



SCIENCE CITY MASTER PLAN

THE SAN JUAN KNOWLEDGE CORRIDOR

PHASE III SUMMARY REPORT
JUNE 2007

**“SCIENCE REALLY WORKS BEST WHEN THERE’S A
KIND OF FORCED INTERACTION. THERE ARE LOTS
OF RESEARCH INSTITUTIONS WHERE THERE ARE ALL
KINDS OF SPACE – AND THE SCIENCE ISN’T ANY GOOD.
THIS (PLACE) CREATES A CRITICAL MASS OF PEOPLE
THAT’S NEEDED FOR PRODUCTIVE SCIENCE.”**

ANDREW DILLIN – BIOLOGIST, SALK INSTITUTE

from METROPOLIS MAGAZINE, “CAN ARCHITECTURE INSPIRE GREAT SCIENCE” – February 2007

THIS PHASE III MASTER PLAN REPORT OUTLINES THE PHYSICAL DESIGN VISION FOR THE SAN JUAN KNOWLEDGE CORRIDOR'S FLAGSHIP INITIATIVE – A SCIENCE CITY AT OSO BLANCO. THE DOCUMENT IS SUPPLEMENTED BY TWO OTHER PHASE III REPORTS THAT FOCUS ON ECONOMIC DEVELOPMENT AND COMMUNICATIONS RESPECTIVELY.

THE SCIENCE CITY AT OSO BLANCO INCLUDES THE MASTER PLAN FOR THE REDEVELOPMENT OF THE OSO BLANCO PRISON / LAS AMAPOLAS HOUSING SITES, AS WELL AS AN URBAN DESIGN FRAMEWORK DEMONSTRATING THE DEVELOPMENT PROJECT'S ADJACENCY AND RELATIONSHIP TO OTHER INSTITUTIONS AND CURRENT PROJECTS WITHIN THE KNOWLEDGE CORRIDOR SUCH AS CENTRO MÉDICO; THE PROPOSED COMPREHENSIVE CANCER CENTER; AND THE NEW MOLECULAR SCIENCES BUILDING AT CUPEY.

THIS REPORT IS THE THIRD OF THREE – PRECEDED BY THE PHASE I PRELIMINARY VISION REPORT; AND THE PHASE II ECONOMIC AND URBAN DESIGN SCENARIOS REPORT. THE DOCUMENTS FROM EACH PHASE SHOULD BE CONSIDERED COMPENDIA OF THE OVERALL VISION FOR THE SAN JUAN KNOWLEDGE CORRIDOR AND THE SCIENCE CITY AT OSO BLANCO.

IN ORDER TO CONTEXTUALIZE THE POTENTIAL IMPACT OF THE KNOWLEDGE CORRIDOR – AND TO REINFORCE THE CRITICAL NATURE OF ITS UNDERTAKING – THE FOLLOWING DATA IS OFFERED REGARDING TALENT AND EXPERTISE AS IT RELATES TO THE ISLAND.

- **33% OF ALL M.D. GRADUATES FROM THE UPR MEDICAL SCIENCES CAMPUS GO TO THE MAINLAND TO COMPLETE THEIR RESIDENCIES**

- **40% OF ALL UPR GRADUATES IN ENGINEERING ARE HIRED BY MULTI-NATIONAL CORPORATIONS FROM THE MAINLAND**

- **50% OF PUERTO RICAN’S GRADUATING WITH A PhD IN PUERTO RICO OR IN THE USA ARE EMPLOYED BY ACADEMIA OR INDUSTRY OUTSIDE OF THE ISLAND**

RESEARCH UNDERTAKEN AS PART OF THIS REPORT HAS DEMONSTRATED CONSENSUS THAT THIS TALENT WILL RETURN UNDER THE RIGHT CONDITIONS. THE KNOWLEDGE CORRIDOR OFFERS THE FIRST STEP TOWARDS RETAINING THIS EXCEPTIONAL RESOURCE AND IN TURN, TRANSFORMING THE PUERTO RICO ECONOMY AS A WHOLE.

A light gray world map serves as the background. Numerous thin, dotted pink lines radiate from a central point in Puerto Rico, ending with small pink arrowheads pointing towards various locations across the globe, including North America, Europe, Africa, and Australia. The text is overlaid on the map, with the first paragraph centered and the second paragraph positioned below it.

**THE CONTINUED EXODUS OF SOME OF THE BEST TALENT
IN HIGH TECHNOLOGY FIELDS DEPRIVES INDUSTRY AND
ACADEMIA IN PUERTO RICO OF THE CRITICAL HUMAN
RESOURCES NECESSARY TO ADVANCE AN ESTABLISHED
LIFE SCIENCES ECONOMY**

**THE KNOWLEDGE CORRIDOR IS THE FIRST STEP IN
BUILDING UPON PUERTO RICO'S MOST VALUABLE
NATURAL RESOURCE – ITS PEOPLE**



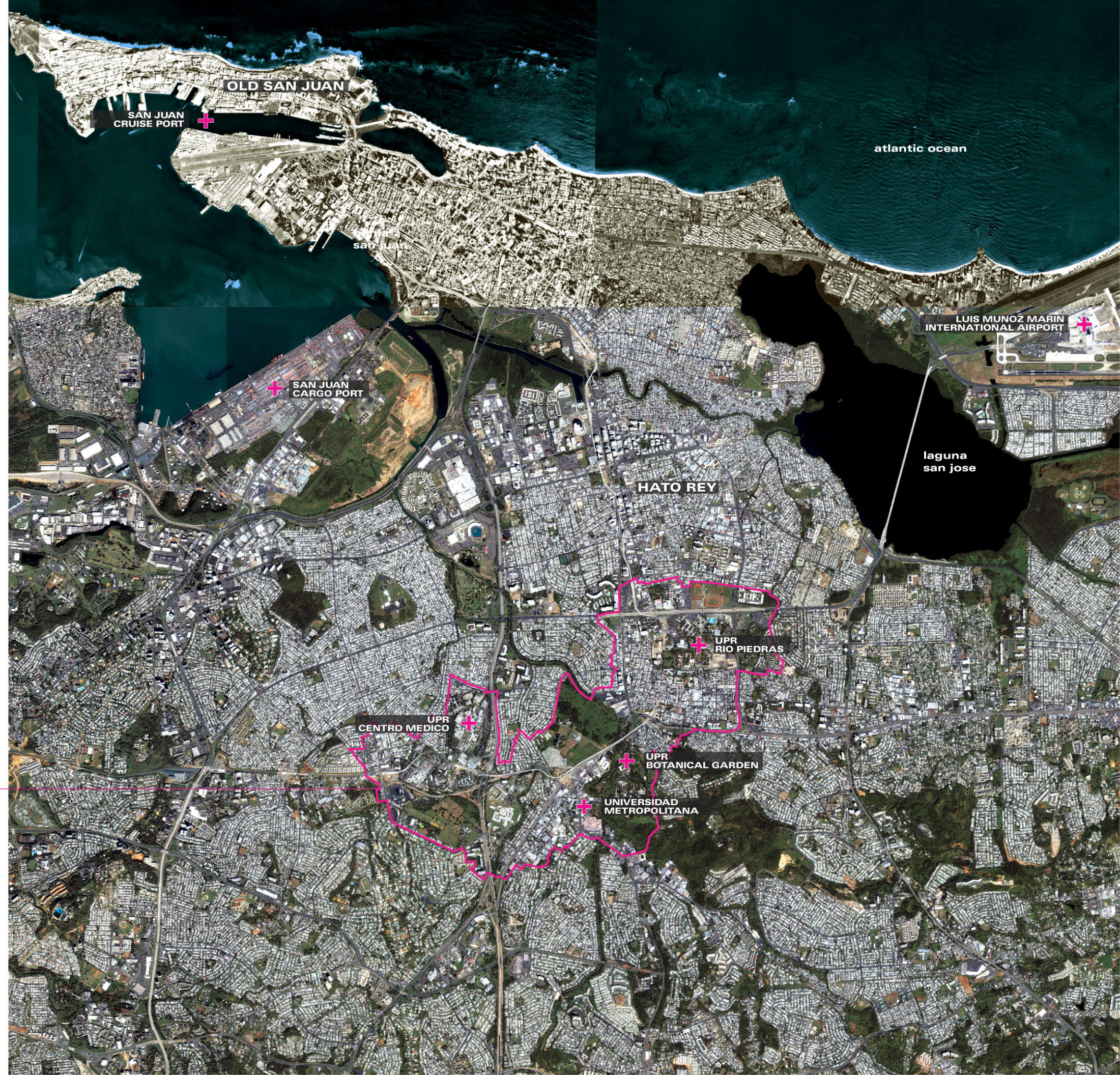
THE KNOWLEDGE CORRIDOR

Through the Bio-Island initiative, the Government of Puerto Rico has made a commitment to the advancement of a “Knowledge Economy” in Puerto Rico – a new economy of education, research, ideas, innovation and technological creativity.

The Phase III Master Plan Report outlines the flagship development of this vision – a new Science City at Oso Blanco. This new development will sit at the geographic and ideological heart of the Knowledge Corridor – a nearly 2000 acre district within San Juan comprised of the University of Puerto Rico’s Rio Piedras campus; San Juan’s Central Medical Campus; the University of Puerto Rico’s Botanical Gardens; Universidad Metropolitana; and various publicly-owned potential development sites for life science industries, education and new lifestyle neighborhoods.

Providing a clear strategic agenda for future development at Oso Blanco will establish a comprehensive Life Sciences cluster in San Juan able to facilitate the development of a new economic vision for Puerto Rico –
A 21ST CENTURY GLOBAL KNOWLEDGE ECONOMY.

THE KNOWLEDGE CORRIDOR COMPRISES
VARIOUS EDUCATIONAL, RESEARCH AND
CULTURAL SITES CENTERED ALONG THE
TREN URBANO



THE KNOWLEDGE CORRIDOR

The aim of the Knowledge Corridor is to fuel economic growth and innovation by capitalizing upon Puerto Rico’s growing Life Science industries. Investment and development in this area will strengthen and expand the Island’s place in the global economy, attracting and retaining new scientific talent as well as generating capital and innovative ideas for use throughout the world.

This report outlines how to leverage this expanding economy into the development of a new “Science City” – a state-of-the-art enclave that integrates educational and research campuses with commercial laboratories, vibrant mixed-use urban neighborhoods, efficient transportation networks and dynamic public open spaces.

The Knowledge Corridor incorporates a potential investment of \$3 billion in infrastructure and transportation initiatives; nearly 700,000 m² of dormant, government owned land; the adjacency of recognized centers of innovation and academic excellence; and the unique tropical vibrancy of Puerto Rico and its culture.



**SAN JUAN'S KNOWLEDGE CORRIDOR IS THE
FLAGSHIP INITIATIVE OF A NEW ECONOMIC
AGENDA FOR PUERTO RICO**



RESEARCH



LIFESTYLE



CULTURE



NATURE



EDUCATION

**BY CONSIDERING THE CORRIDOR AS
PART OF A LARGER URBAN ECOSYSTEM,
ANY REDEVELOPMENT WILL HAVE A
TRANSFORMATIVE EFFECT ON THE
BROADER METROPOLIS OF SAN JUAN**



REGIONAL OVERVIEW

The stations along the Tren Urbano line offer a series of new nodes for the development of various high-density industry clusters.

The Knowledge Corridor benefits from an intense grouping of scientific, medical and research programs within its boundaries.¹ This programmatic character is supported by the comprehensive system of transportation and communication infrastructures that link the Corridor to the whole of the San Juan metropolitan region. This network provides easy access to other program clusters and amenities throughout San Juan including, parks, athletic venues, shopping districts, convention and exhibition areas, as well as the unique neighborhoods that abut or are nearby the Corridor such as Hato Rey, Condado and Rio Piedras.

¹ This delimitation is a preliminary study area based upon the Special Development District proposed for the Tren Urbano Transit Corridor.

HERITAGE

TOURISM

CONVENTION

BUSINESS

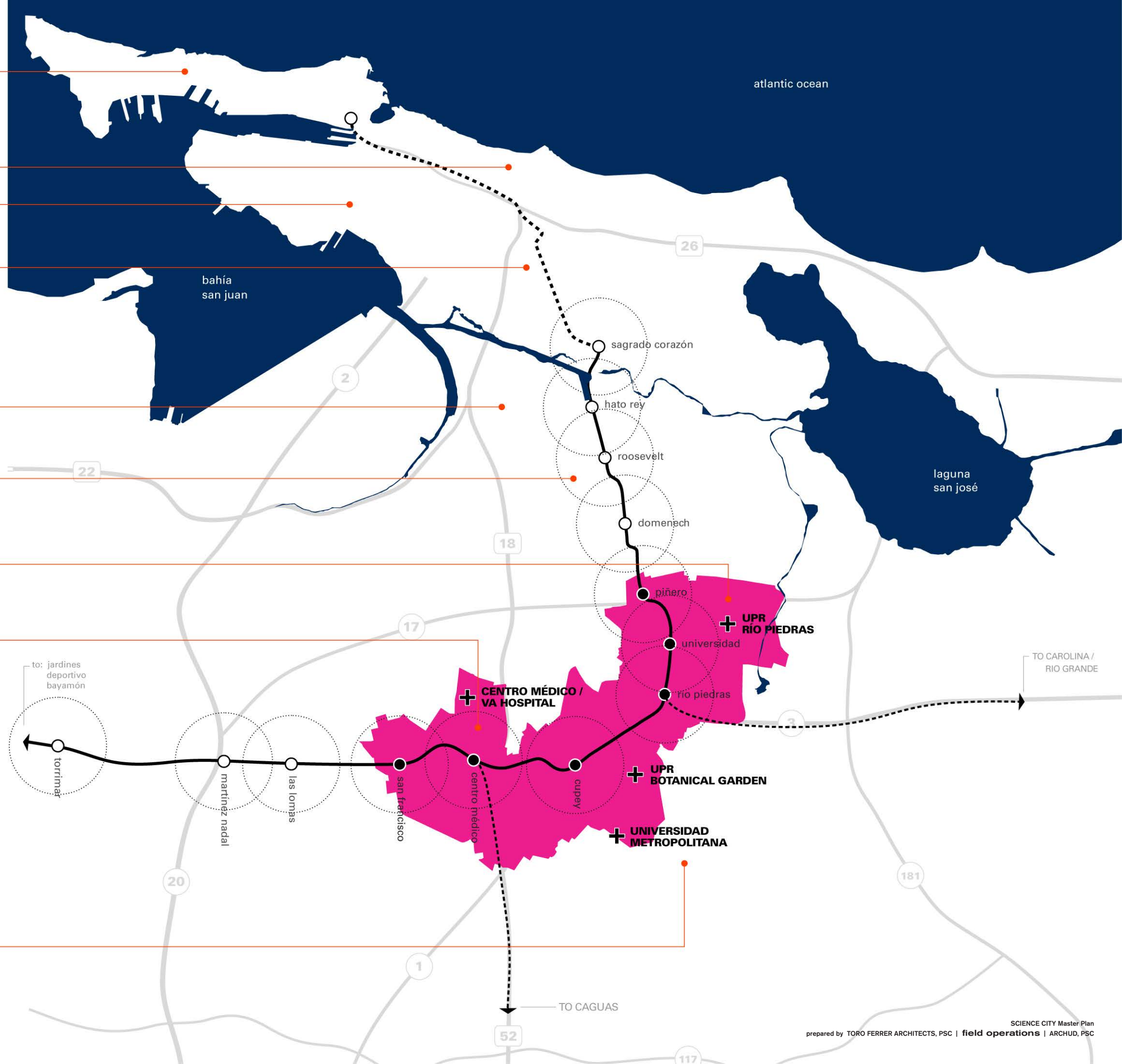
ENTERTAINMENT

FINANCIAL

EDUCATION

MEDICAL

ECOLOGICAL



tren urbano

knowledge corridor

0 450 0 1143
m ft

scale 1:45000

CORRIDOR OVERVIEW / INSTITUTIONAL TENANTS

Embedded within the sprawling urban fabric of San Juan and the natural preserve of the Ecological Corridor, the Knowledge Corridor structurally aligns itself along the Tren Urbano between Piñero station in the north and San Francisco station to the south west. Within this zone are four major institutional tenants that programmatically distinguish the Corridor from other territories within the San Juan metropolitan region and act as catalysts for the definition of the Knowledge Corridor as a realizable initiative. These tenants include the University of Puerto Rico's flagship campus at Rio Piedras as well as the University's Botanical Gardens, the Universidad Metropolitana and the Centro Médico de Puerto Rico.

In addition to these institutions, the Corridor's unique and distinct communities will all play a major role in the planning effort of the territory. At present, the Corridor is populated by no fewer than 25 development or redevelopment projects including; campus open space improvements at UPR Rio Piedras; renovations and expansion of the Botanical Garden; restoration of the Historic Aqueduct; a new Molecular Sciences Building at Cupey; the Comprehensive Cancer Center adjacent to Centro Médico; a new Veteran's Administration Tower; a new Department of Education Headquarters; and the Cupey Station Area improvements, in addition to several other public/private development initiatives.

THESE UNDERTAKINGS EQUATE TO A CURRENT INVESTMENT IN THE KNOWLEDGE CORRIDOR OF NO LESS THAN 450 MILLION DOLLARS

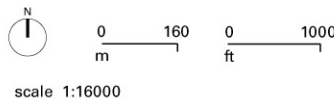
Add to this other Tren Urbano station area improvements and potential expansion of the system to Caguas and Carolina, and you have investment in this region of San Juan totaling more than three billion dollars. A carefully coordinated plan is necessary to ensure that all these developments add up to a memorable, coherent vision – THE SAN JUAN KNOWLEDGE CORRIDOR.



✚ institutional tenants

● tren urbano

--- district boundaries





- mobility network
- green tissue
- redevelopment zones
- tren urbano
- urban plaza / pedestrian
- knowledge corridor

N
0 160 0 1000
m ft
scale 1:16000

THE CORRIDOR TOMORROW

This impression of the San Juan Knowledge Corridor represents a potential build-out of 25+ years including development of a new Science City at Oso Blanco as well as redevelopment of other strategic areas including the University of Puerto Rico at Rio Piedras; the Centro Médico de Puerto Rico Campus/Veteran's Administration Hospital; the University of Puerto Rico Botanical Garden; the Cupey Station Area/PR-1 Corridor; the San Francisco Station Area/AMA Bus Depot; and the PR-1/Muñoz Rivera/PR-3 Intersection. The blue lines shown define the trajectory of the Tren Urbano which links the institutional tenants of the Knowledge Corridor with areas like Hato Rey and Central San Juan, Caguas and Carolina.

FOREGROUNDED IN THIS VIEW IS THE SCIENCE CITY DEVELOPMENT AT OSO BLANCO – THE CENTER OF INNOVATION, RESEARCH AND TECHNOLOGY WITHIN THE KNOWLEDGE CORRIDOR.



CENTRO MÉDICO DE PUERTO RICO

SCIENCE CITY AT OSO BLANCO

UPR BOTANICAL GARDEN NORTH

UNIVERSITY OF PUERTO RICO RIO PIEDRAS

UPR BOTANICAL GARDEN SOUTH

UNIVERSIDAD METROPOLITANA

SCIENCE CITY DEVELOPMENT TEMPLATE

SCIENCE CITY DEVELOPMENT SITE

While there are a number of available development parcels throughout the Knowledge Corridor, the Oso Blanco / Las Amapolas site stands out as the obvious location for the deployment of a new Life Science oriented development – the Knowledge Corridor’s Science City. In addition to its geographic location at the Corridor’s center, there are a number of reasons for the site’s desirability including its sheer size at approximately 81 acres; its connectivity to highways and a new mass transit system; and the fact that the parcel is currently publicly held.

However, perhaps the most compelling feature of the Oso Blanco site is its adjacency to an established Life Sciences campus at Centro Médico, the new Comprehensive Cancer Center at PR-18 / PR-21 and the new Molecular Sciences Building at Cupey. Though this section of the report focuses on an urban design scenario for the Science City site, the study takes into consideration the parcel’s relationship with adjacent institutions and development properties, as well as anticipated future development within the Knowledge Corridor.



CENTRO MÉDICO

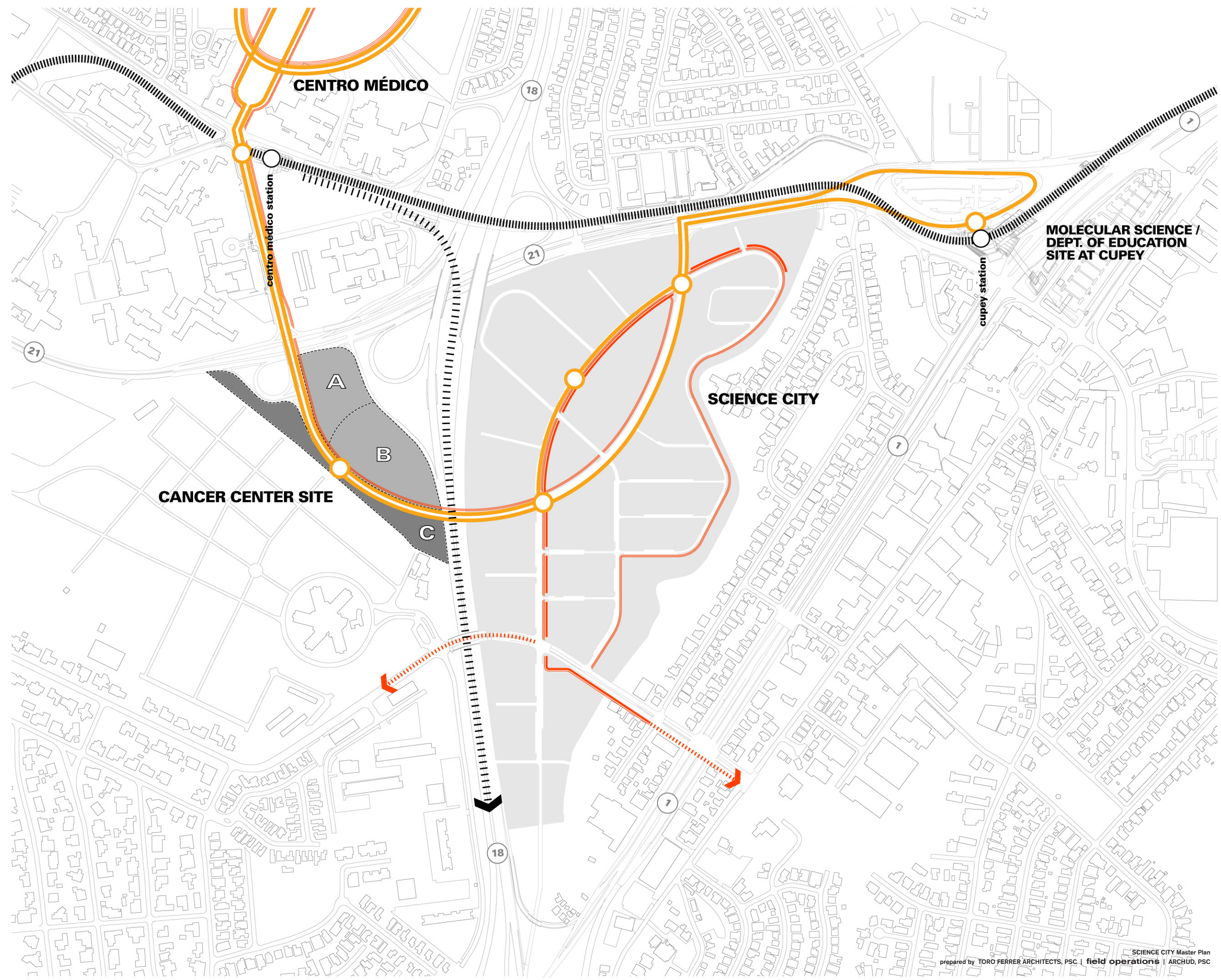
CANCER CENTER SITE







SCIENCE CITY AT OSO BLANCO

LINKAGES

Connection between Centro Médico, the new Comprehensive Cancer Center at PR-18 / PR-21 and the new Molecular Sciences Building at Cupey will rely upon a variety of mobility options creating a strong network of movement within the Science City District. This lattice includes two transit stops – one at Cupey and the other at Centro Médico – each less than a 12 minute walk from the center of the Oso Blanco development. Linking these two stations is a shuttle loop that will circle the Centro Médico campus, cross the Comprehensive Cancer Center site and move through Oso Blanco before circling back around at Cupey station making the Science City a true Transit Oriented Development (TOD). In addition, bicycle and pedestrian circuits will parallel the Science City Boulevard, connecting each of the three campuses internal circulation structures. This pedestrian/bicycle network is envisioned to link with other regional networks within the Knowledge Corridor connecting the Science City to places like the University of Puerto Rico, the Botanical Garden and the Rio Piedras community.

The primary element of this mobility network is the proposed Science City Boulevard. This new circuit will not only physically connect the three campuses, but will also function in restructuring the Comprehensive Cancer Center site, creating three distinct parcels for development. The deployment of this new boulevard will, in effect, transform the proposed cancer center site from a leftover suburban outparcel into a well defined piece of urban fabric integral to the Science City.



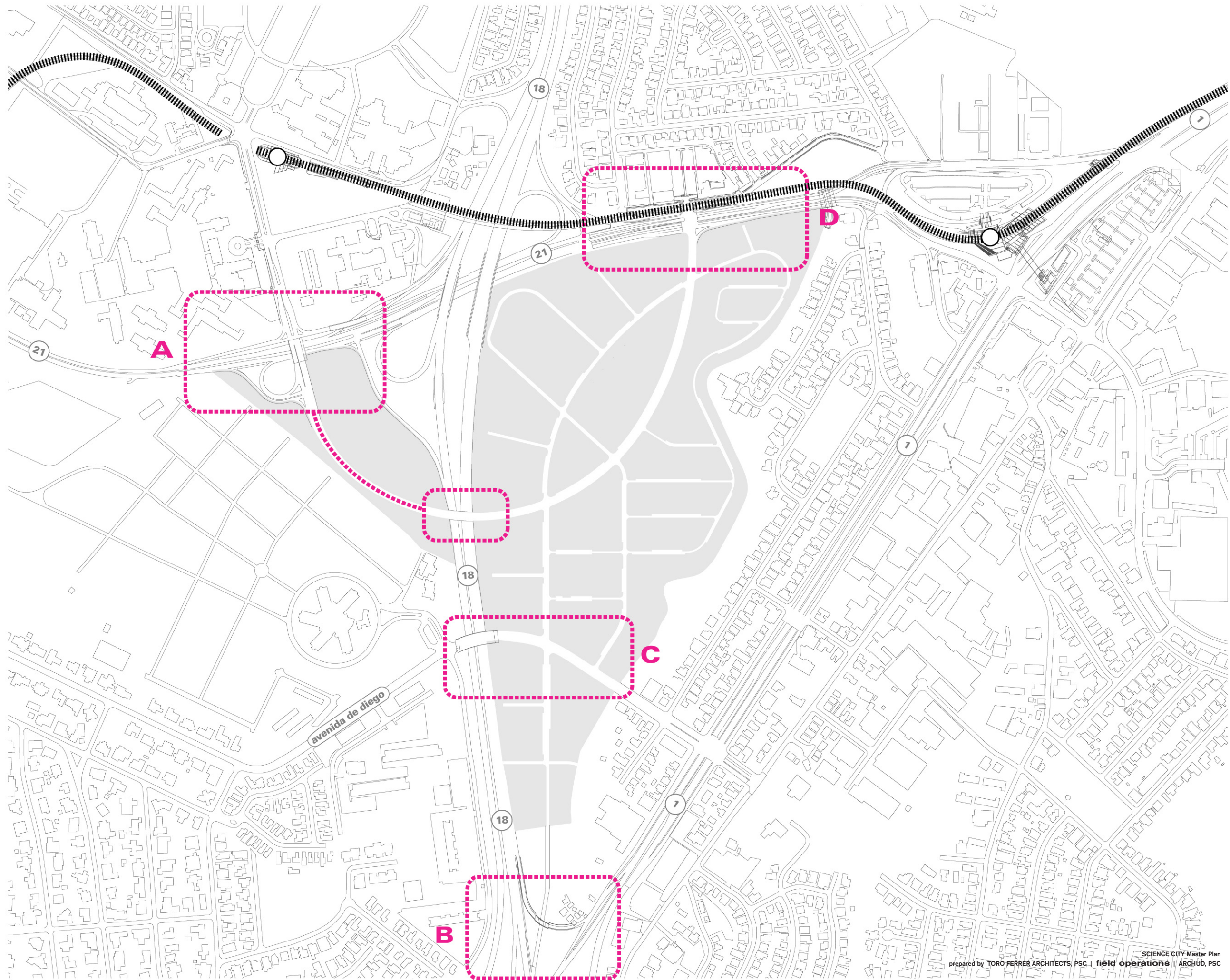
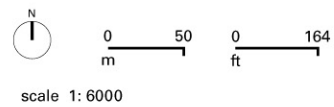
-  **center center parcels (NET values)**
A - 125,765 sf (11.685 m²)
B - 197,680 sf (18.365 m²)
-  **co-generation parcel (NET values)**
C - 101,557 sf (9,435 m²)
-  **pedestrian / bike circuit**
-  **trolley circuit**
-  **tren urbano**
-  **tren urbano extension (caguas)**

N
0 60 0 197
m ft
scale 1: 6000

INFRASTRUCTURAL IMPROVEMENTS

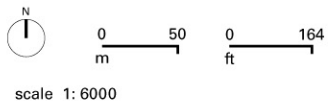
In order to complete the Science City Mobility Network outlined above, four primary infrastructural renovations will need to be implemented. A) The first is the above mentioned Science City Boulevard. This connection will include a new roadway across the Comprehensive Cancer Center site, a bridge linking the Cancer Center site with Oso Blanco, and a new interchange and bridge at PR-21. B) The second infrastructural renovation is a new exit along PR-18 entering the Science City development to the south of Las Amapolas. This new access will necessitate a reconfiguration of the existing connection between PR-1 and P-18 in addition to the proposed ramp. C) The third renovation will be to Avenida de Diego between the Buena Vista Creek and the bridge over PR-18. This modification will include a road widening for the addition of turn lanes, as well as a planted central median. Traffic control measures are also anticipated; however, any change will need to meet the dimensions of the existing bridge over PR-18. D) The fourth off-site infrastructure renovation occurs at the intersection of the Science City Boulevard and PR-21. A proposed improvements project for this roadway currently exists, extending from Cupey Station. However, this project will need to be modified to accommodate traffic volume and connection to the proposed Science City development.

 off-site infrastructure improv.

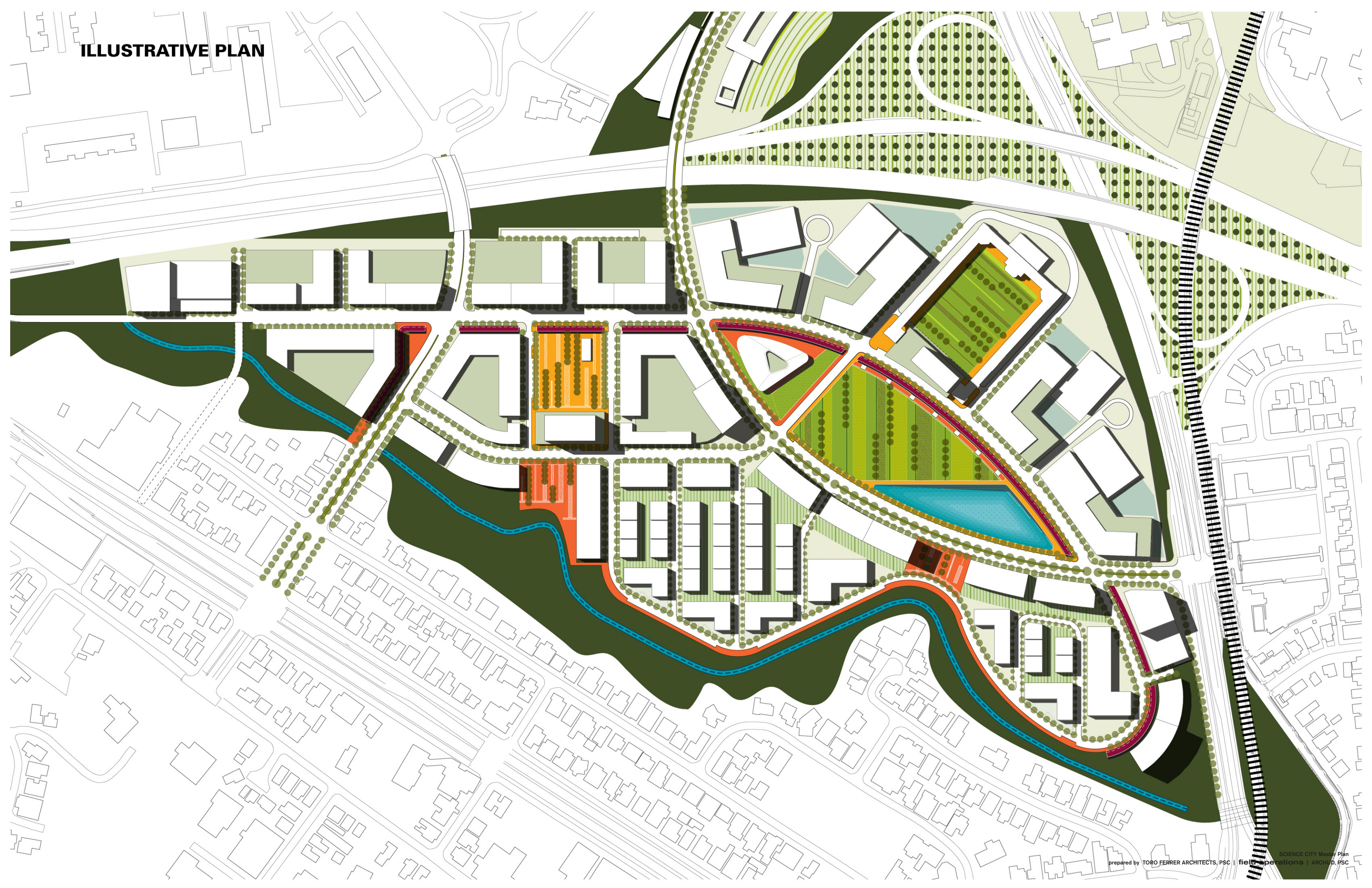


ILLUSTRATIVE PLAN: DISTRICT

Programmatic linkages to Centro Médico, the new Comprehensive Cancer Center at PR-18 / PR-21 and the new Molecular Sciences Building at Cupey provide the foundation for a true Life Sciences cluster at Oso Blanco. Infrastructural renovations and strongly articulated, identifiable public open spaces provide the physical structure within which long-term, high-density urban development will take place. Pair this with adjacent public amenities like the Botanical Garden, and the Knowledge Corridor’s “Green Heart” will soon have an equally vibrant urban core around which future development can and will occur – A NEW SCIENCE CITY at OSO BLANCO.



ILLUSTRATIVE PLAN

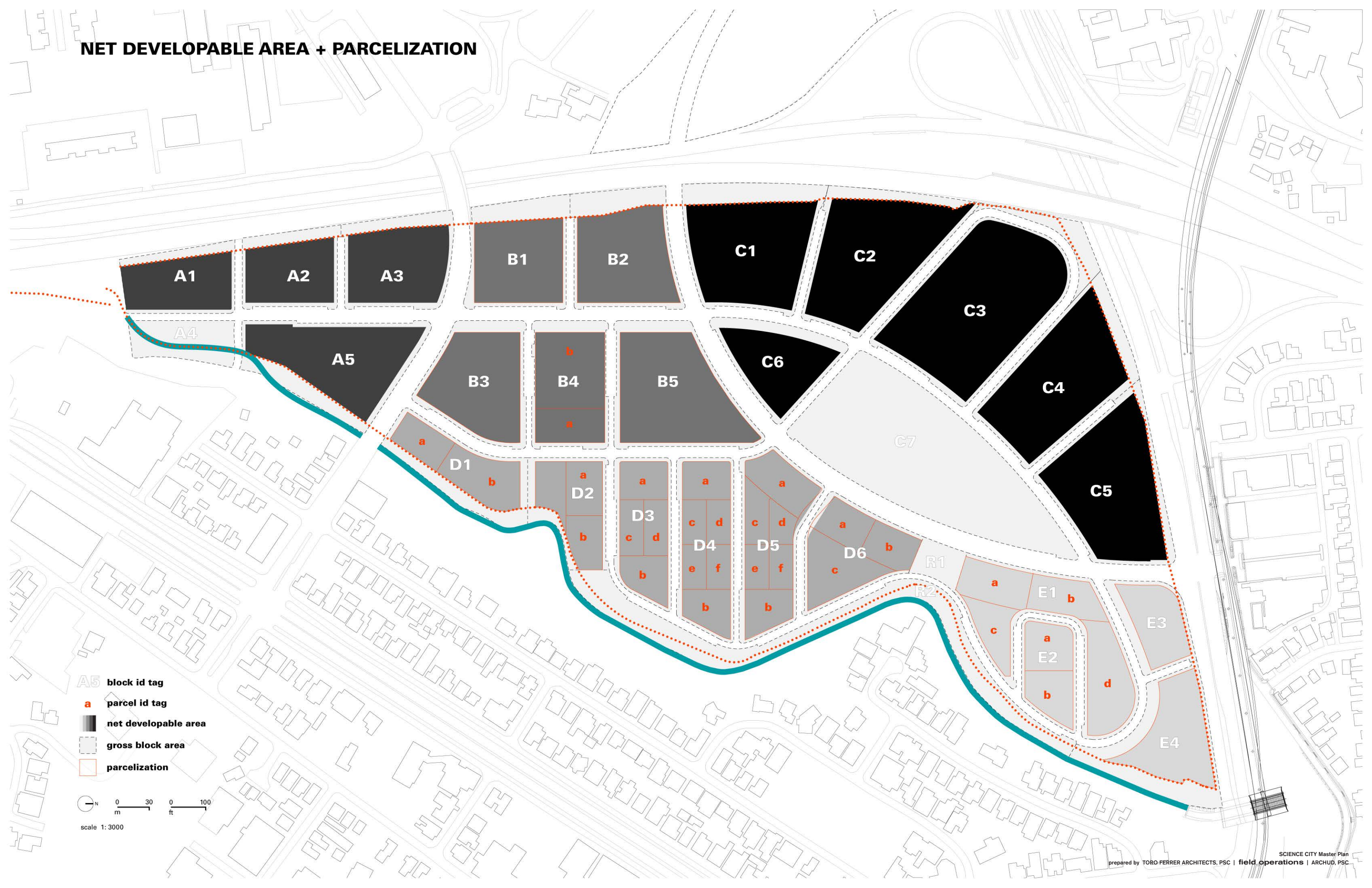
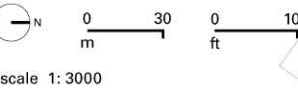


BLOCK STRUCTURE / DEVELOPABLE AREA / PARCELIZATION

The proposed Master Plan for Oso Blanco divides the site into 27 separate blocks ranging in size from 40,000 SF (3,715 SM) to more than 250,000 SF (23,225 SM). The majority of the blocks are between 100,000 - 150,000 SF (9,290 - 13,935 SM). Blocks in Zones A, B and C are not able to be subdivided since they are anticipated to house primarily mixed use (A +B) or laboratory (C) programs which require larger parcels to accommodate their commensurate building types. The blocks in Zones D and E are able to be subdivided into smaller parcels given that their primary programmatic disposition is residential in nature. This subdivision is not fixed, and is described in more detail latter in this report under the section addressing residential building typologies (see p 98-109). Parcels C-7 and R-1+2 are not developable as they are slated to become the primary public open space elements of the Science City development. Parcel C-6 is only available for the development of a civic building such as a school or library.

NET DEVELOPABLE AREA + PARCELIZATION

- A5 block id tag
- a parcel id tag
- net developable area
- gross block area
- parcelization



PROPOSED MASSING

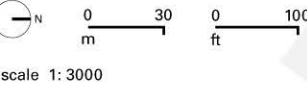
The proposed massing of the Science City development orients itself around three major public open spaces in addition to the Historic Prison courtyard. The central park is lined to the north west by large laboratory buildings, and to the south east by high density residential structures overlooking the green lung of the Science City Development. To the south is the smaller scale retail plaza around which the large mixed use buildings and their associated parking structures are located. The larger buildings of this type are sited at the core of the development area while the smaller scale mixed use types are oriented along PR 18. The eastern edge of the development is bounded by the River Way and River Walk. Between this public amenity and the large scale mixed use core is the primary residential component of the development. This area has a dense, lower scale building mass and footprint, except where the blocks meet the central oval park and larger towers emerge. The overall development is punctuated by these taller towers along the major open spaces, breaking free from the tight, well-formed fabric at the base of the development.

PROPOSED MASSING

- development limit
- topographic limit
- 4 building levels
- 4 parking levels
- building footprint
- parking footprint
- parking below grade

TOTAL LABORATORY:	1,000,000 SF
TOTAL RESIDENTIAL:	5,028,000 SF
TOTAL RETAIL:	405,000 SF
TOTAL OFFICE:	396,000 SF
TOTAL HOTEL:	94,550 SF
TOTAL CONFERENCE:	60,000 SF
TOTAL CIVIC:	90,000 SF
TOTAL BUILT:	7,073,550 SF

Note: All Areas in Gross SF



PROGRAM DISTRIBUTION: LABORATORY / RETAIL / PROFESSIONAL OFFICE

There are three major zones of program within the proposed Science City development. