

# toronto south detention center

16 May 2012



presenters:



design and planning:

Alan Munn

Senior Partner of Zeidler Partnership Architects

designing for LEED / Sustainability:

Susan Kapetanovic-Marr

Sustainability specialist – buildings, technology and energy division of Morrison Hershfield



MORRISON HERSHFIELD



consortium and DBFM (Design Build Finance Maintain):

Michael Sullivan

Director, Equity Services of EllisDon Corporation

construction and design build issues:

Geoff van der Lee

Director, Special Projects of EllisDon Corporation



zeidler



toronto south detention center





EllisDon Corporation

EllisDon Inc.

Fengate Capital

Johnson Controls

Zeidler Partnership Architects

Stephenson Engineering

Smith and Andersen

Crossey Engineering Ltd.

Strybos Barron King Ltd.

Morrison Hershfield

Municipal Infrastructure Group

AECOM

Vipond

Nadine International



awards  
for the  
toronto  
south  
detention  
center

# The AIA Academy of Architecture for Justice Justice Facilities Review 2012 Award of Excellence - Merit

1. project descriptive data
2. narrative of project program
3. greatest challenges
4. notable features
5. thought leadership category
6. descriptive data
7. supplementary data
  - LEED
  - special demands
  - new technologies or materials
  - new or experimental programming
  - new or experimental design
  - special circumstances
  - top three design features
  - specific features

design and planning:

Alan Munn

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zeidler

zeidler

 **EllisDon**

 **ITS**  
Integrated Team Solutions

 **MORRISON HERSHFIELD**

toronto south detention center



aging toronto  
corrections  
facilities to be  
replaced by  
TSDC

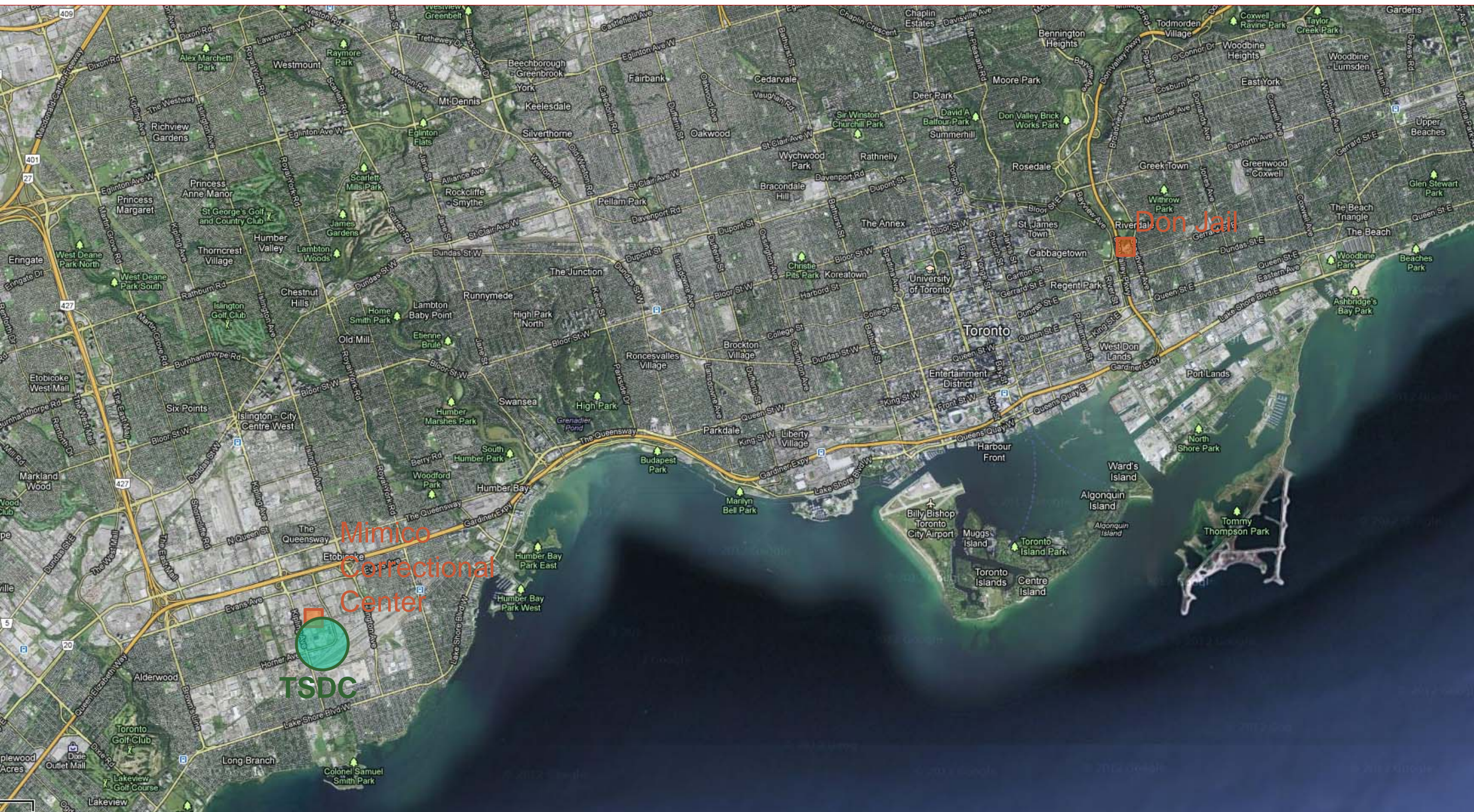
Mimico Correctional Center



Don Jail



## location of facilities in toronto





site previous to construction



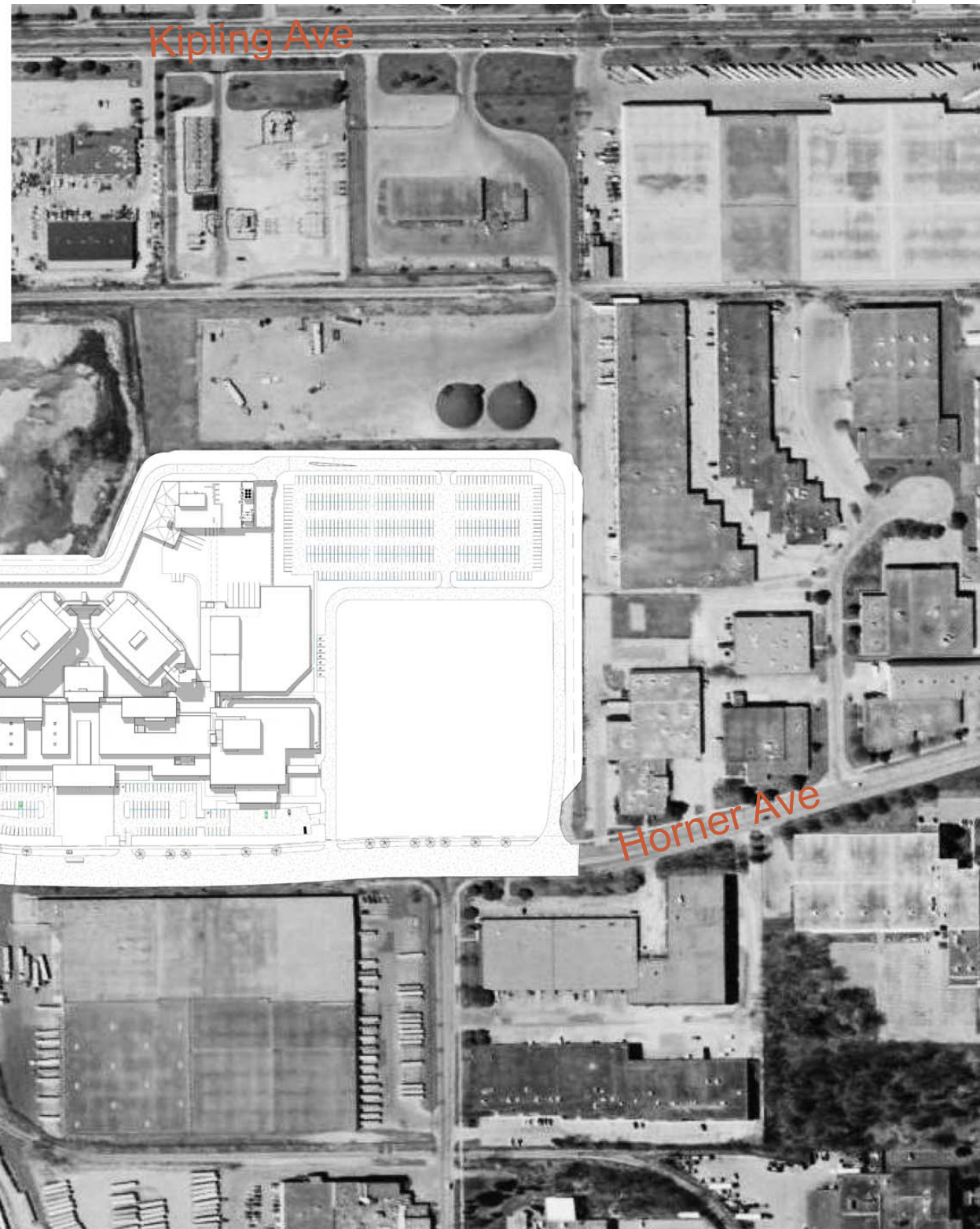


site plan

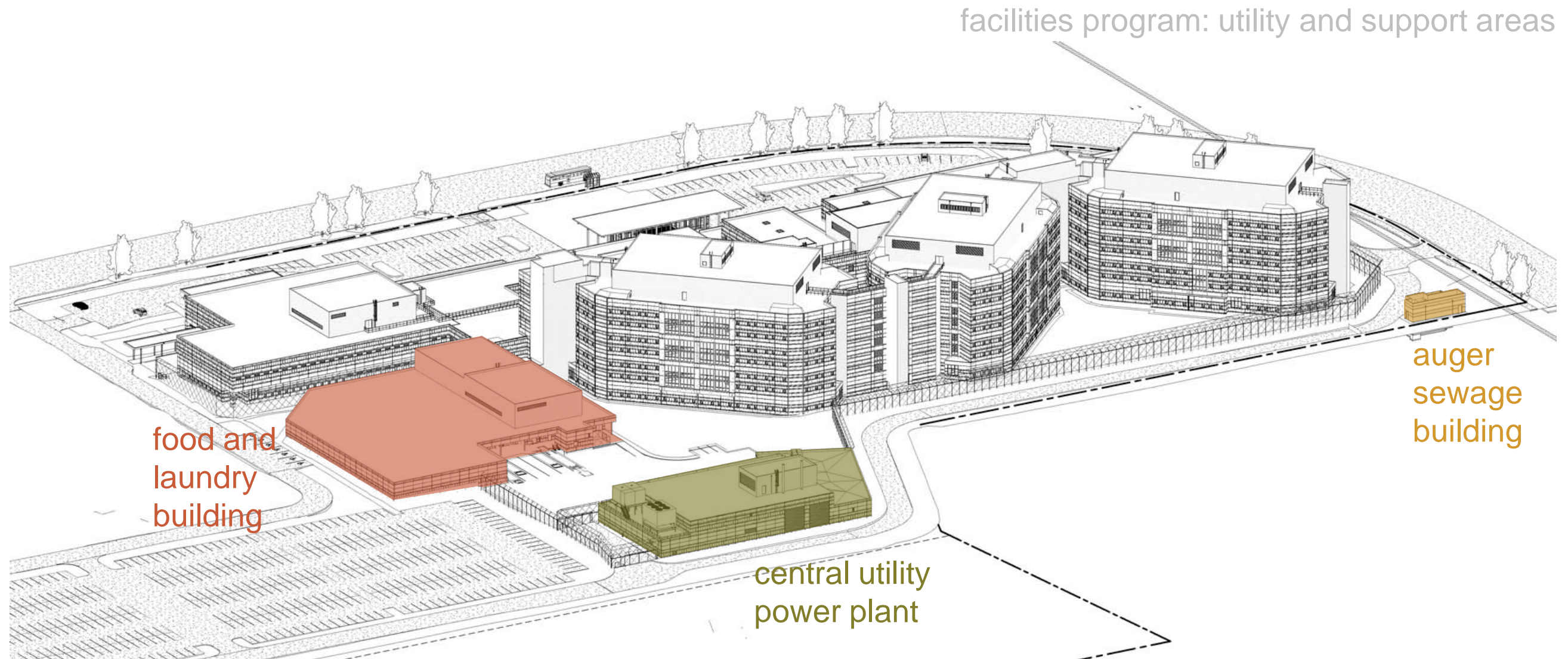


Existing site

- Located East of Kipling and South of The Gardiner Express Way, Immediately North of The East/West Railway Line
- Total Area 26.9 Acre

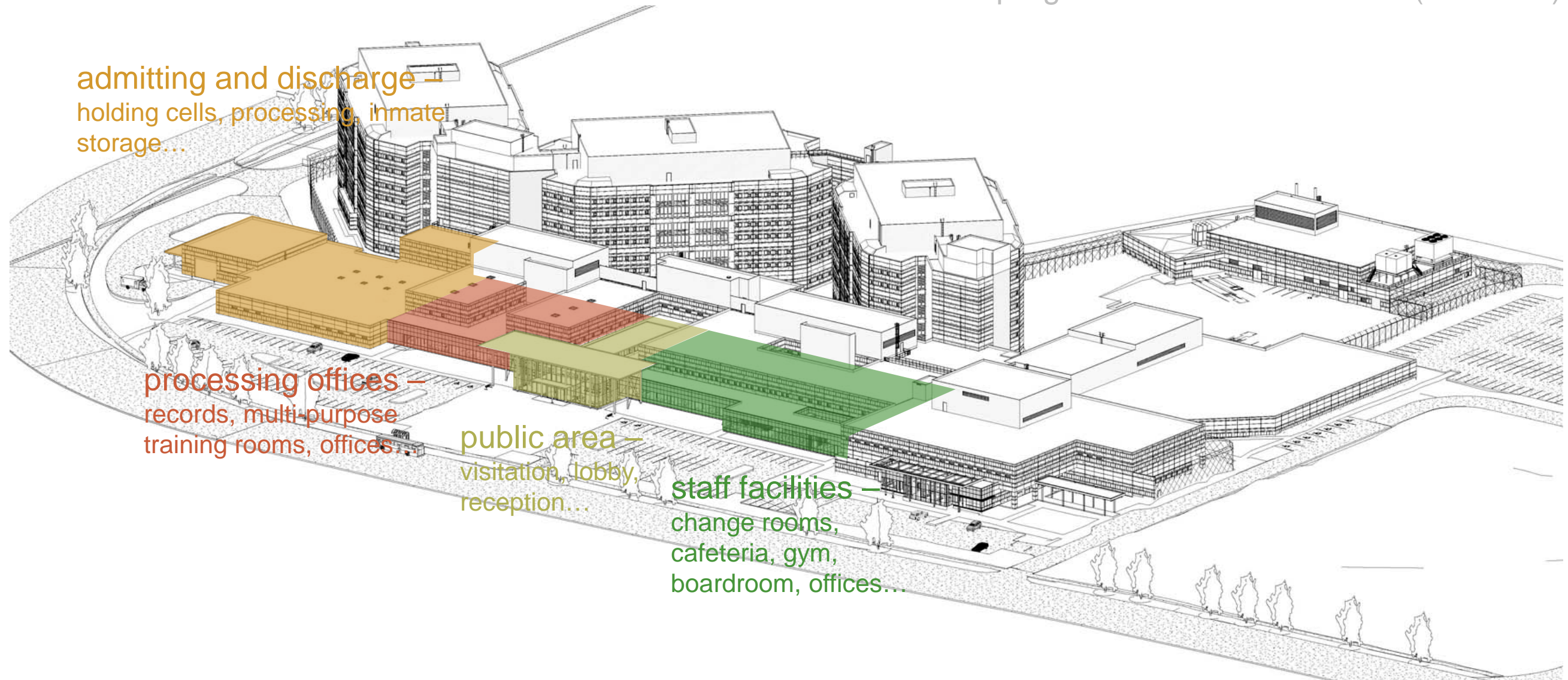


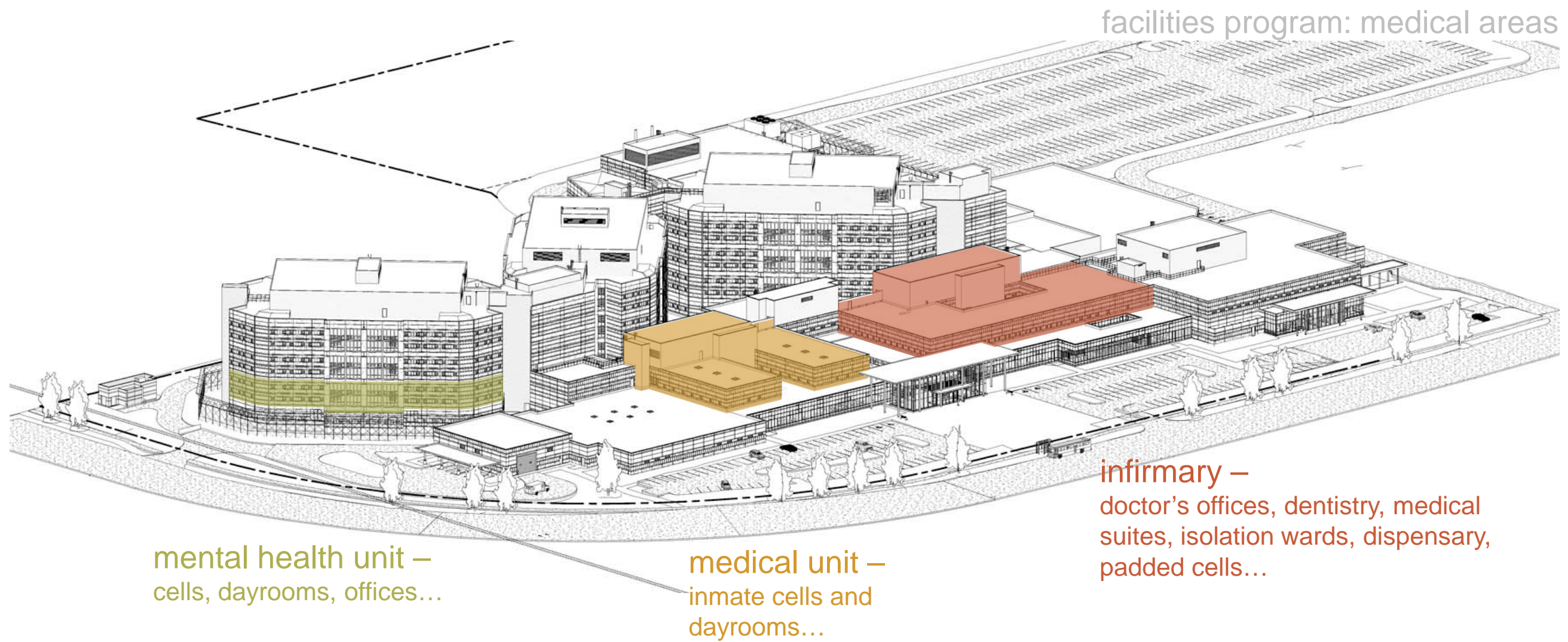






facilities program: administration area (level one)





