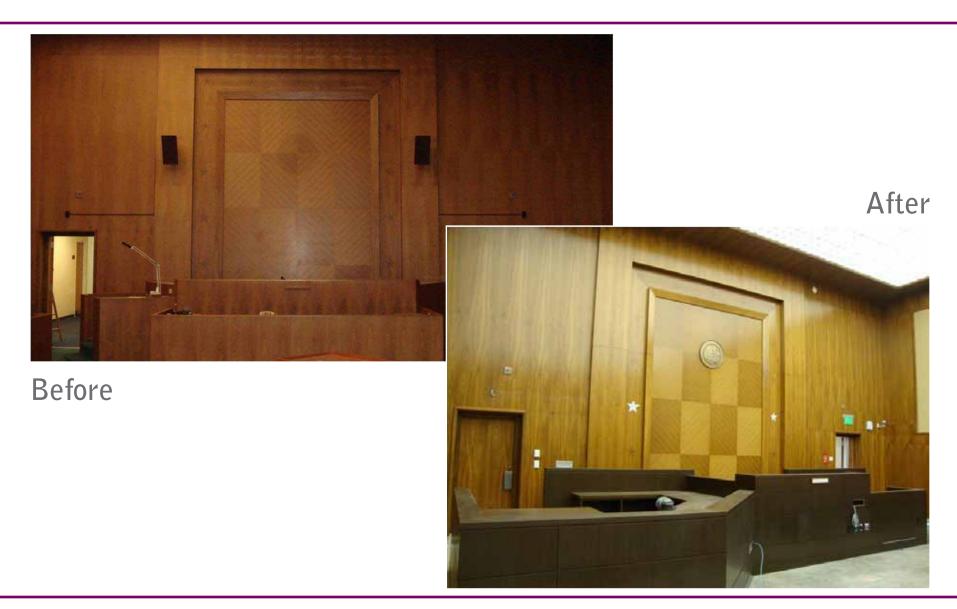
Consumption

- Replace existing Boilers
- Roofing
- Mechanical Systems

Controls

- Upgrade Building Automation System
- Install Lighting Controls

Energy—Lighting



Implementation: B.F. Sisk Courthouse

Sustainability—LEED

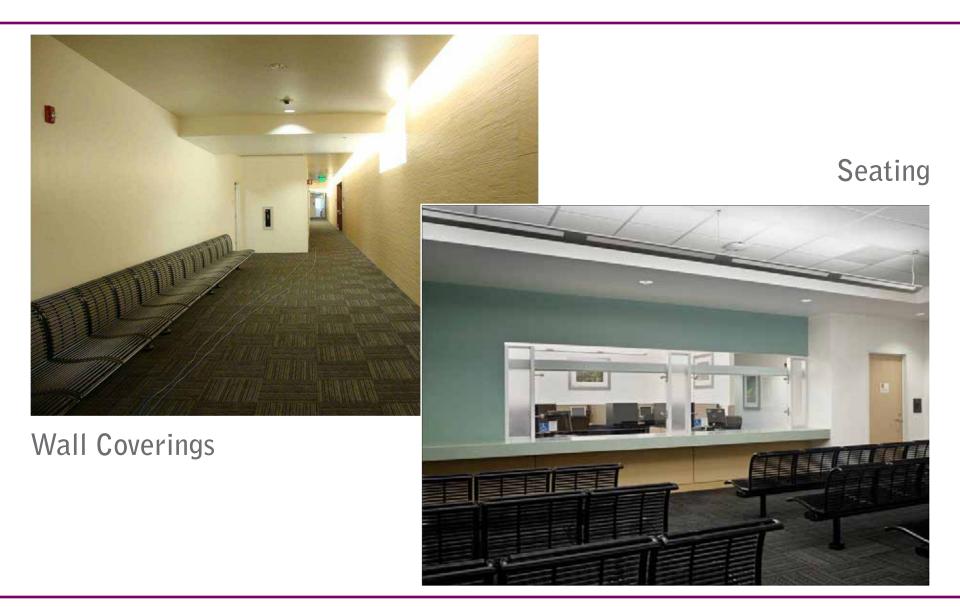
LEED Silver Goal

- Leveraged LEED Methodology
- Mechanical Systems
- Commissioning

Ancillary LEED Factors

- 90% Recyclable
- Water Consumption
- LEED Certified Support Team

Sustainability—Durability



Implementation: B.F. Sisk Courthouse

Contact Information

Michael LeBoeuf, FAIA, Moderator

meleboeuf@gmail.com

Kevin Kampschroer, Director, Office of Federal High-Performance Green Buildings, US GSA

kevin.kampschroer@gsa.gov

John Woelfling AIA, LEED AP BD+C, Principal, Dattner Architects

jwoelfling@dattner.com

Patrick McGrath, Acting Facilities Operations Manager, Judicial Council of California-Administrative Office of the Courts

patrick.mcgrath@jud.ca.gov

Sources

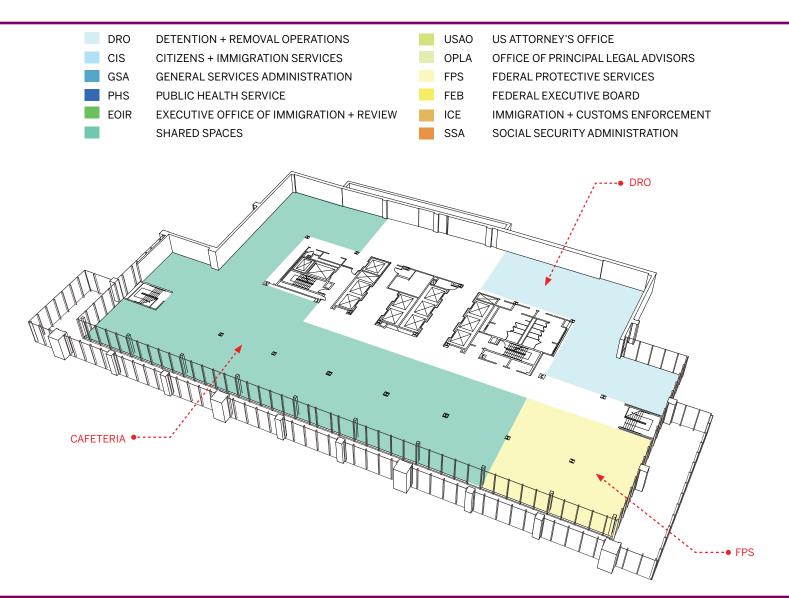
GSA

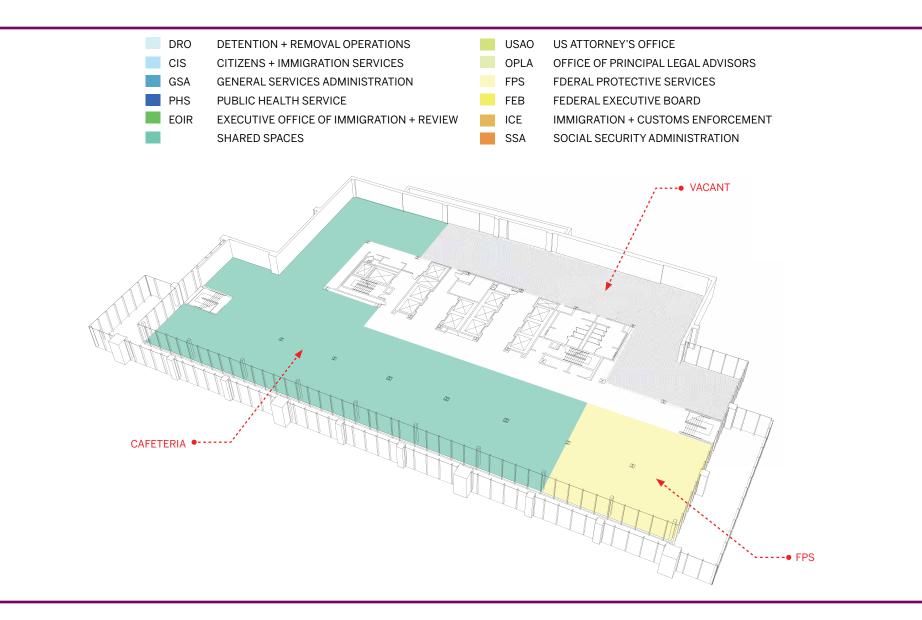
- www.whitehouse.gov/administration/eop/ceq
- www.gsa.gov/recovery
- www.wbdg.org
- For doing business with the government: industryrelations@ gsa.gov

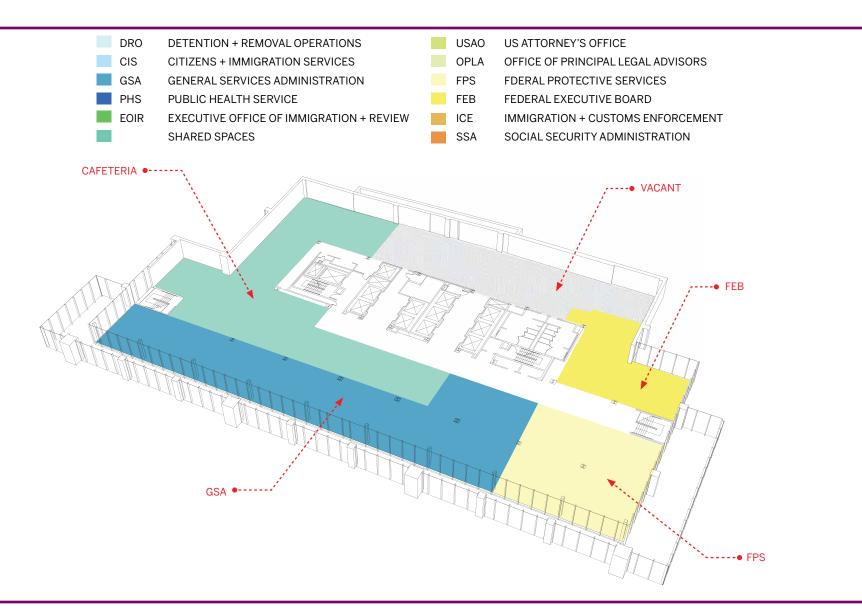
California Office of the Courts

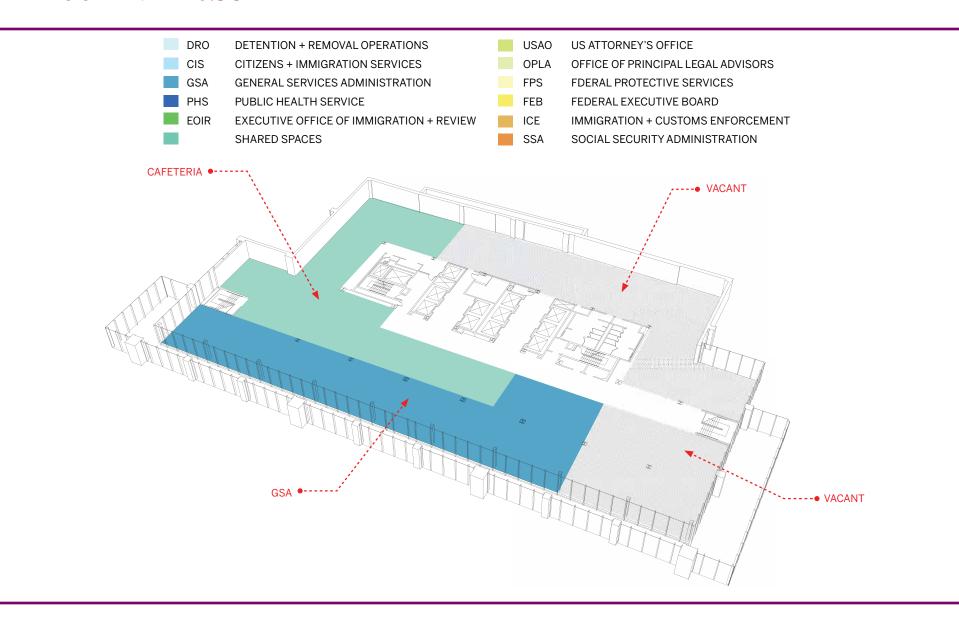
www.courts.ca.gov

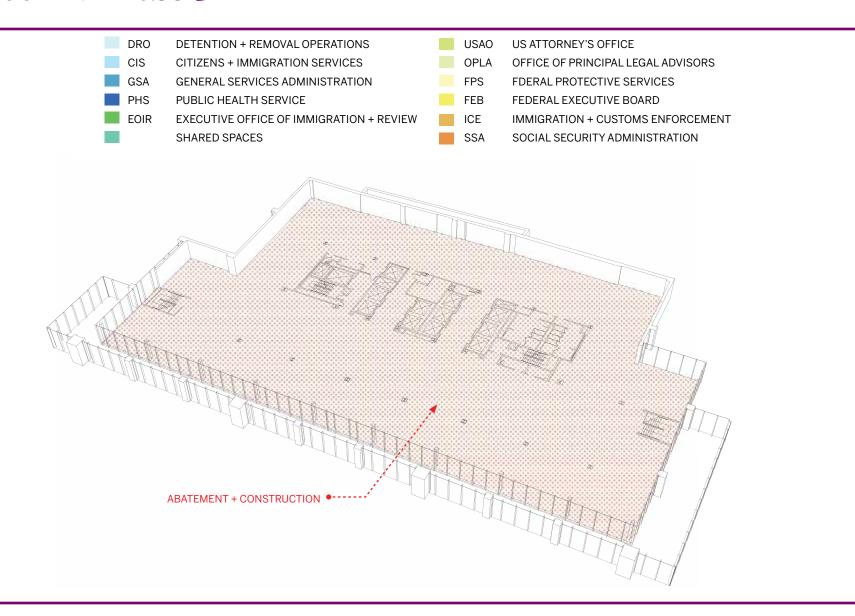
Floor 2: Existing



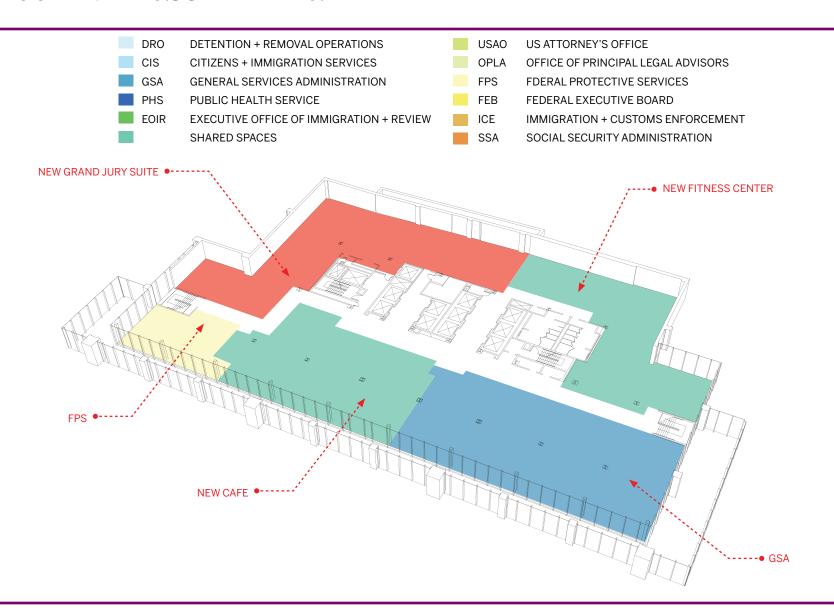




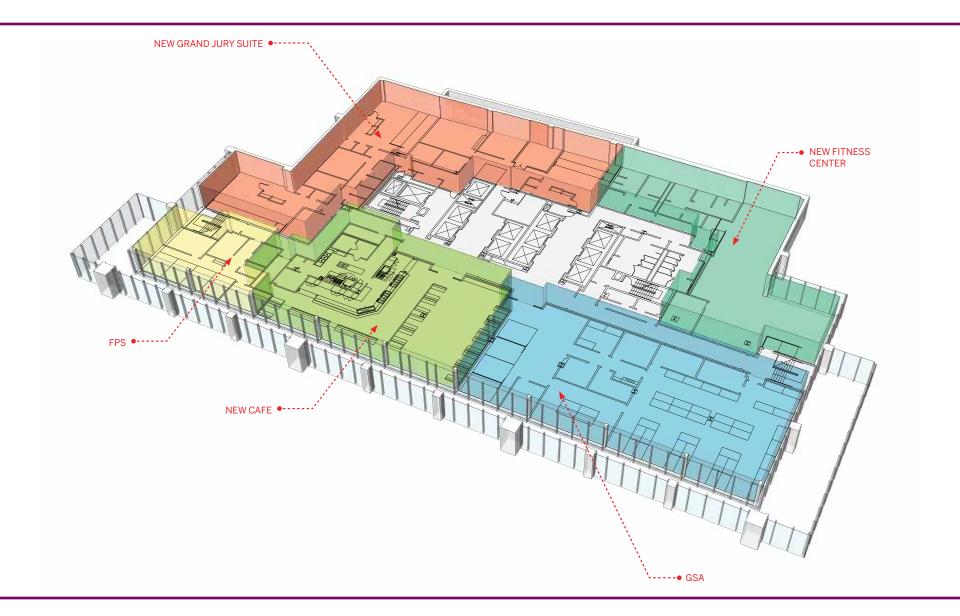




Floor 2: Phase 4 - Final



Floor 2



Implementation: Peter W. Rodino Building Modernization