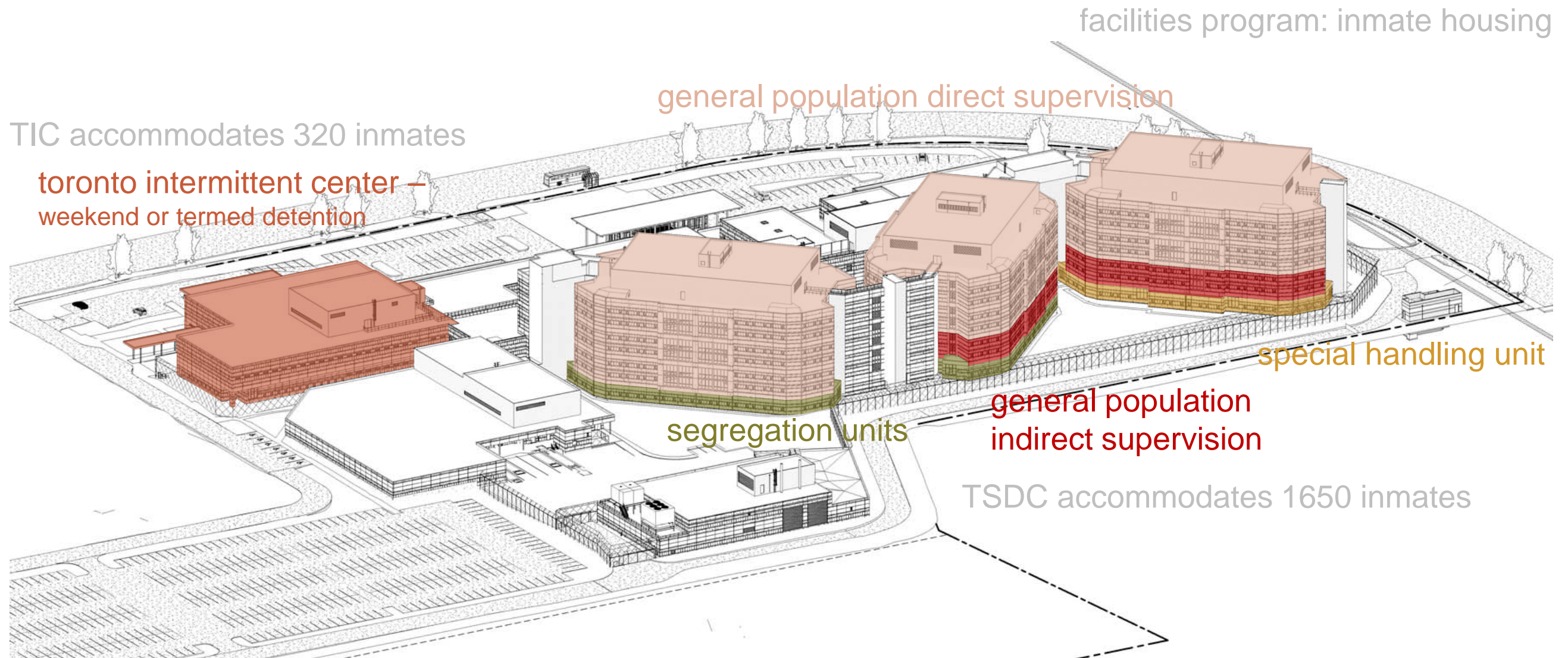
facilities program: medical areas

mental health unit –  
cells, dayrooms, offices...

medical unit –  
inmate cells and  
dayrooms...

infirmary –  
doctor's offices, dentistry, medical  
suites, isolation wards, dispensary,  
padded cells...







demanding RFP construction timeline schedule

release of RFP – Oct 2008  
schematic design and pursuit period  
submission of RFP – Jun 2009  
preferred proponent of RFP – Sep 2009  
user group period and design development





demanding RFP construction timeline schedule





demanding RFP construction timeline schedule



completion of Toronto Intermittent Center, power plant and support services (RFP requirement) – March 2011  
decanting of Mimico Correctional Center to Toronto Intermittent Center begins



demanding RFP construction timeline schedule



TSDC construction completion (RFP requirement) – Sep 2012

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precast cell construction was chosen at an early stage to meet the demanding needs of the scheduled timeline



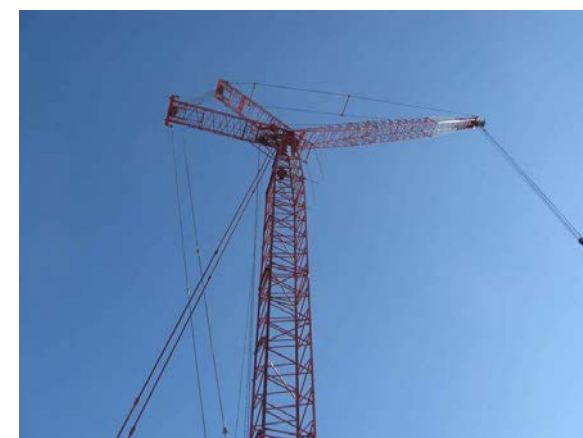
controlled factory manufacturing ensured timely delivery and quality of finish that would have been difficult to achieve in the field







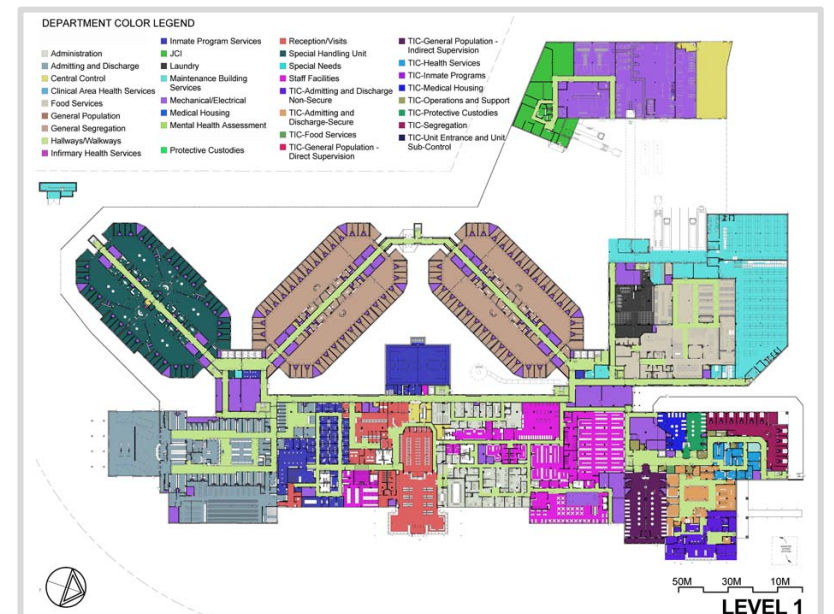
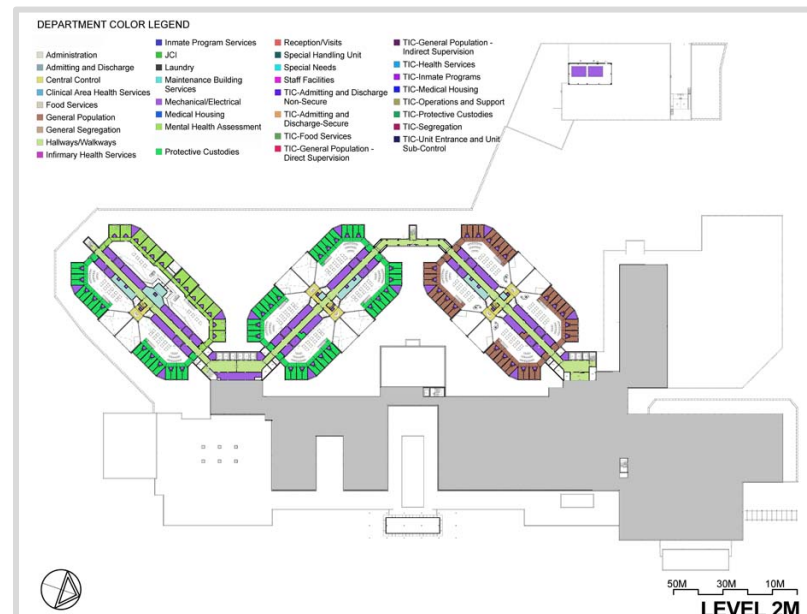
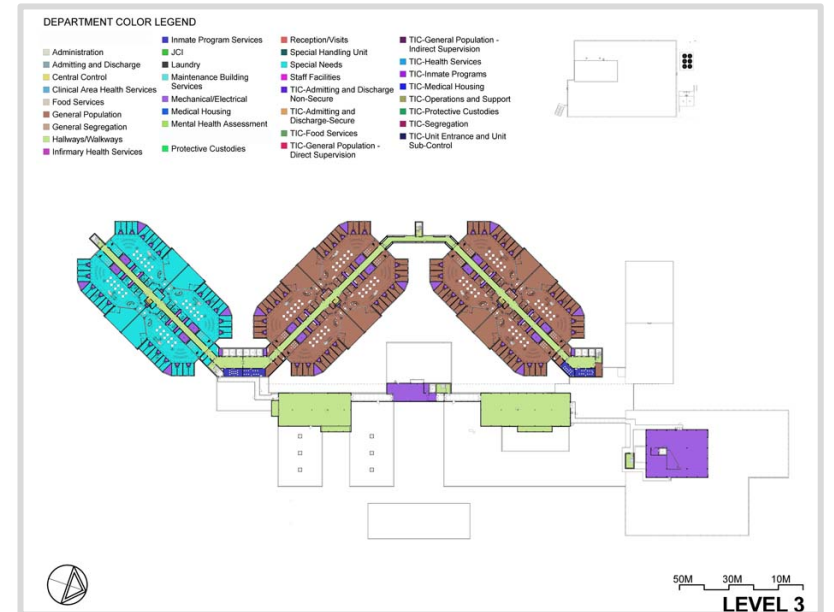
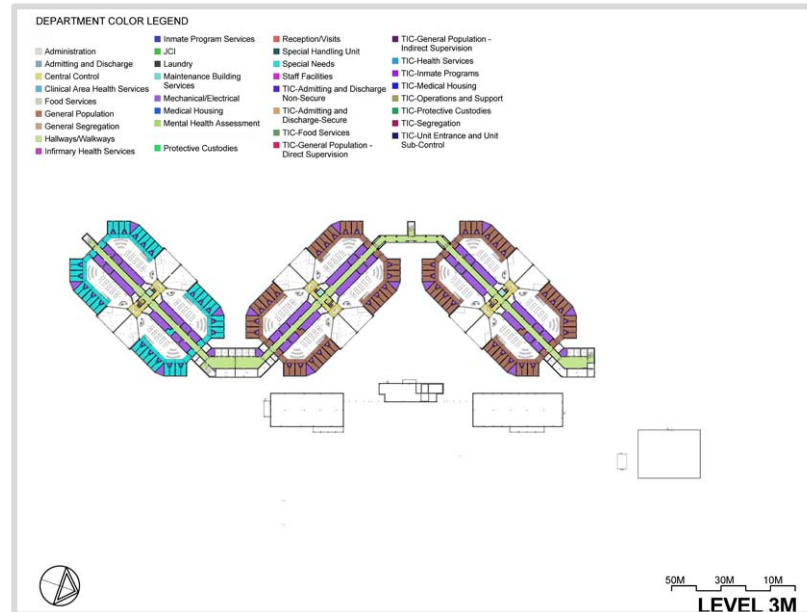
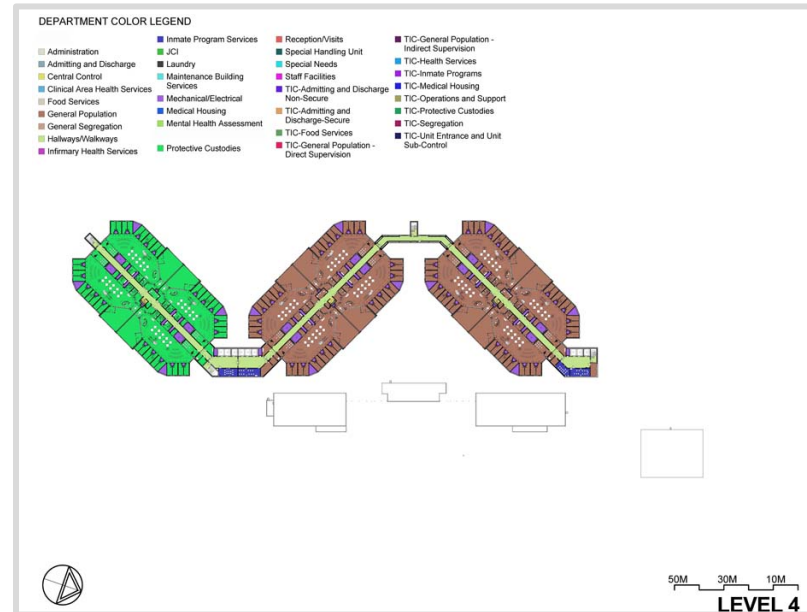
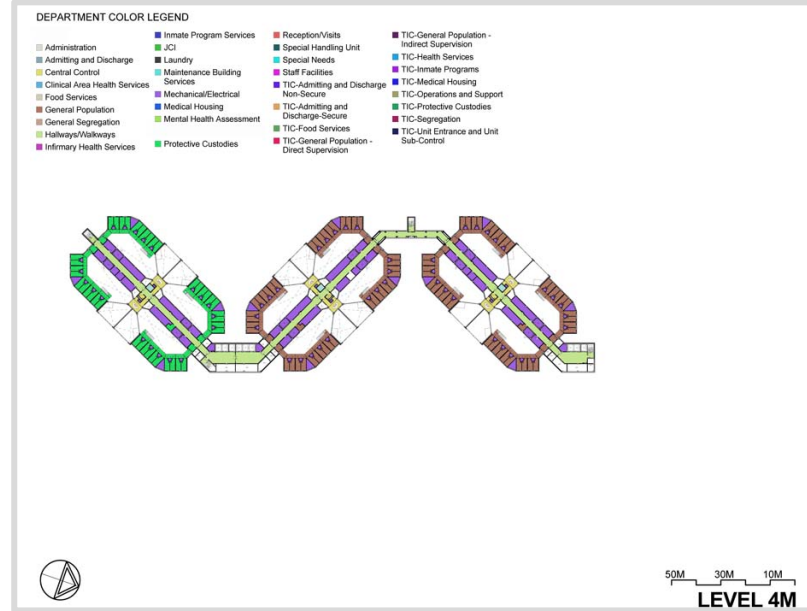
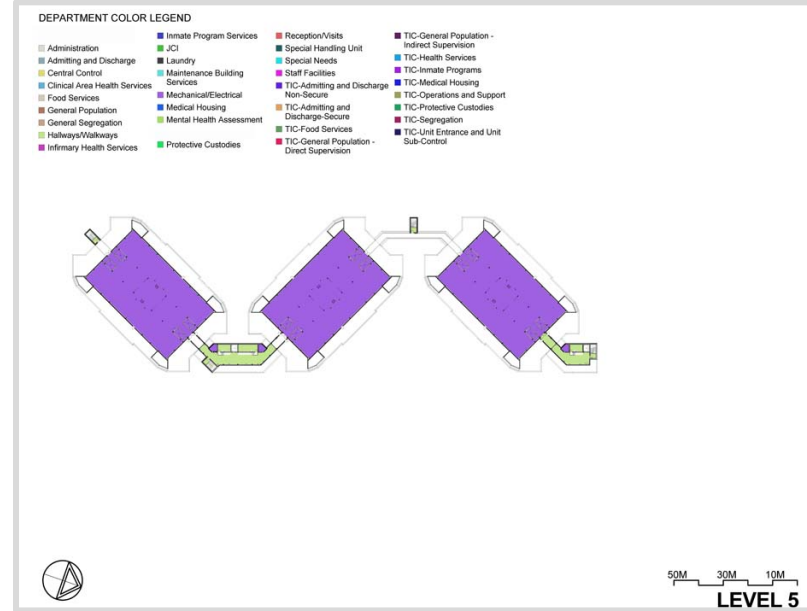
requirements in the RFP and precast cell construction produced **three notable challenges** in the design of the TSDC







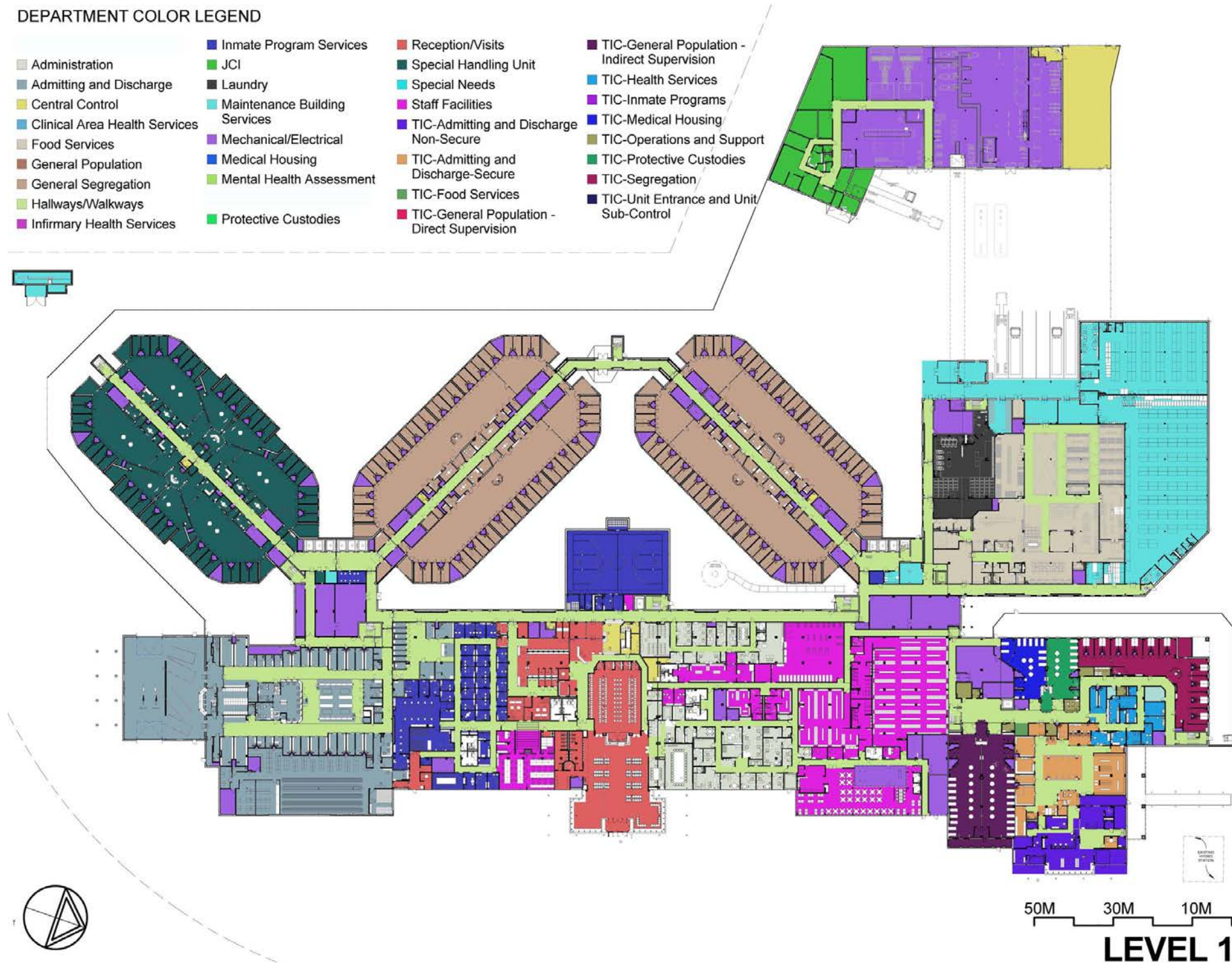




design challenge one:  
uniformity of stacking precast  
cells versus complex  
programming of departments  
in the RFP



design challenge one:  
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design challenge one:  
uniformity of stacking precast cells versus complex programming of departments in the RFP

#### DEPARTMENT COLOR LEGEND

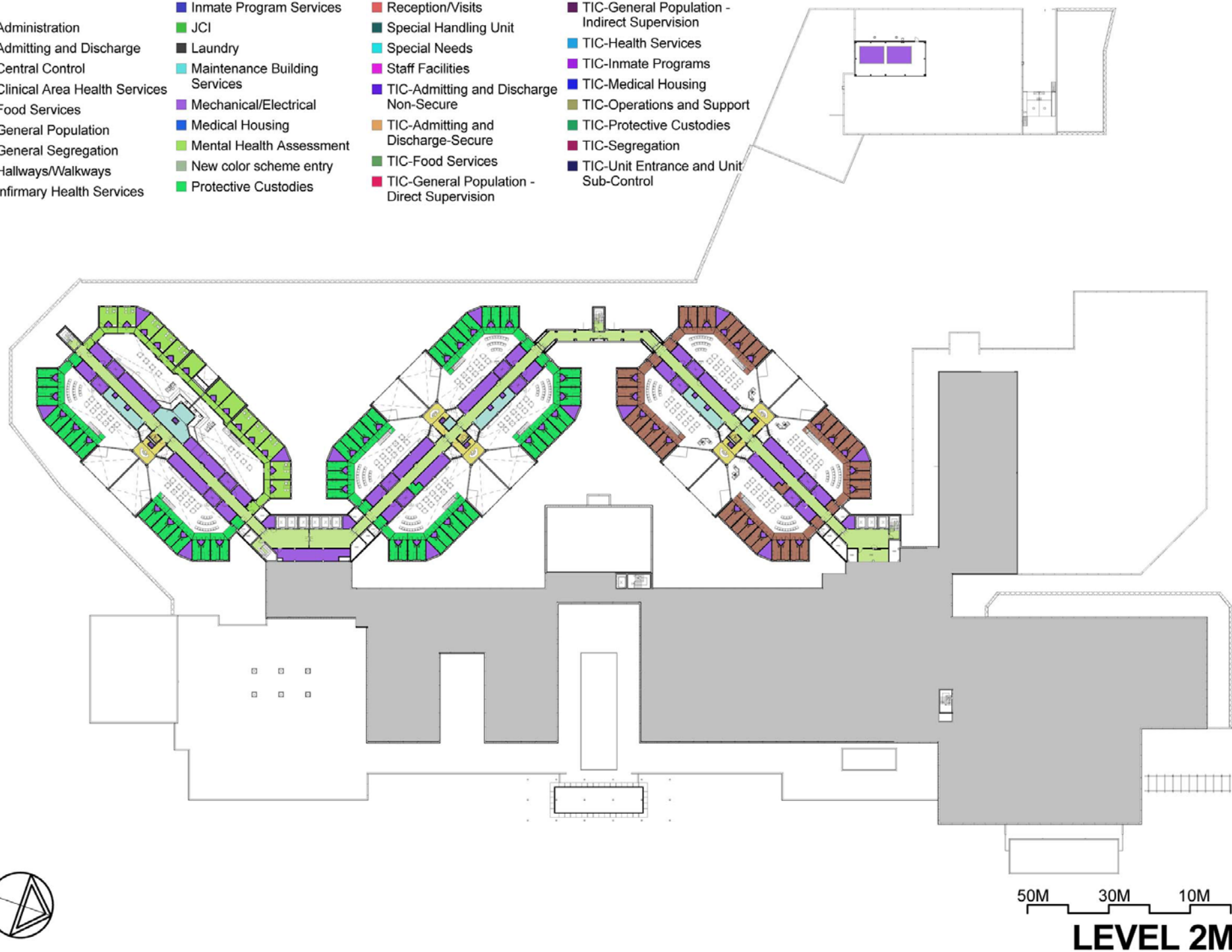
Administration	Inmate Program Services	Reception/Visits	TIC-General Population - Indirect Supervision
Admitting and Discharge	JCI	Special Handling Unit	TIC-Health Services
Central Control	Laundry	Special Needs	TIC-Inmate Programs
Clinical Area Health Services	Maintenance Building Services	Staff Facilities	TIC-Medical Housing
Food Services	Mechanical/Electrical	TIC-Admitting and Discharge Non-Secure	TIC-Operations and Support
General Population	Medical Housing	TIC-Admitting and Discharge-Secure	TIC-Protective Custodies
General Segregation	Mental Health Assessment	TIC-Food Services	TIC-Segregation
Hallways/Walkways	New color scheme entry	TIC-General Population - Direct Supervision	TIC-Unit Entrance and Unit Sub-Control
Infirmatory Health Services	Protective Custodies		



design challenge one:  
uniformity of stacking precast cells versus complex programming of departments in the RFP

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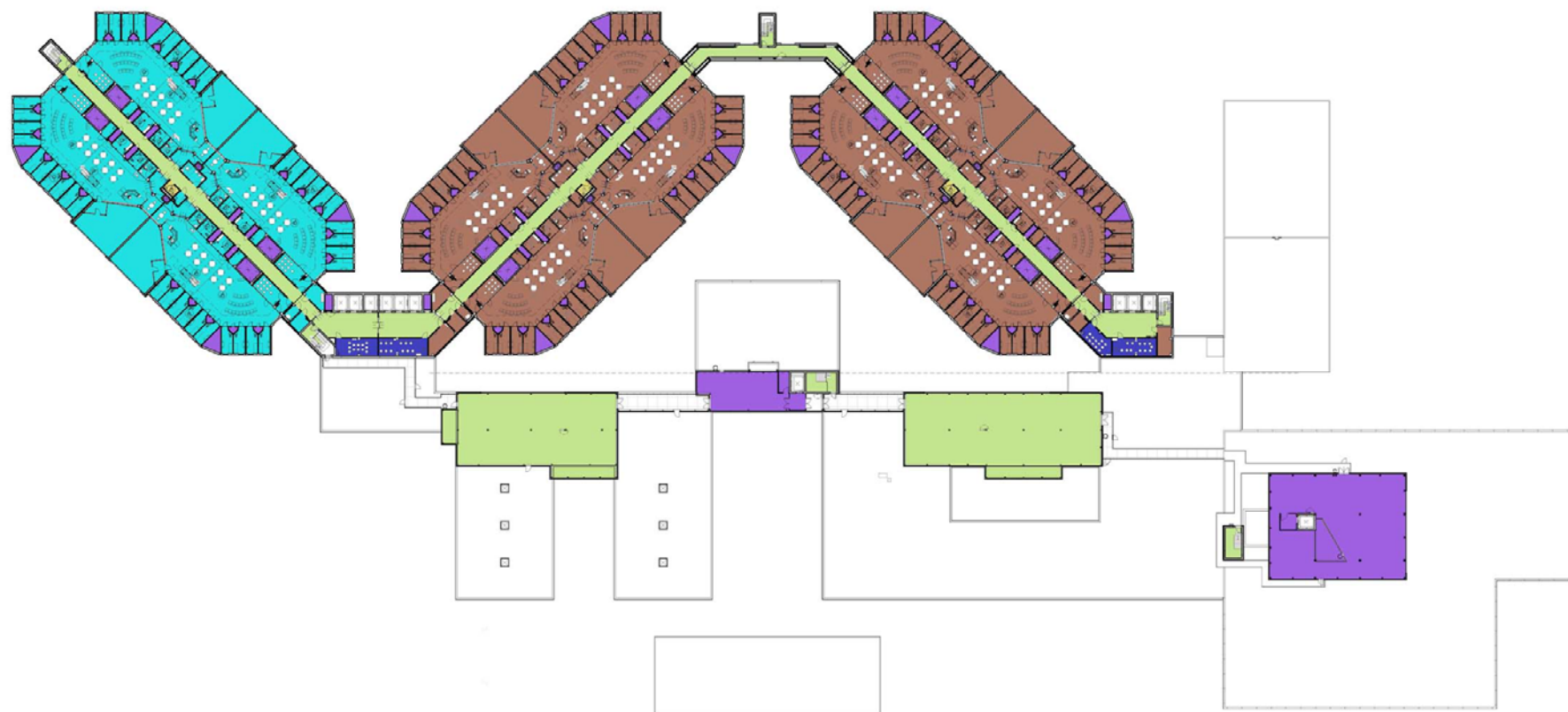
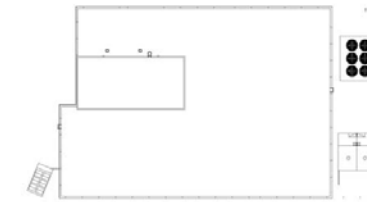




design challenge one:  
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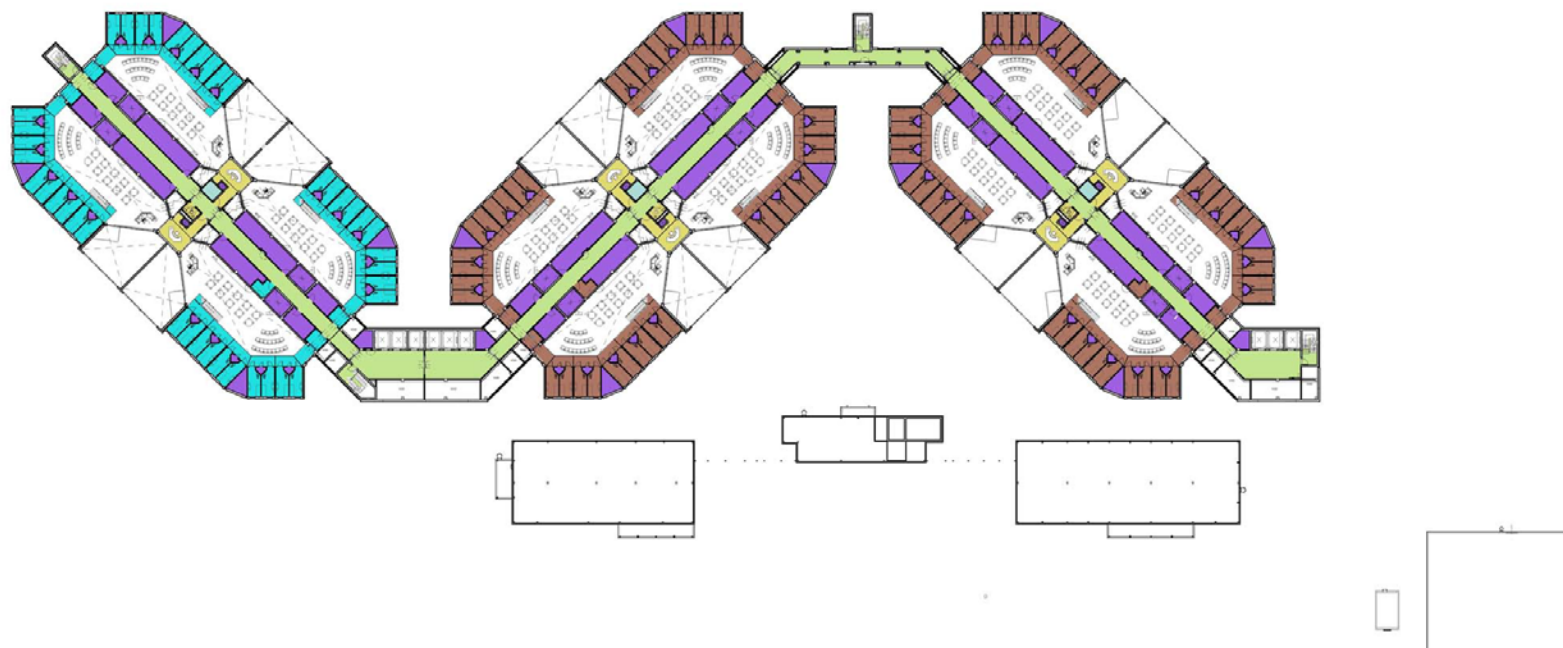


50M 30M 10M  
**LEVEL 3**

design challenge one:  
uniformity of stacking precast cells versus complex programming of departments in the RFP

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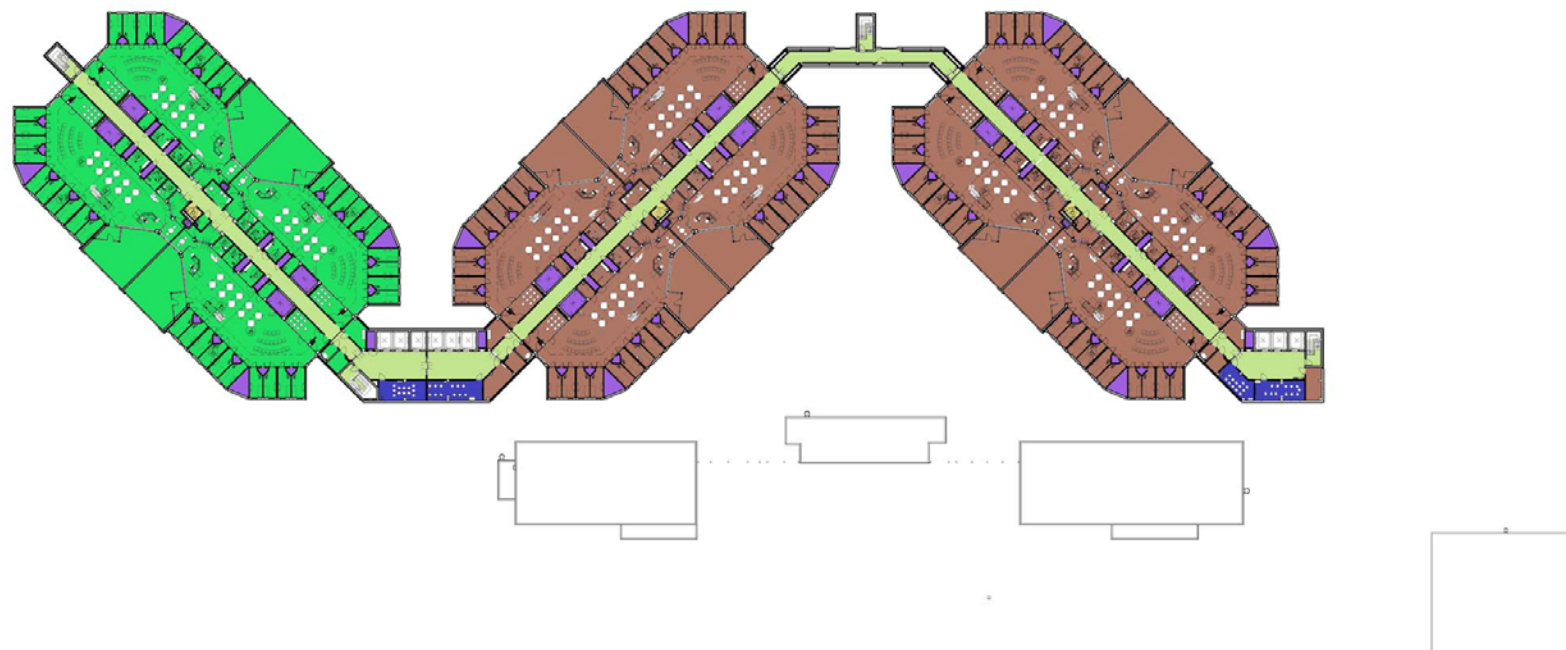
50M 30M 10M  
**LEVEL 3M**



design challenge one:  
uniformity of stacking precast cells versus complex programming of departments in the RFP

DEPARTMENT COLOR LEGEND

			
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Admitting and Discharge	JCI	Special Handling Unit	TIC-Health Services
			
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General Population	Medical Housing	TIC-Admitting and Discharge-Secure	TIC-Protective Custodies
			
General Segregation	Mental Health Assessment	TIC-Food Services	TIC-Segregation
			
Hallways/Walkways	New color scheme entry	TIC-General Population - Direct Supervision	TIC-Unit Entrance and Unit Sub-Control
			
Infirmity Health Services	Protective Custodies		

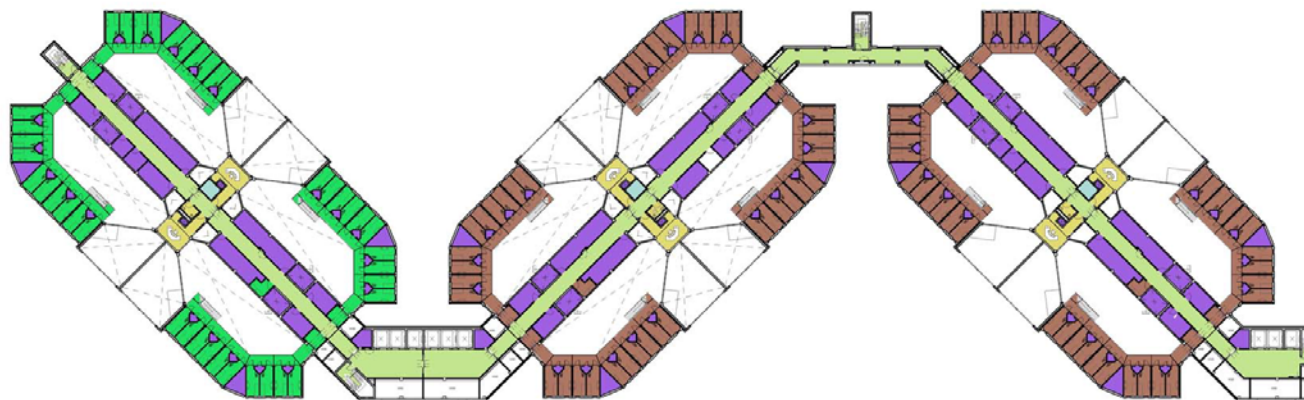


50M 30M 10M  
**LEVEL 4**

design challenge one:  
uniformity of stacking precast cells versus complex programming of departments in the RFP

#### DEPARTMENT COLOR LEGEND

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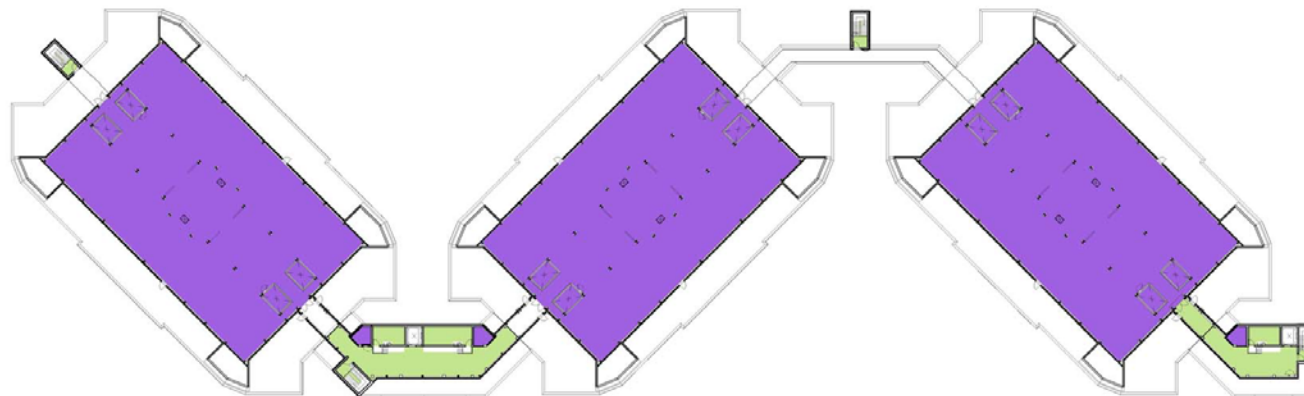


50M 30M 10M  
**LEVEL 4M**

design challenge one:  
uniformity of stacking precast cells versus complex programming of departments in the RFP

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Infirmity Health Services	Protective Custodies		



50M 30M 10M  
**LEVEL 5**





RFP required that no ramps or sloped floors are to be in the TSDC for the ease of cart movement

design challenge  
two: conflicting height requirements between precast cells, RFP demands and mechanical

RFP required all ceiling heights of corridors and rooms in the facility to be 2.4m or higher

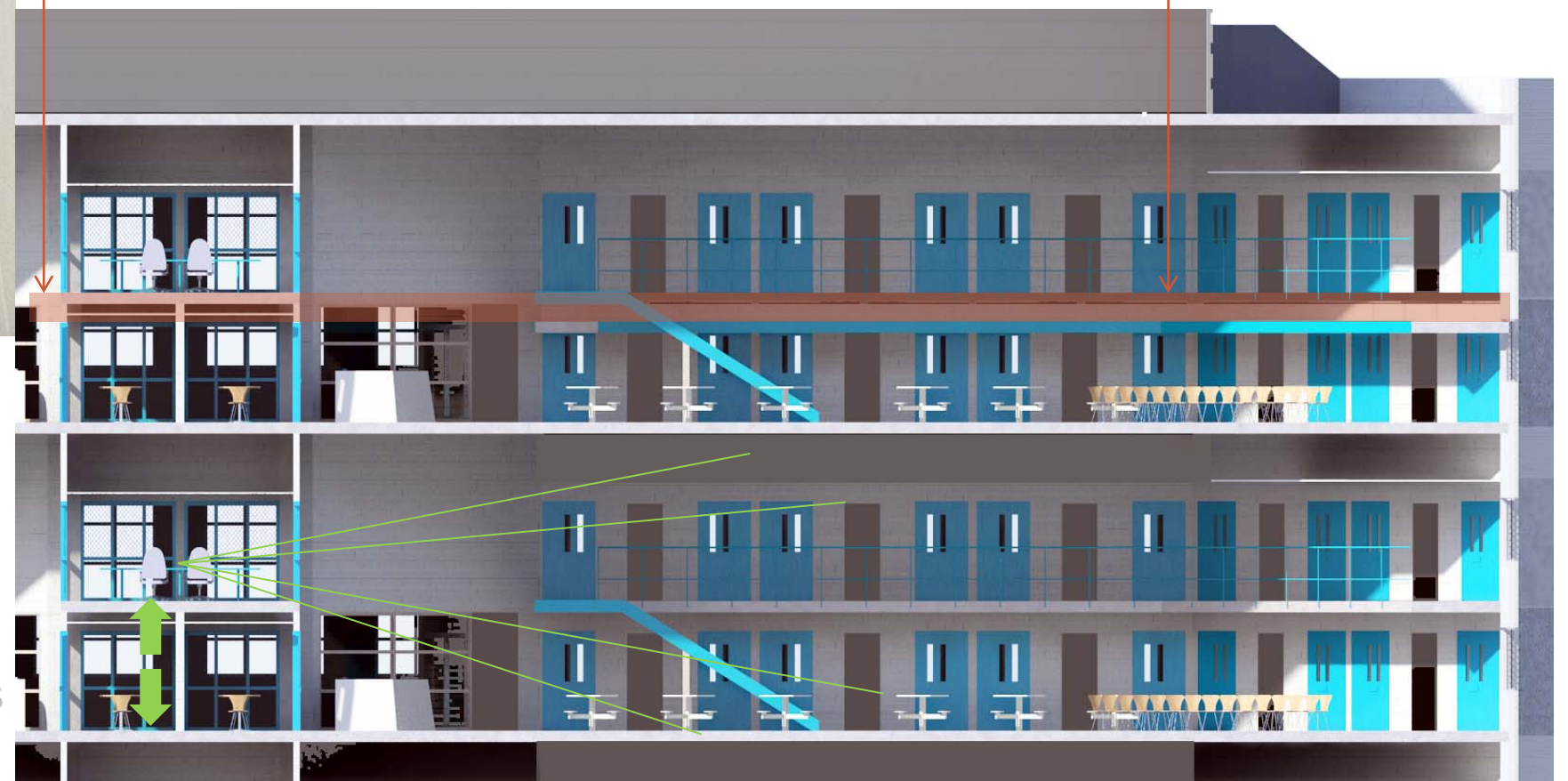




height of precast cell limited to 3m due to transport requirements

design challenge  
two: conflicting height requirements between precast cells, RFP demands and mechanical

hence no interstitial space could be introduced between mezzanine levels of precast cells to service mechanical utilities without raising control post levels, lowering ceiling heights or introducing ramps/raised floors



RFP required all guard monitor posts in the facility to be no higher than 3.2m above finish floor to aid sight lines as well as no horizontally obstructed views to inmate common spaces



design challenge  
two: conflicting  
height  
requirements  
between precast  
cells, RFP  
demands and  
mechanical



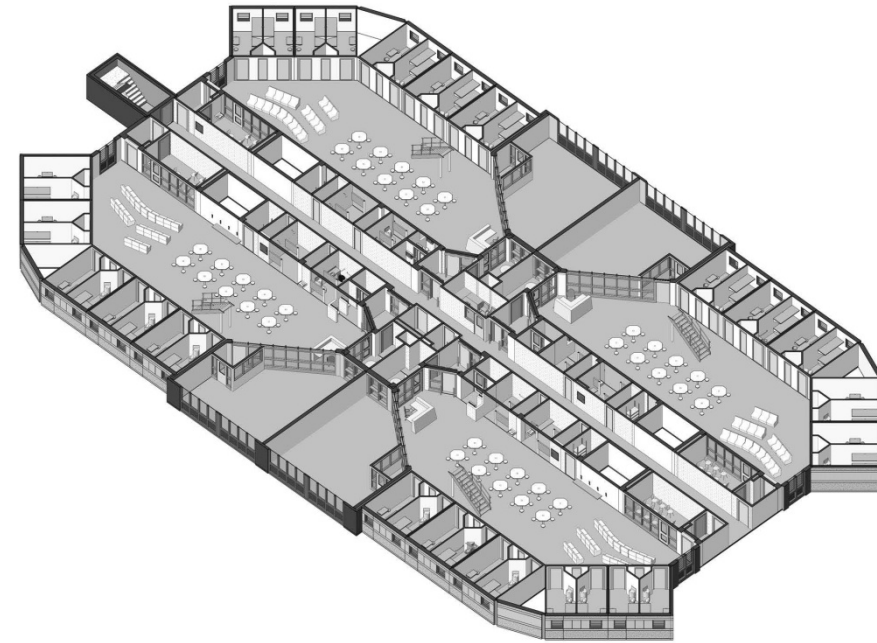
guard station view of general population units:  
3m above dayroom , horizontal obstruction free into four main common spaces from one position





general population unit control room

general population dayroom unit images







general population  
dayroom unit images





design challenge  
two: conflicting  
height  
requirements  
between precast  
cells, RFP  
demands and  
mechanical

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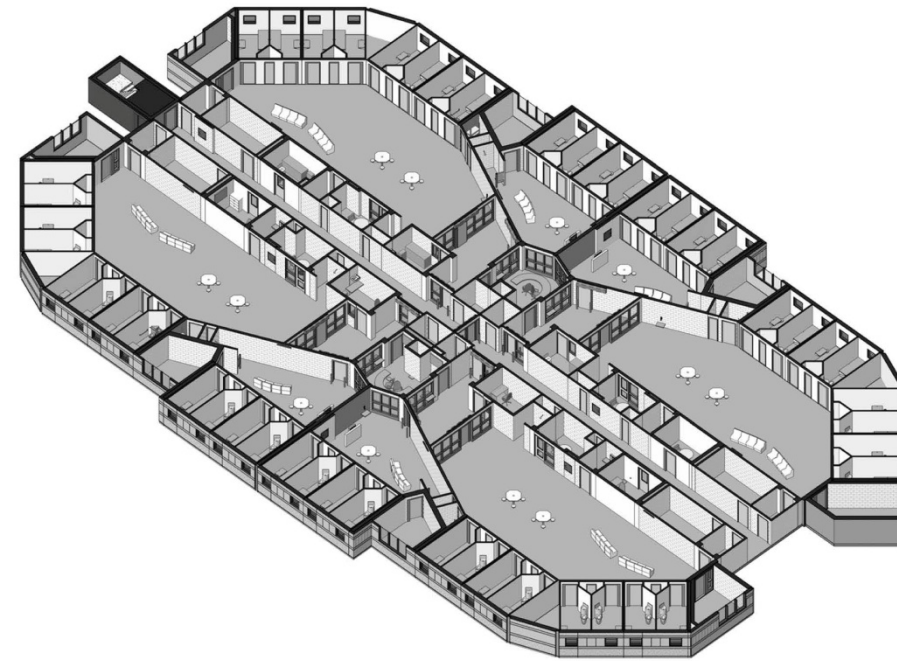
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special handling unit control room



special handling unit images







special handling unit images



design challenge  
two: conflicting  
height  
requirements  
between precast  
cells, RFP  
demands and  
mechanical

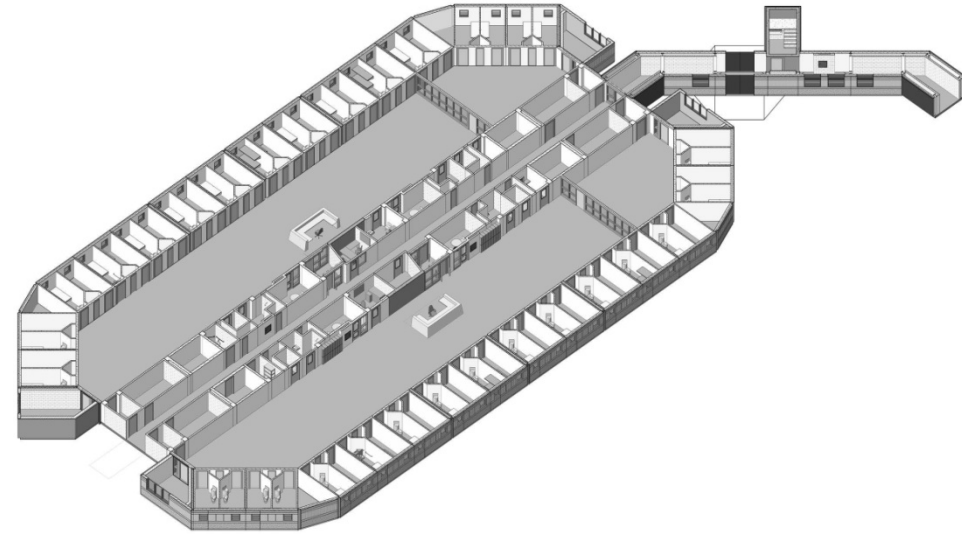


guard station view of segregation units:  
horizontal obstruction free at base of towers, column free, all loads transferred to perimeter





segregation unit images



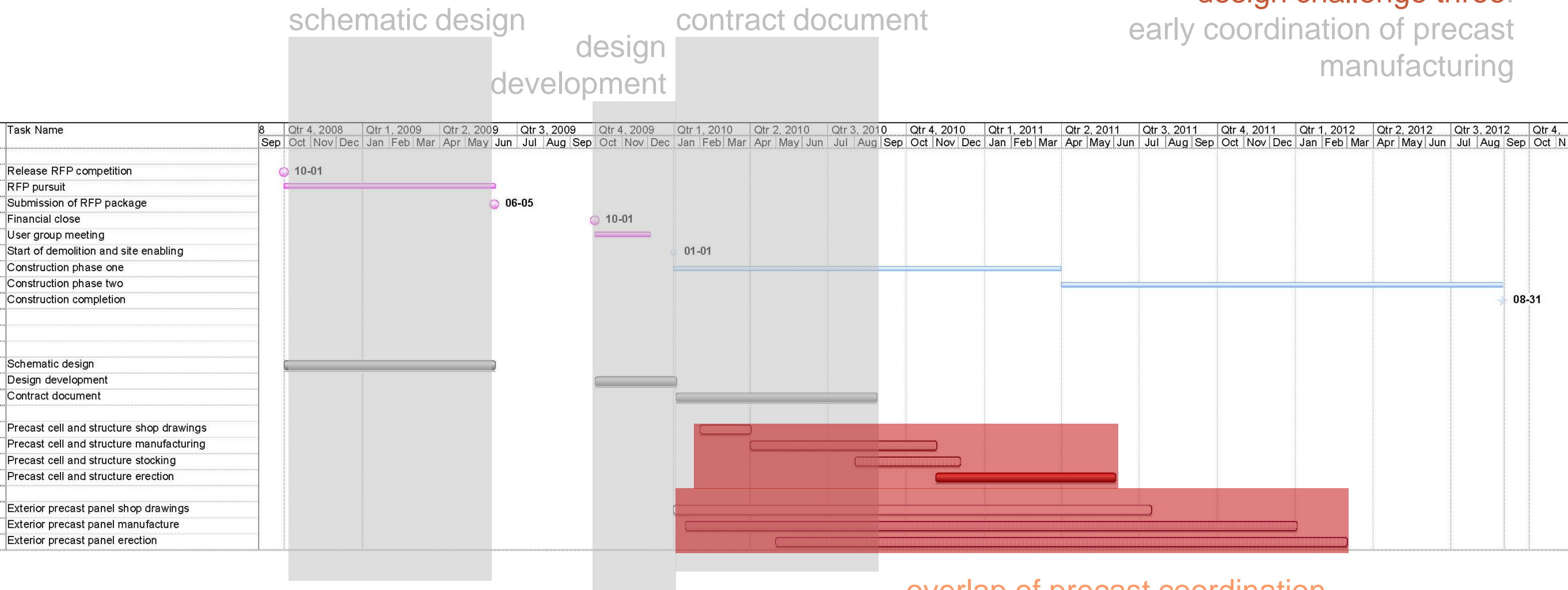


segregation unit images

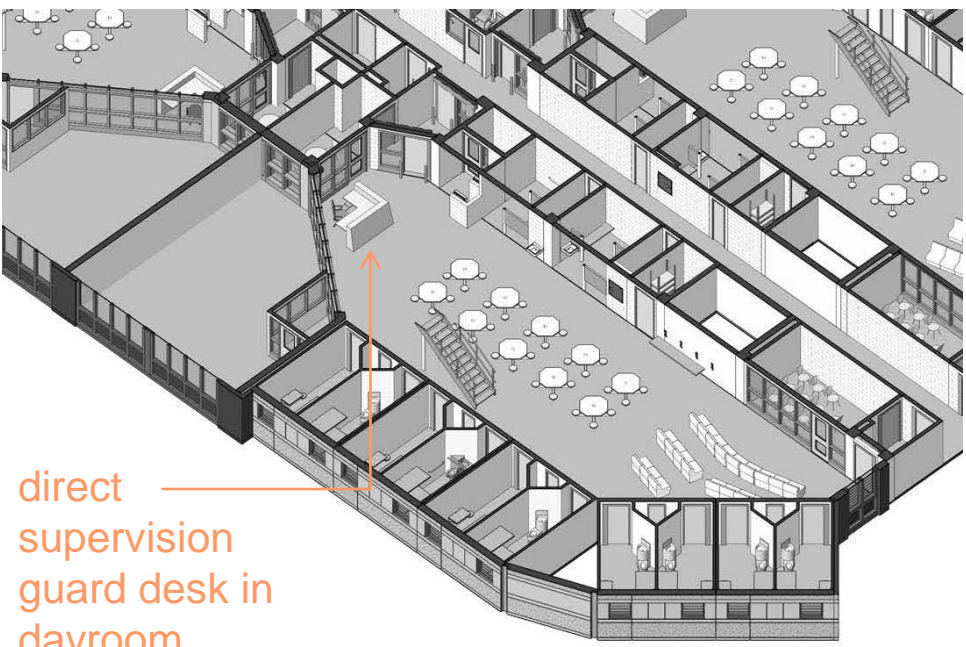




design challenge three:  
early coordination of precast  
manufacturing



←→ overlap of precast coordination  
time required prior to the  
completion of working drawings



precast members are difficult to alter on site  
all mechanical and electrical requirements had to  
be coordinated prior to manufacture and  
completion of construction documents.  
general population dayrooms in the TSDC were  
designed to allow for interchange between direct  
and indirect supervision as required in the RFP





the design response to the requirements  
in the RFP and construction challenges  
produced **notable features** in this facility







**notable feature one:**  
the choice to utilize precast for interior structure as well as exterior shell to accelerate construction timeline provided opportunities to enrich the exterior design with little added extra cost



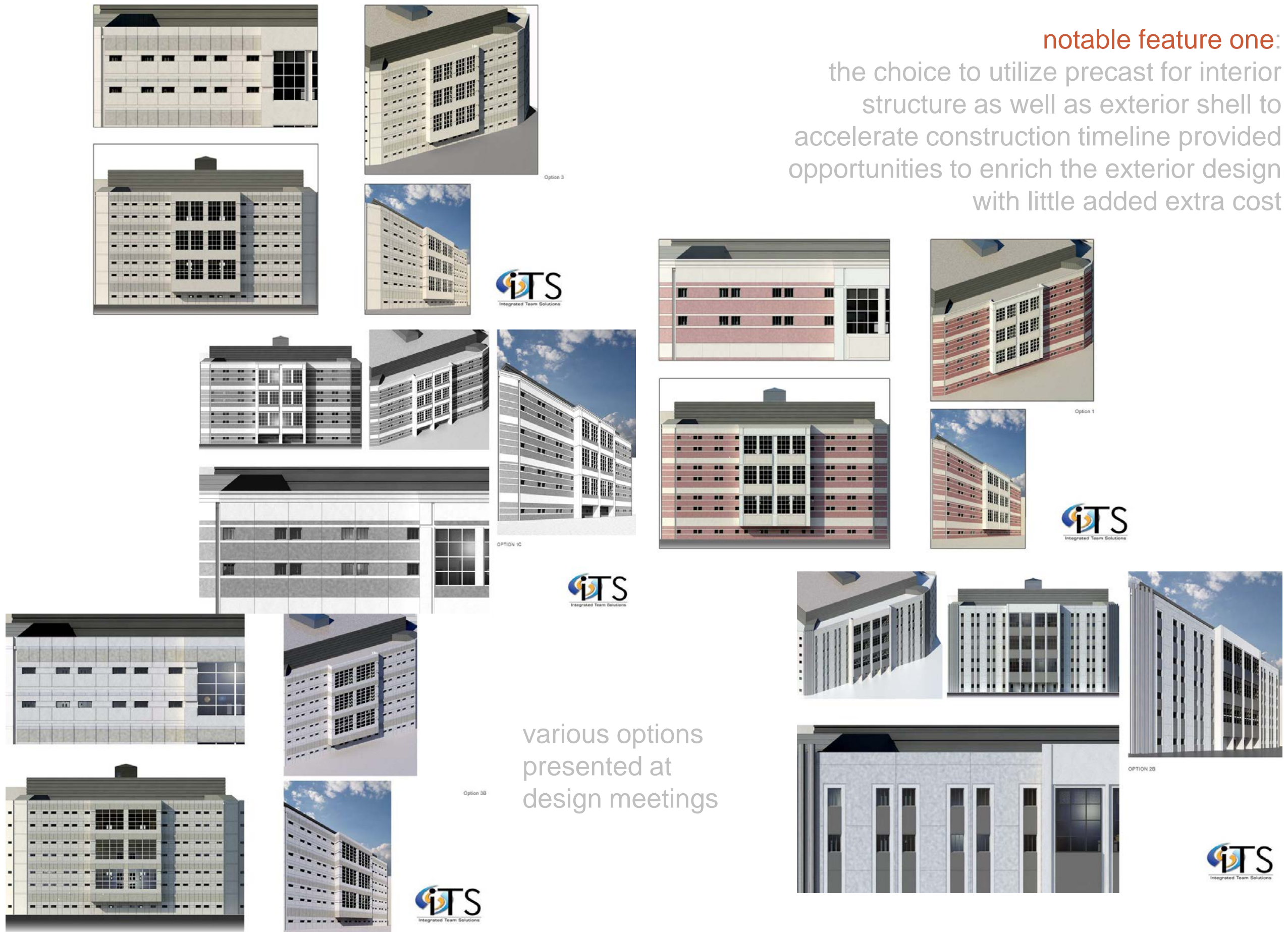
traditional CMU cavity wall construction at the Central Ontario North Correctional Centre, Penetanguishene





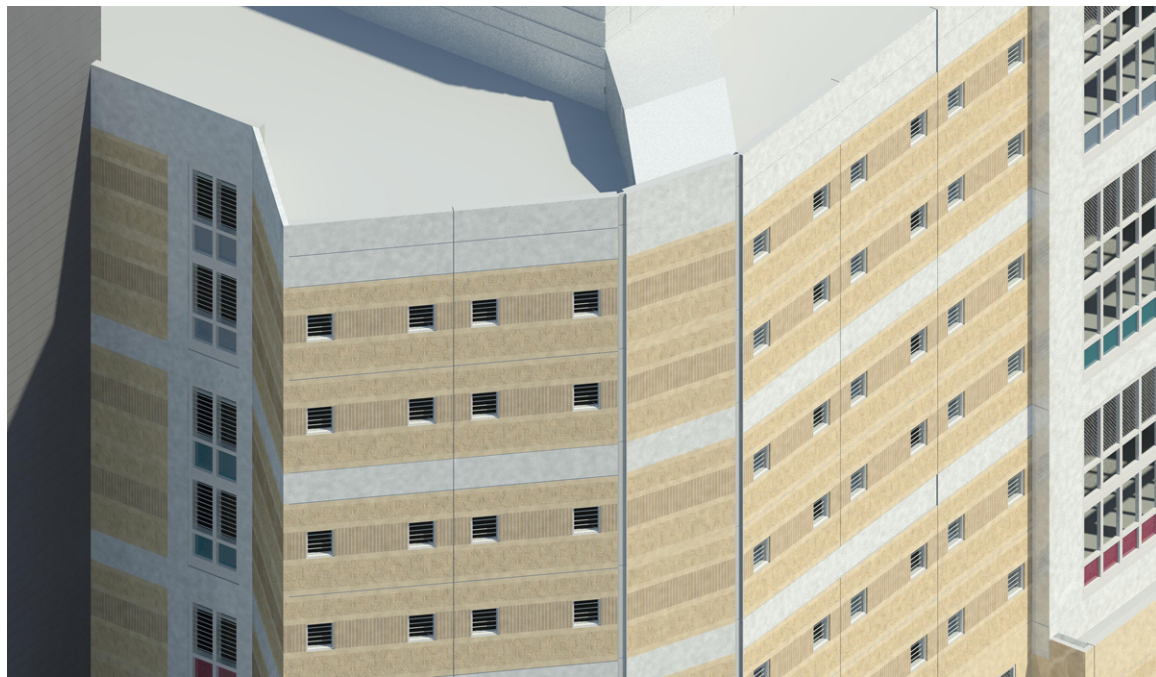
notable feature one:

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various options presented at design meetings

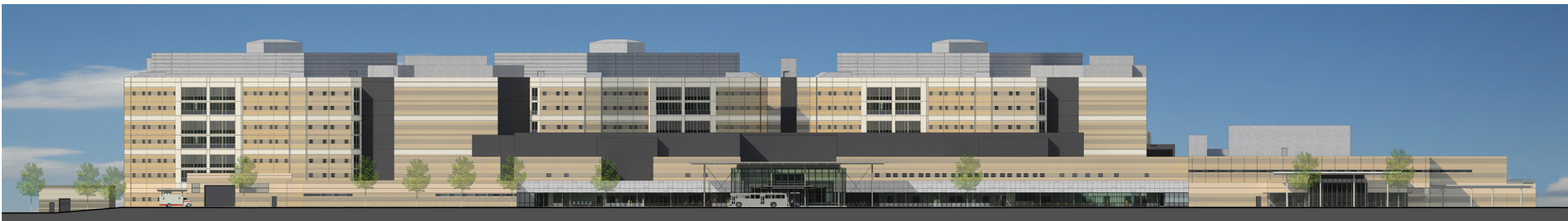
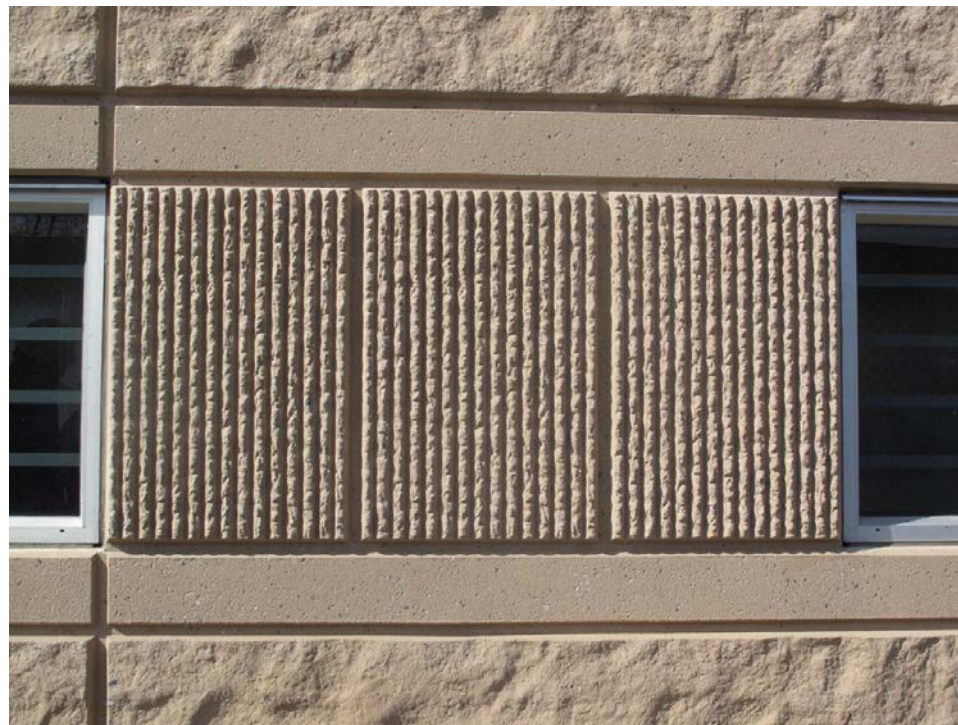




notable feature one:

the choice to utilize precast for interior structure as well as exterior shell to accelerate construction timeline provided opportunities to enrich the exterior design with little added extra cost

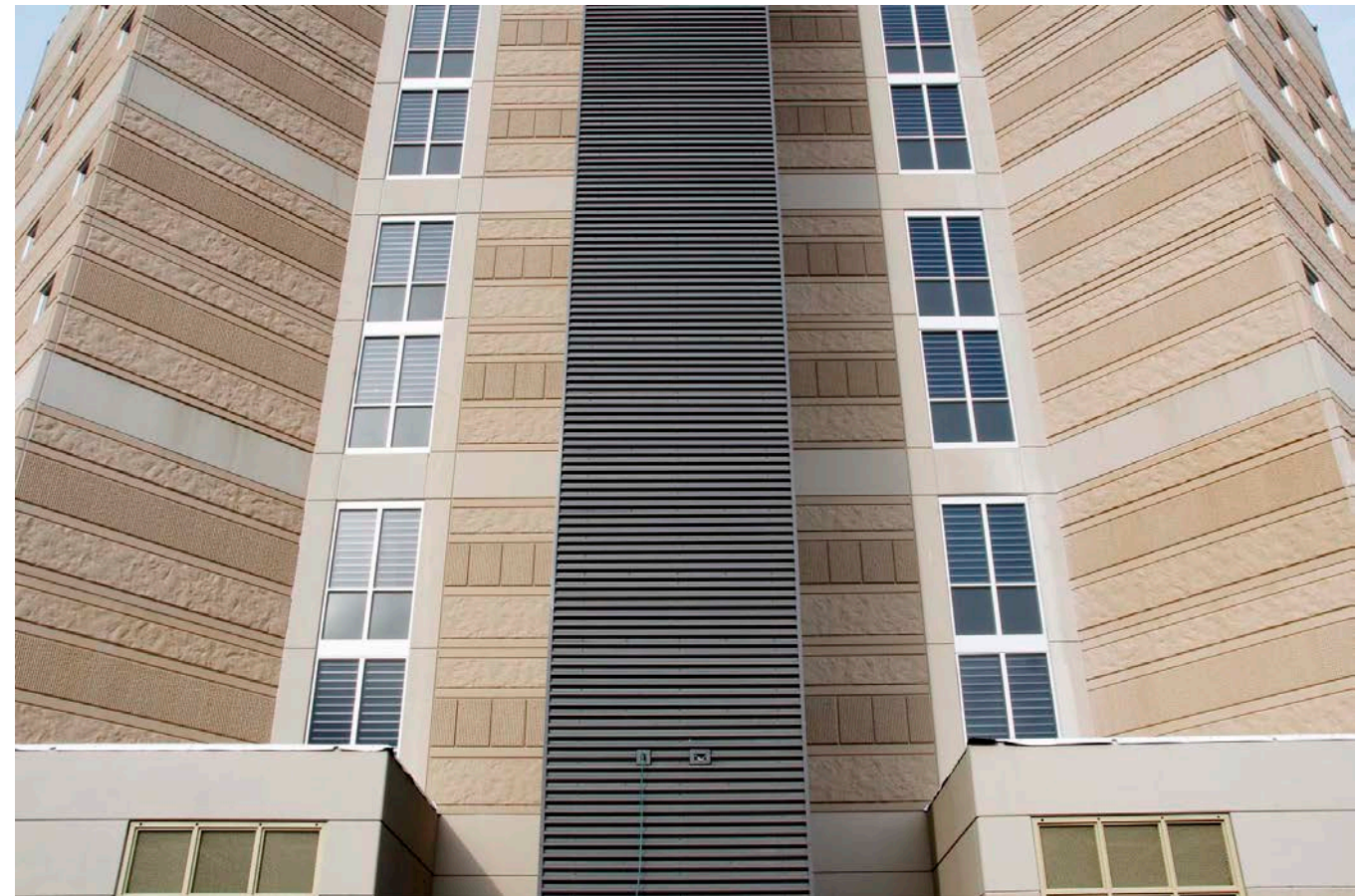
exterior precast provided an opportunity to change colours and manipulate tones with shadows and textures on the surfaces by altering form liners







**notable feature one:**  
the choice to utilize precast for interior structure as well as exterior shell to accelerate construction timeline provided opportunities to enrich the exterior design with little added extra cost





**notable feature one:**

the choice to utilize precast for interior structure as well as exterior shell to accelerate construction timeline provided opportunities to enrich the exterior design with little added extra cost





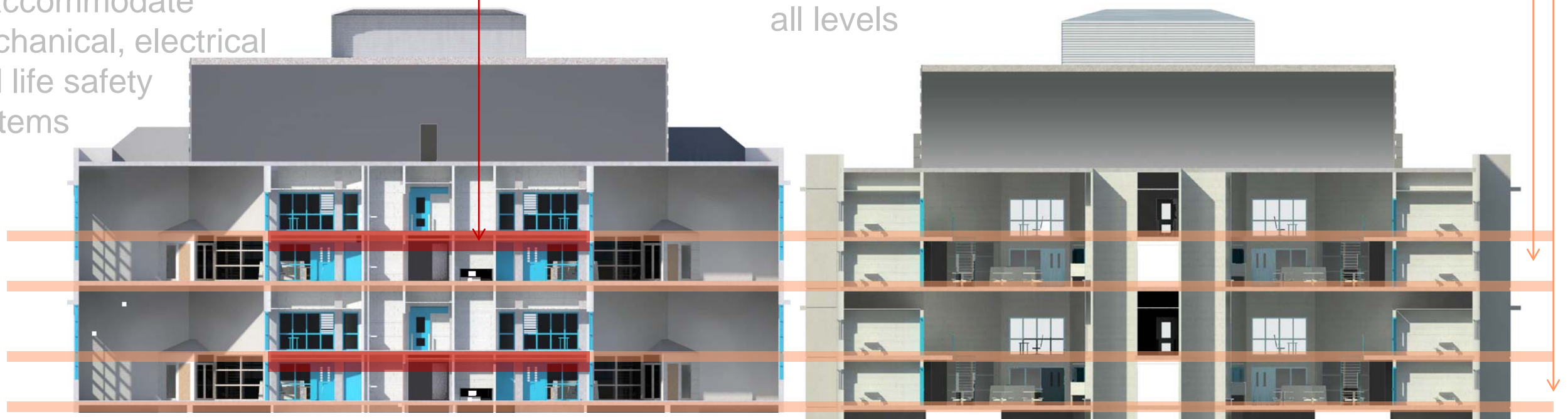
**notable feature two:**

the RFP and precast limitations in “design challenge two” required a delicate balance in tower design

precast cells were designed and constructed to a maximum 3m high transport limit, resulting in a spacious 2.7m high inmate cell ceiling

various regions in the towers were provided with a maximum 0.3m deep space to accommodate mechanical, electrical and life safety systems

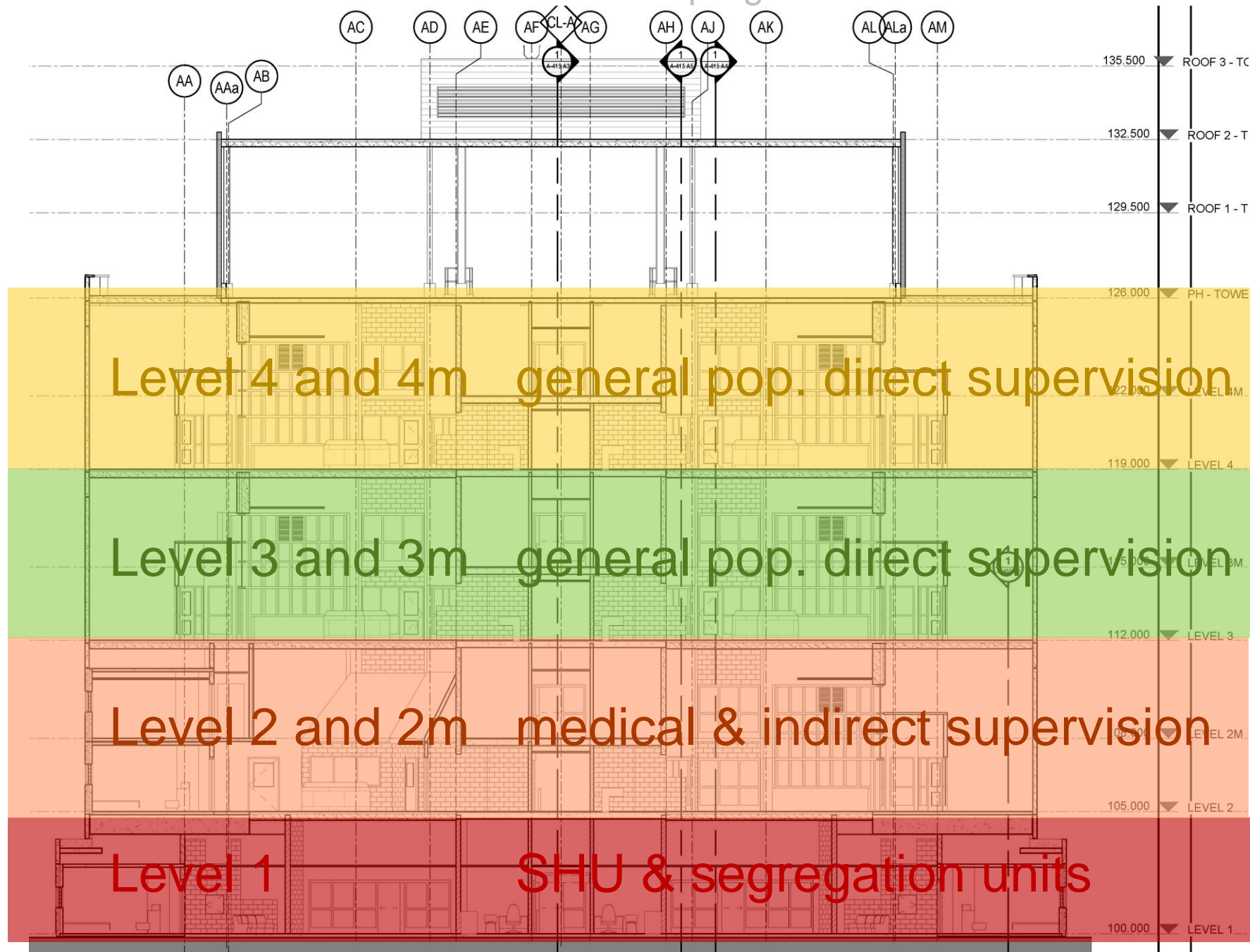
3m high guard post, mezzanine and cells were established to a consistent elevation with no ramps or steps to ease handicap access and cart traffic at all levels





notable feature three:  
complex inmate  
program and  
movement in the  
facility were integrated  
with the uniformity of  
the precast stacking  
structure

elevation schematic of inmate program and elevation movement



general population and protective custody direct supervision inmates, non-problematic movement, programs of inmates are consistent with general dayroom model

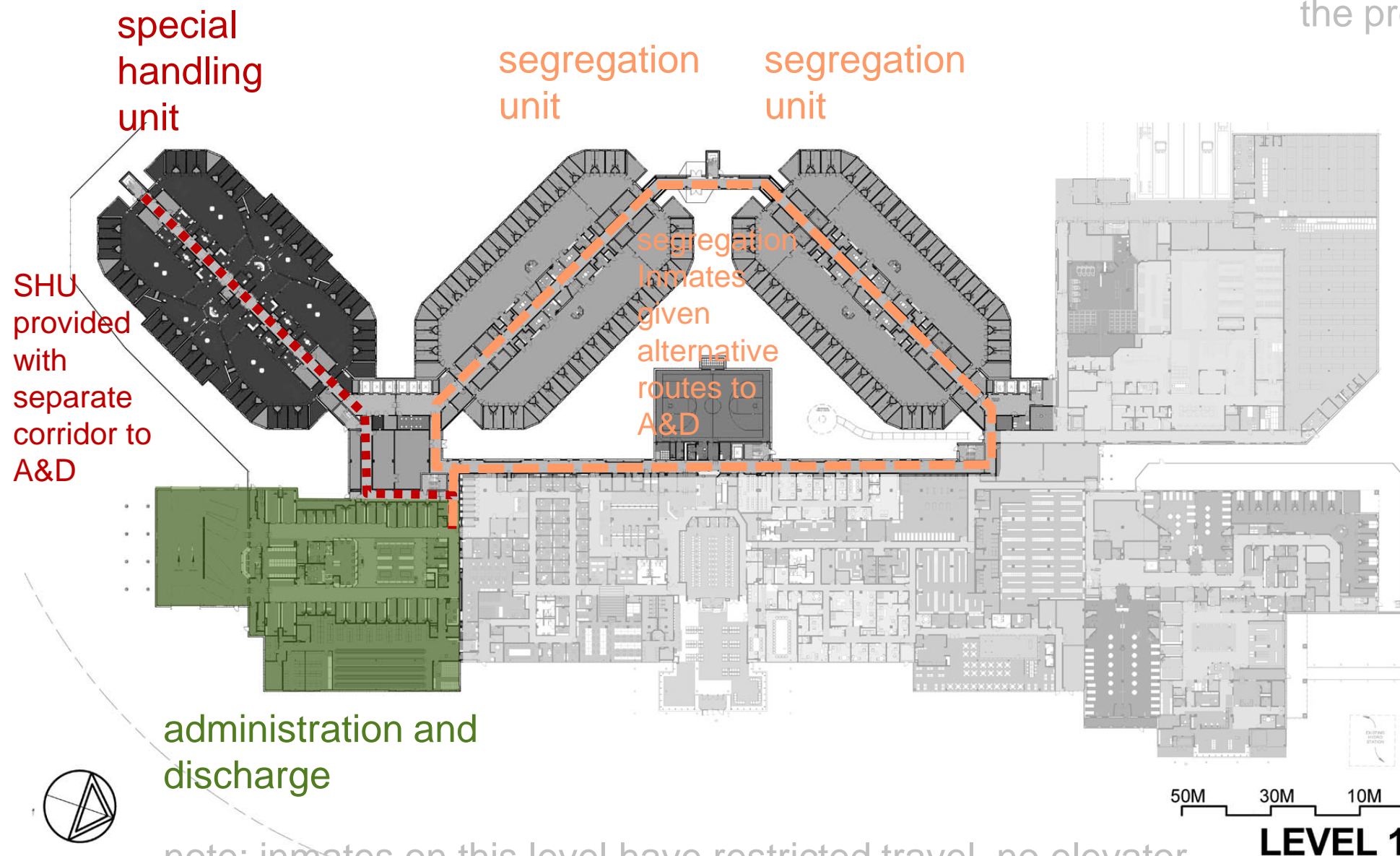
general population and special needs direct supervision inmates, non-problematic movement, programs of inmates are consistent with general dayroom model

mental health, medical and indirect supervision inmates, inmates with problematic movement, minimal elevator travel to A&D, no elevator travel for inmate special activities (e.g. worship, multi-purpose rooms and medical)

special handling and segregation inmates, restricted travel, no elevator travel required to A&D, tower base structure varied to accommodate special programming requirements of units



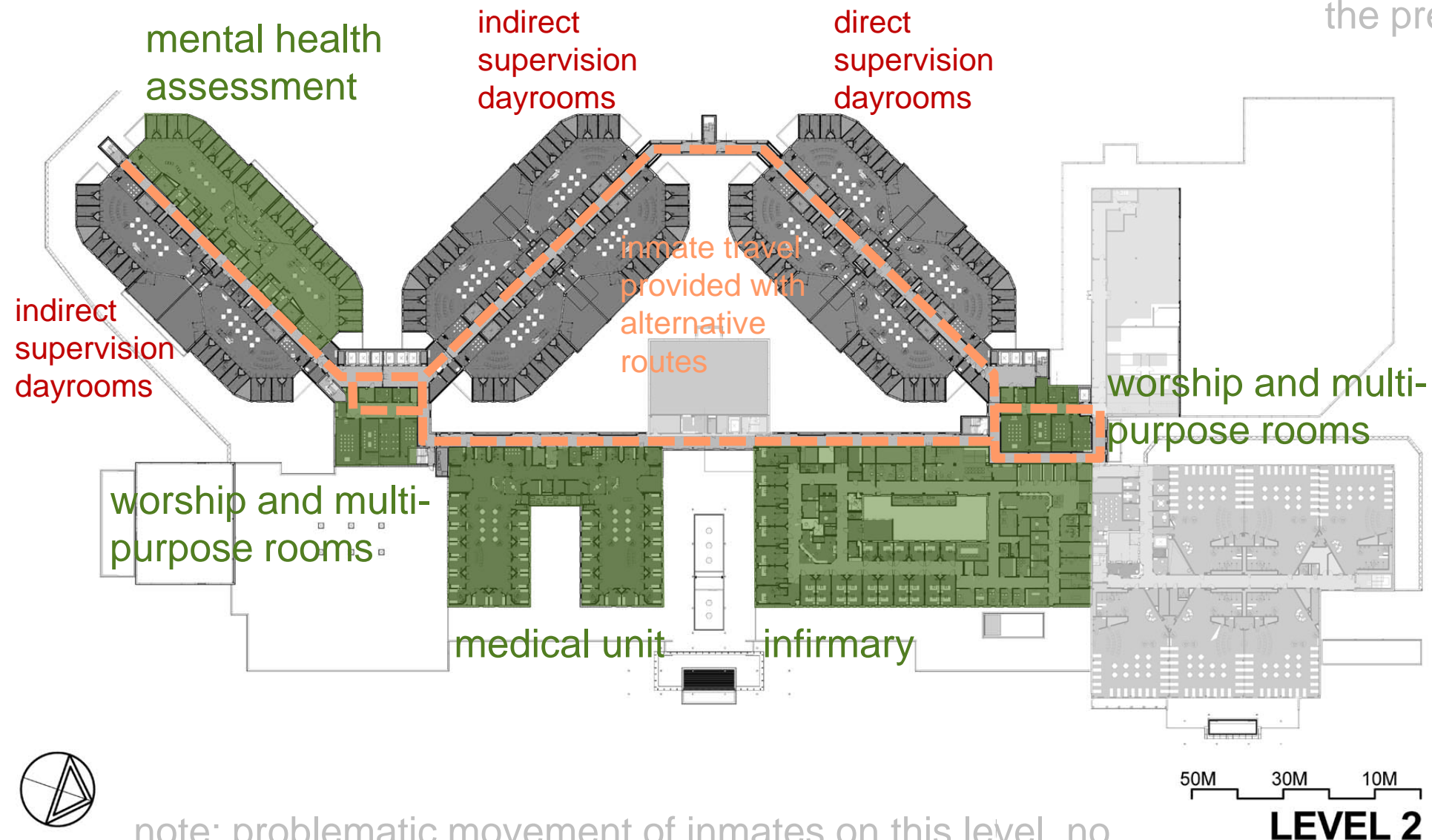
notable feature three:  
complex inmate  
program and  
movement in the  
facility were integrated  
with the uniformity of  
the precast stacking  
structure



note: inmates on this level have restricted travel, no elevator travel required to A&D, tower base structure varied to accommodate special programming of units



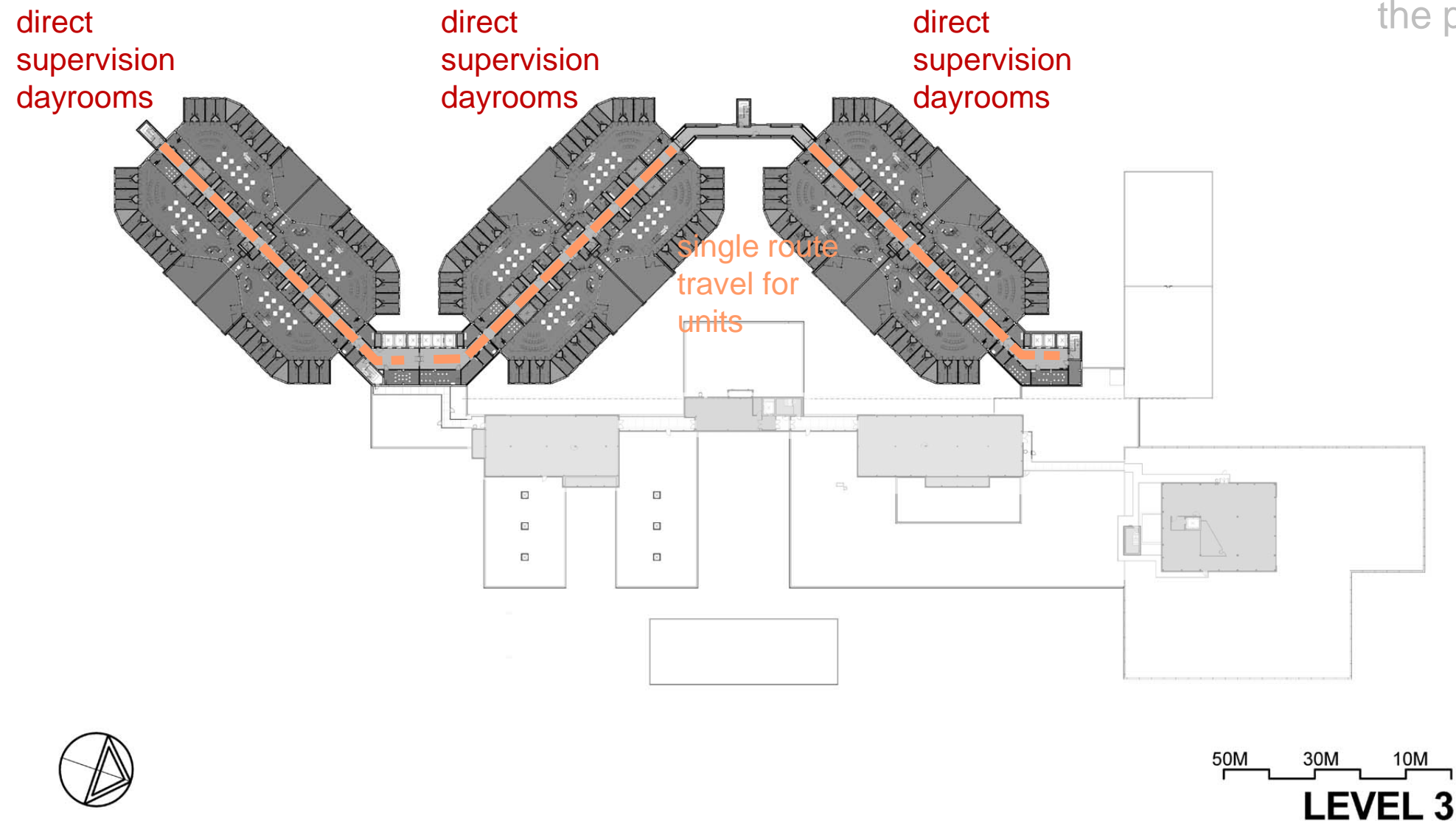
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the precast stacking  
structure



note: problematic movement of inmates on this level, no elevator travel required to inmate special activities area such as classrooms, worship centers or medical, elevator travel for inmates in these units are the shortest to A&D



notable feature three:  
complex inmate  
program and  
movement in the  
facility were integrated  
with the uniformity of  
the precast stacking  
structure



note: levels 3 and 4 have consistent programming



mental health unit images





infirmary unit images





notable feature four:  
speed and efficiency  
of precast construction



TORONTO SOUTH DETENTION CENTRE  
April 30, 2011



TORONTO SOUTH DETENTION CENTRE  
JULY 27, 2011



TORONTO SOUTH DETENTION CENTRE  
November 1, 2010



TORONTO SOUTH DETENTION CENTRE  
January 30, 2011

in a period of seven months,  
with a small crew of  
approximately six men, three  
eight-storey towers were  
erected out of precast



notable feature four:  
speed and efficiency of precast construction



**TORONTO SOUTH DETENTION CENTRE**  
November 1, 2010



notable feature four:  
speed and efficiency of precast construction



**TORONTO SOUTH DETENTION CENTRE**  
January 30, 2011



notable feature four:  
speed and efficiency of precast construction



**TORONTO SOUTH DETENTION CENTRE**  
April 30, 2011



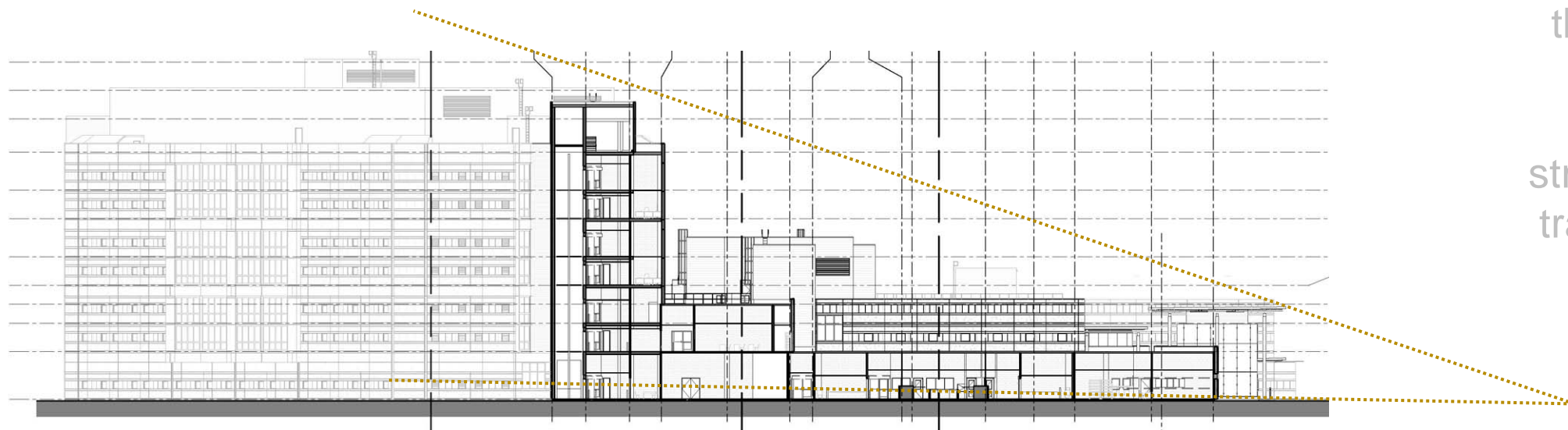
notable feature four:  
speed and efficiency of precast construction



**TORONTO SOUTH DETENTION CENTRE**  
JULY 27, 2011



notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma



building mass reduced in appearance by stepping  
back the building at street frontage







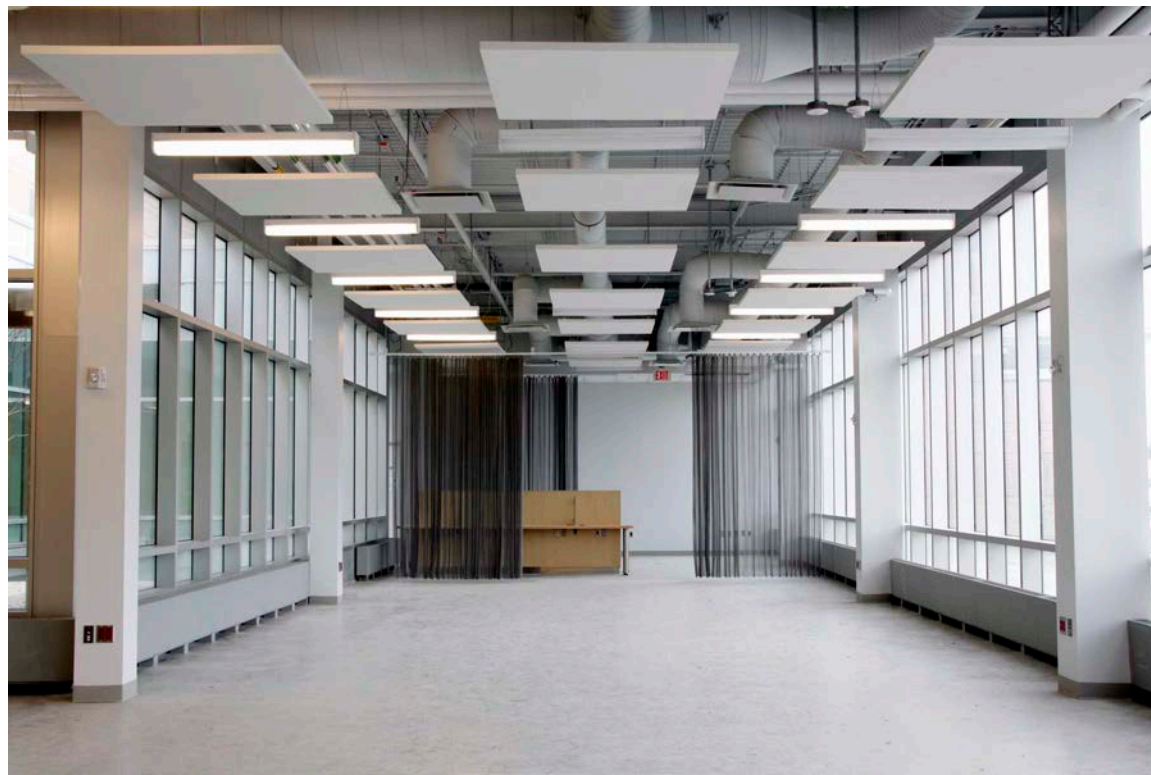
notable feature five:  
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accessible civic  
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traditional detention  
facility stigma



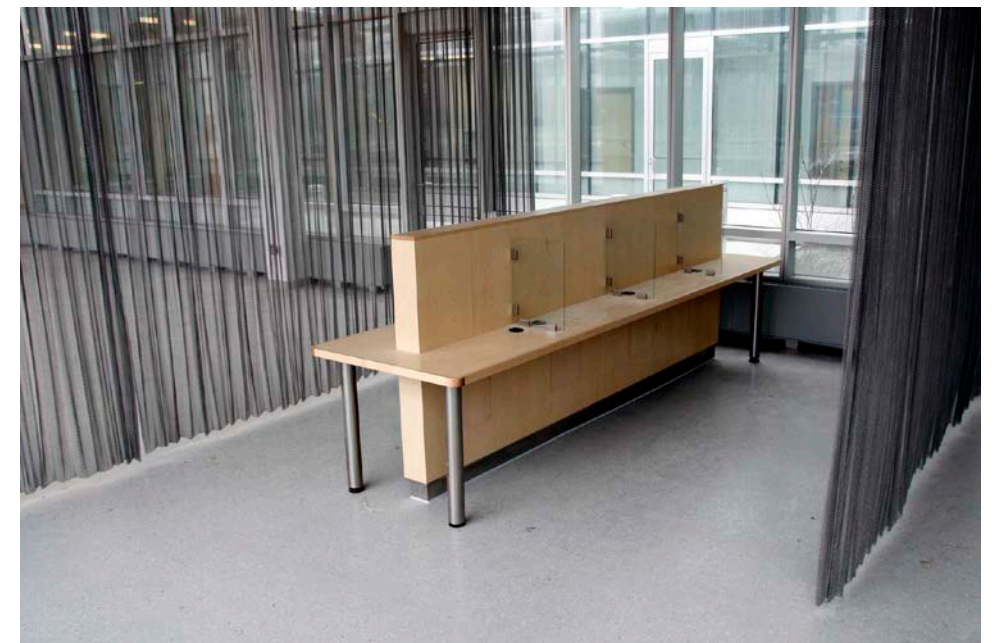
use of non-traditional materials for detention facilities







notable feature five:  
MCSCS had wished  
the building to be a  
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use of non-traditional materials for  
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notable feature five:  
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traditional detention  
facility stigma



use of colour





use of natural light in public spaces

notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma

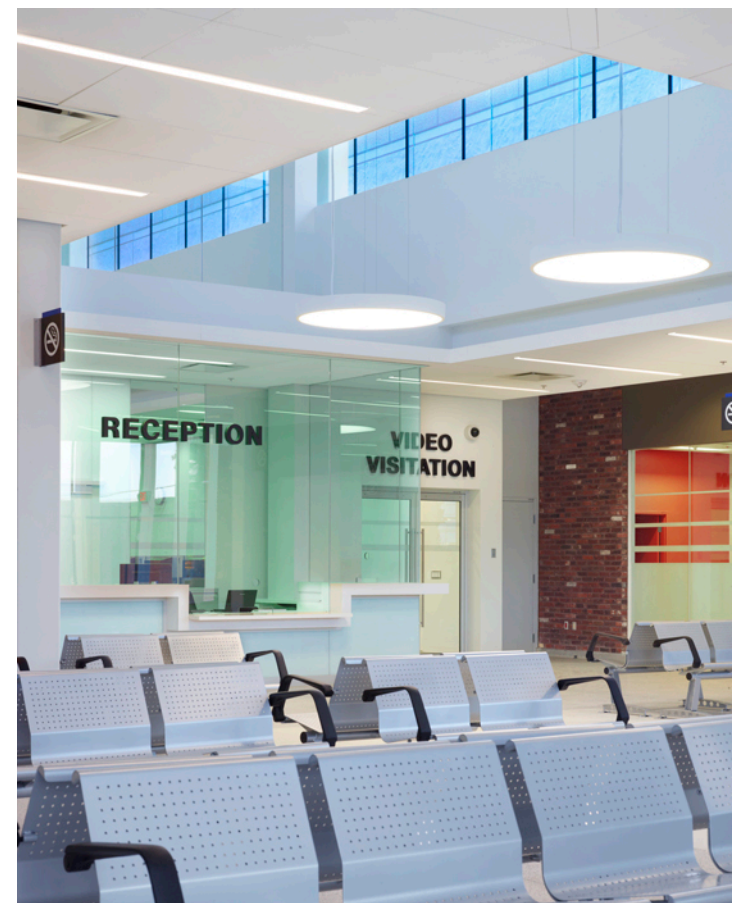






use of natural light in public spaces

notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
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facility stigma







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use of natural light in public spaces







**notable feature five:**  
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use of natural light in public spaces



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structure without the  
traditional detention  
facility stigma



use of natural light in public spaces



toronto south detention center





notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma

use of natural  
light in staff  
spaces







notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma

use of natural  
light in inmate  
dayroom  
spaces







notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma



use of natural light in inmate spaces





notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma

use of natural  
light in inmate  
medical spaces







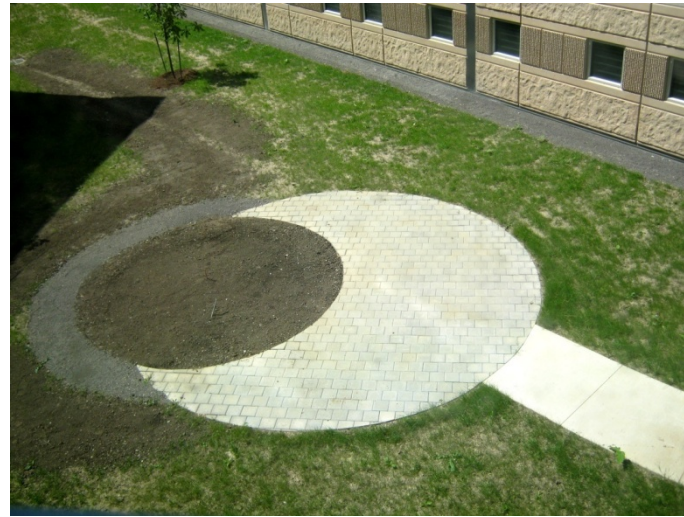
notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma



use of natural  
light in inmate/  
staff admitting  
and discharge  
spaces







exterior  
aboriginal  
worship area

notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma





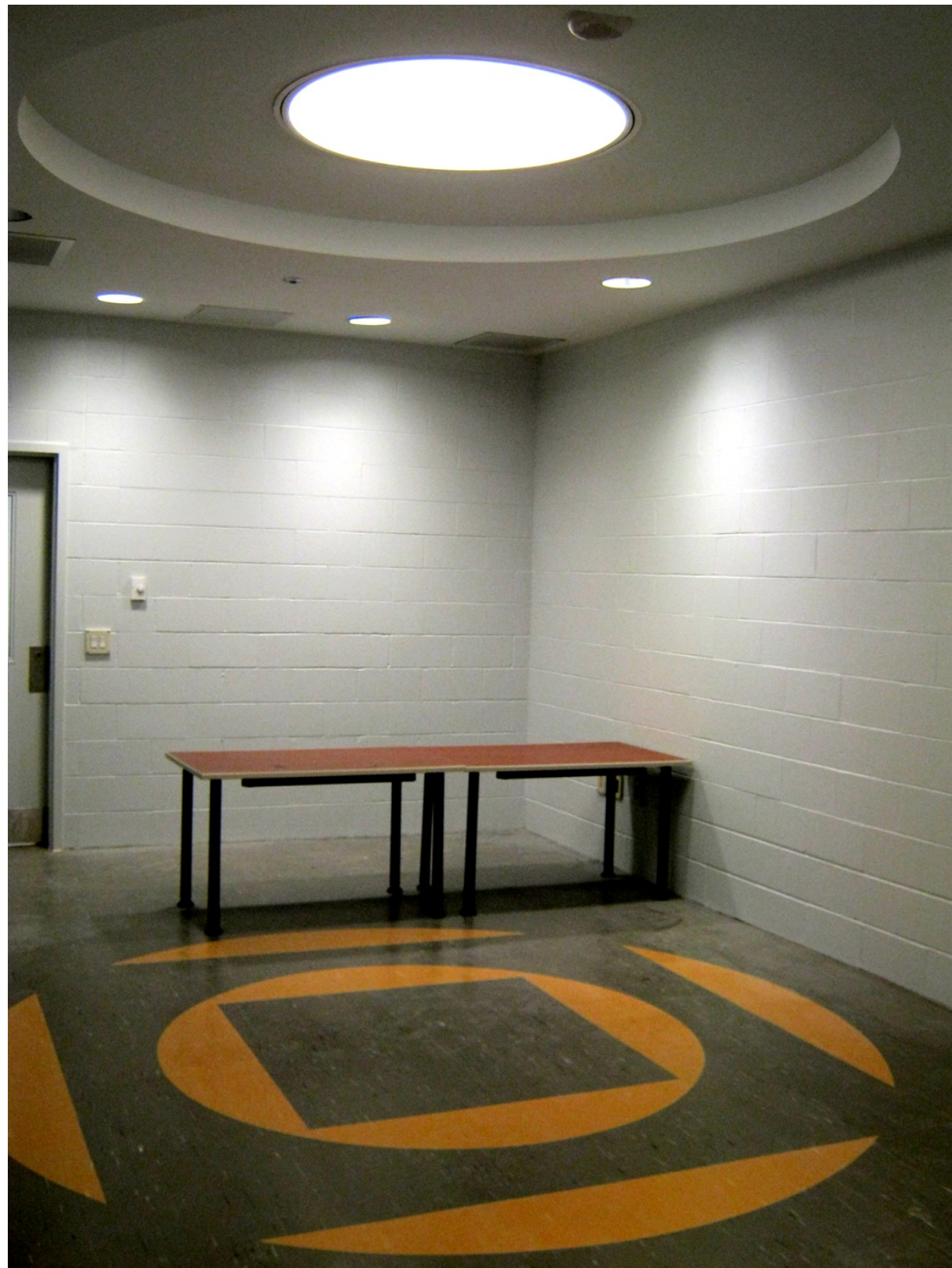
notable feature five:  
MCSCS had wished  
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facility stigma



inmate worship area







notable feature five:  
MCSCS had wished  
the building to be a  
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accessible civic  
structure without the  
traditional detention  
facility stigma

inmate worship area







notable feature five:  
MCSCS had wished  
the building to be a  
receptive and  
accessible civic  
structure without the  
traditional detention  
facility stigma

extensive use of  
glass frontage





notable feature five:  
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extensive use of  
glass frontage







notable feature five:  
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 traditional detention  
 facility stigma

extensive use of  
 glass frontage





designing for LEED / Sustainability:

Susan Kapetanovic-Marr

Sustainability specialist – buildings, technology and energy division of Morrison Hershfield



MORRISON HERSHFIELD

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zeidler

 **EllisDon**

 **ITS**  
Integrated Team Solutions

  
MORRISON HERSHFIELD

toronto south detention center





# Overview

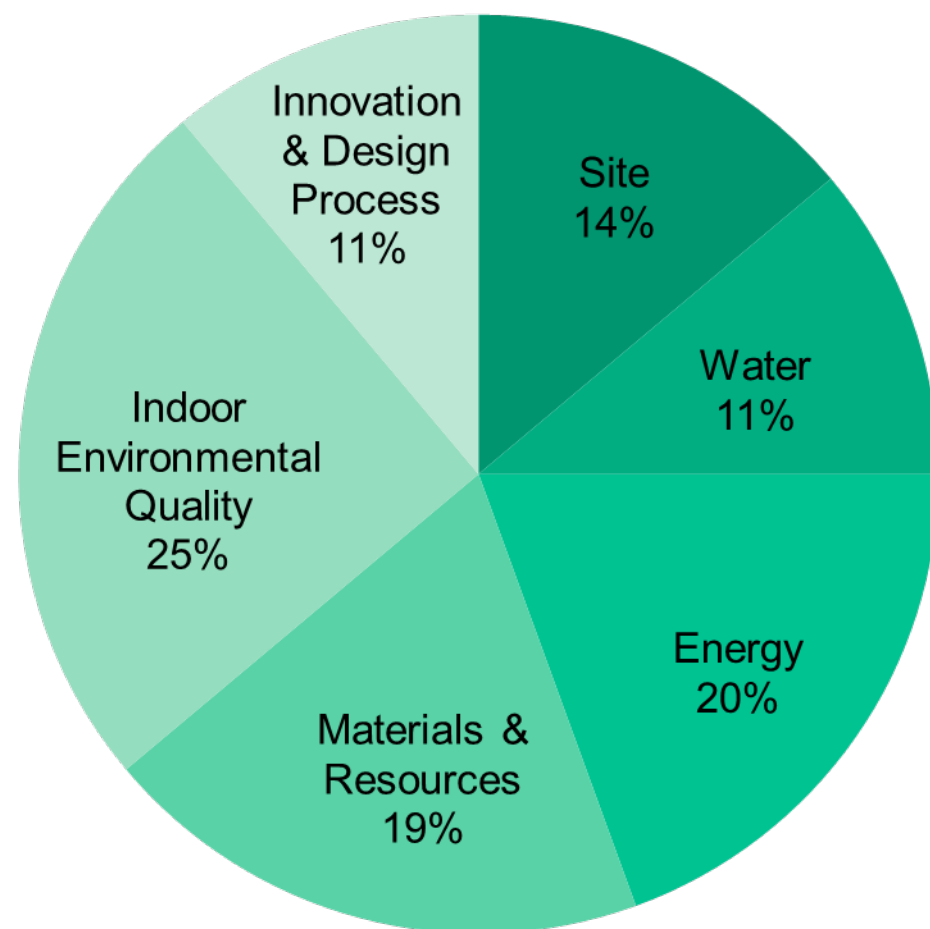
- Leadership in Energy and Environmental Design (LEED®) is a third-party certification program that serves as a benchmark for the design, construction and operation of high performance buildings.
- Project was registered with the Canada Green Building Council (CaGBC) in March 2009, under version 1.0 of the rating system.
- Currently undergoing certification review, targeting LEED® Silver Certification.







# LEED® Strategy

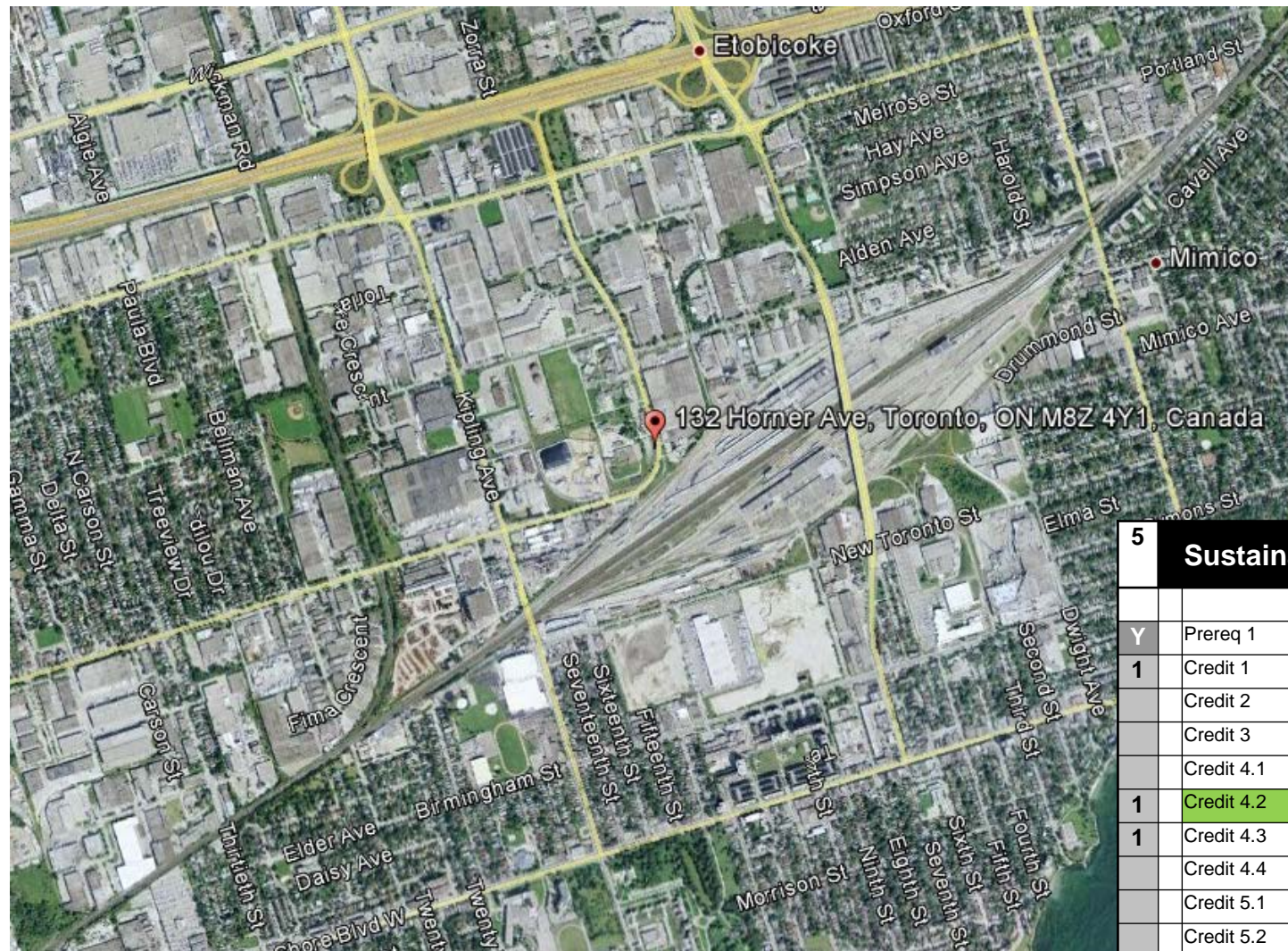


1. Approach
2. Challenges
3. Lessons learned





# Location Considerations



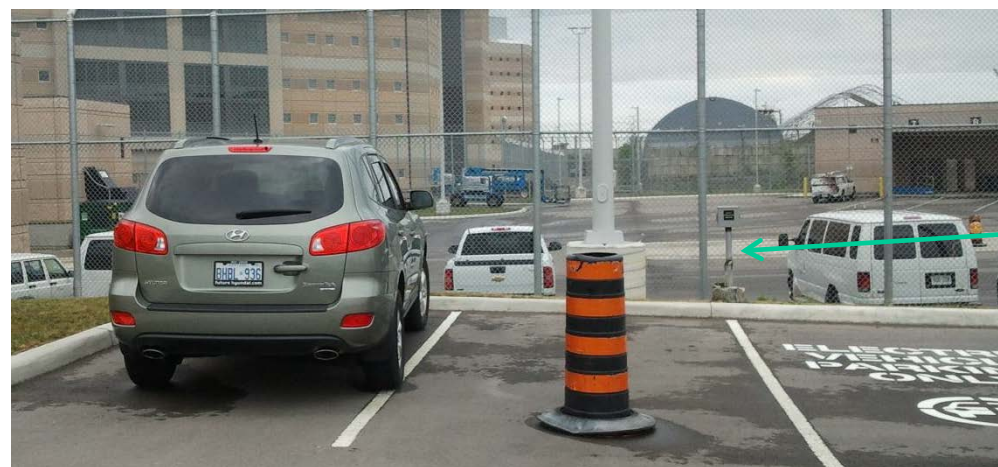
- Industrial zone
- Security restrictions
- Design opportunities

5	Sustainable Sites			14 Points
	Prereq 1	Erosion & Sedimentation Control		Required
1	Credit 1	Site Selection		1
	Credit 2	Development Density		1
	Credit 3	Redevelopment of Contaminated Site		1
	Credit 4.1	Alternative Transportation, Public Transportation Access		1
1	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms		1
1	Credit 4.3	Alternative Transportation, Alternative Fuel Vehicles		1
	Credit 4.4	Alternative Transportation, Parking Capacity		1
	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space		1
	Credit 5.2	Reduced Site Disturbance, Development Footprint		1
	Credit 6.1	Stormwater Management, Rate and Quantity		1
1	Credit 6.2	Stormwater Management, Treatment		1
	Credit 7.1	Heat Island Effect, Non-Roof		1
1	Credit 7.2	Heat Island Effect, Roof		1
	Credit 8	Light Pollution Reduction		1





# Location Considerations







# Building Occupancy

- Regular and “residential” occupants
- Priorities for staff occupants:
  - Comfortable working environment
  - Access to daylight
  - Capacity for IAQ monitoring
  - Capacity for thermal comfort design and monitoring

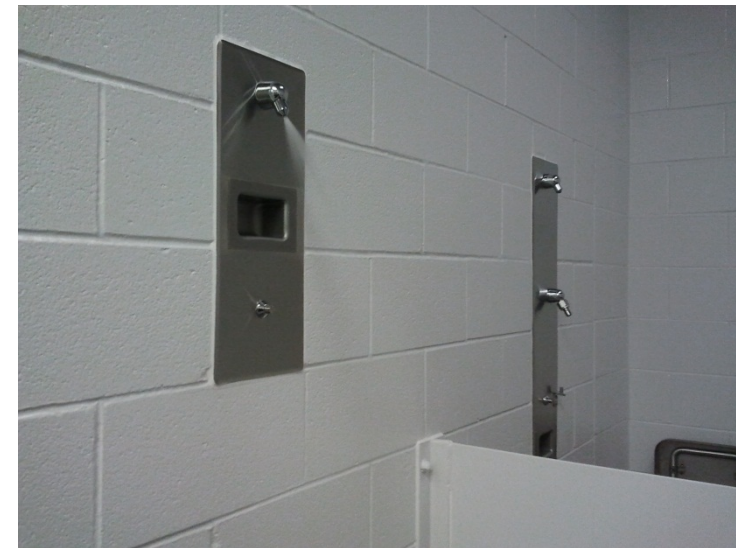






# Building Occupancy

- Priorities for inmate occupants:
  - Vandal resistant fixtures and finishes
  - Acoustic comfort
  - Daylight







# Product Tracking

	Materials & Resources			Points
1	Credit 2.1	<b>Construction Waste Management:</b> Divert 50% from Landfill		1
1	Credit 2.2	<b>Construction Waste Management:</b> Divert 75% from Landfill		1
1	Credit 4.1	<b>Recycled Content:</b> 7.5% (post-consumer + ½ pre-consumer)		1
1	Credit 4.2	<b>Recycled Content:</b> 15% (post-consumer + ½ pre-consumer)		1
1	Credit 5.1	<b>Regional Materials:</b> 10% Extracted and Manufactured Regionally		1
1	Credit 5.2	<b>Regional Materials:</b> 20% Extracted and Manufactured Regionally		1

	Indoor Environmental Quality			Points
1	Credit 3.1	<b>Construction IAQ Management Plan:</b> During Construction		1
1	Credit 3.2	<b>Construction IAQ Management Plan:</b> Testing Before Occupancy		1
1	Credit 4.1	<b>Low-Emitting Materials:</b> Adhesives & Sealants		1
1	Credit 4.2	<b>Low-Emitting Materials:</b> Paints and Coating		1
1	Credit 4.3	<b>Low-Emitting Materials:</b> Carpet		1
1	Credit 4.4	<b>Low-Emitting Materials:</b> Composite Wood and Laminate Adhesives		1

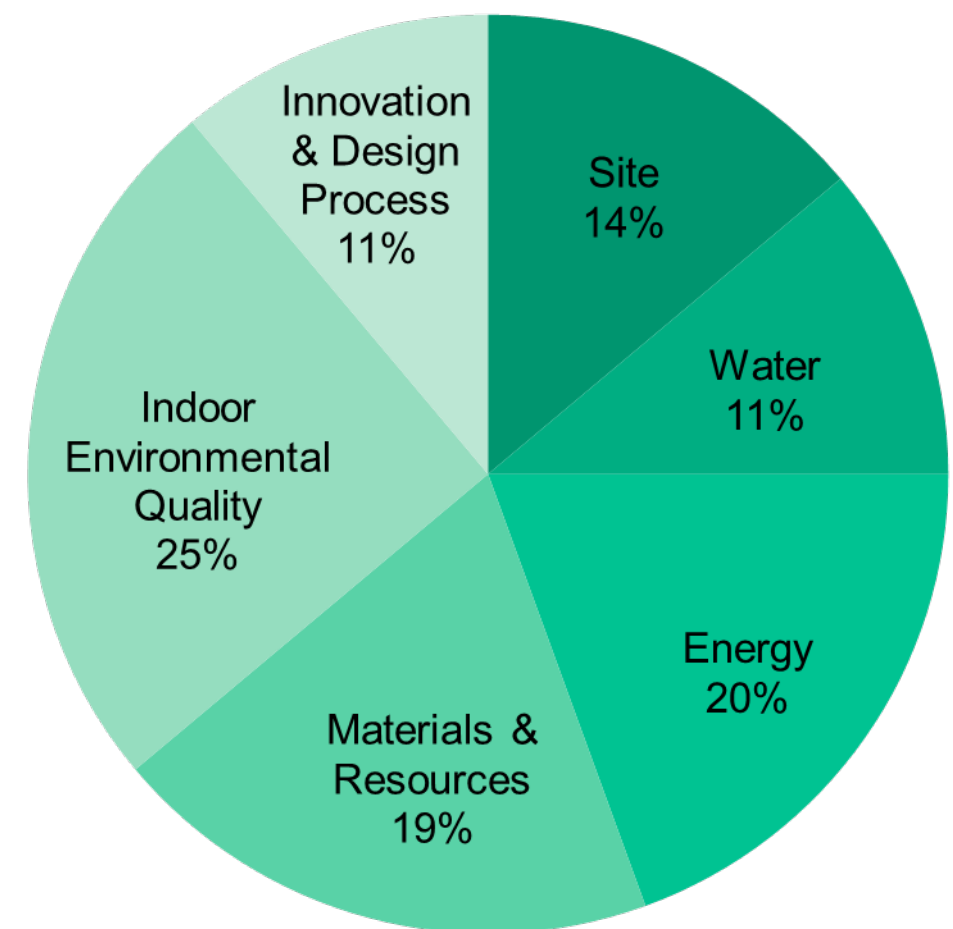
- Ensure that a tracking process is established from the onset
- Perform random spot checks for products on site
- Expect product selection challenges
- Time flexibility for Credit Interpretation Requests (CIRs)





# Lessons Learned

1. Recognize site location limitations and owner priorities
2. Identify the impact of staff and inmate occupancy on design limitations and opportunities
3. Account for product selection challenges
4. Establish an efficient and vigorous material tracking process





consortium and DBFM (Design Build Finance Maintain):

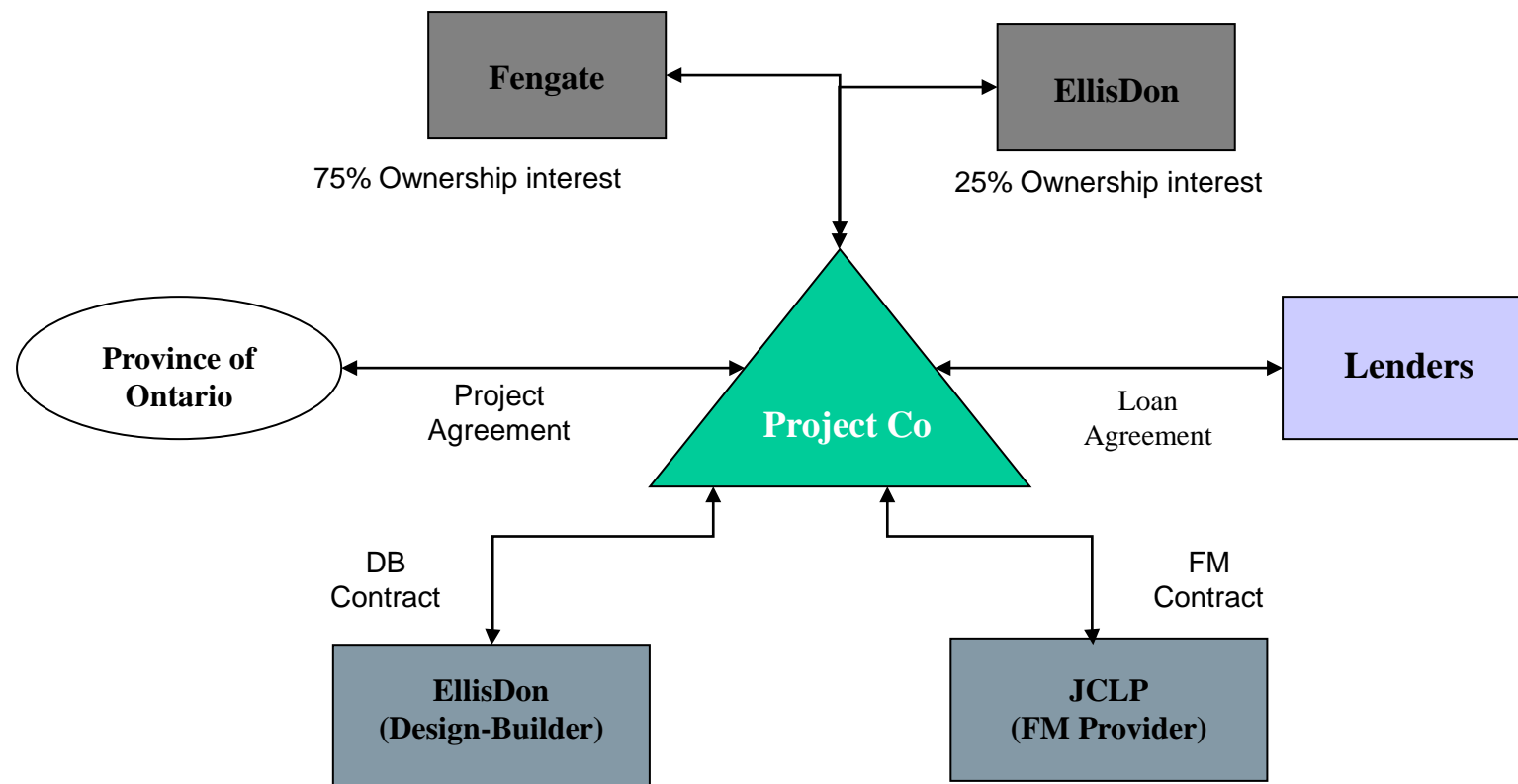
Michael Sullivan

Director, Equity Services of EllisDon Corporation





# Contractual Structure





# ITS Contractual Structure

- Project Co will enter into the Project Agreement with HMQ

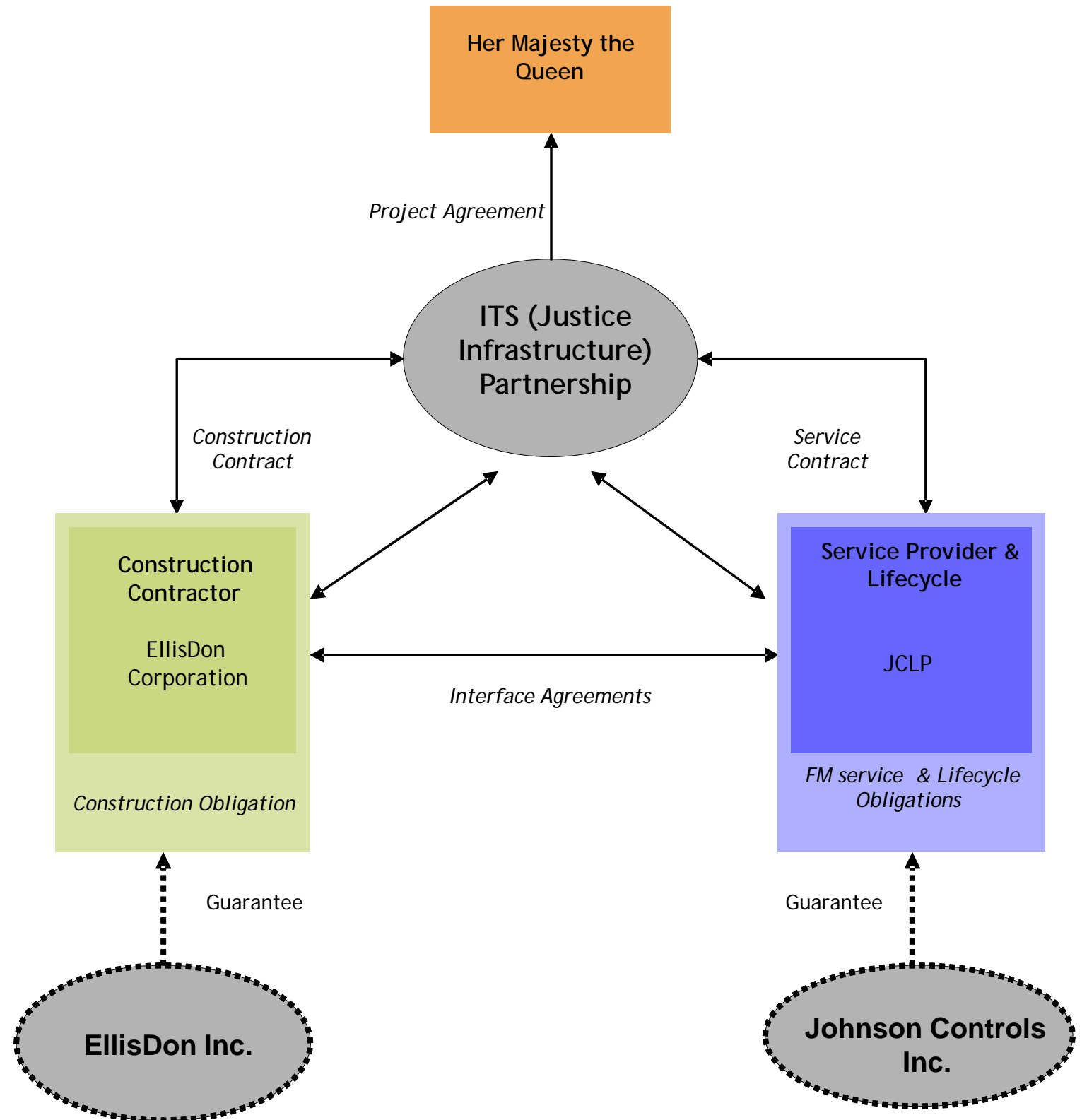
- Project Co will pass its obligations under the project Agreement to the Construction Contractor and the Services Contractor through separate contracts as described below:

- **Construction Contract**

EllisDon Corporation's obligations to Project Co. under the construction contract will be guaranteed by EllisDon Inc.

- **Service Contract**

JCLP's O&M & Lifecycle obligations to Project Co. under the service contract will be guaranteed by Johnson Controls Inc.





construction and design build issues:

Geoff van der Lee

Director, Special Projects of EllisDon Corporation





site previous to construction and phasing extent





construction completion and phasing extent





recent aerial photos



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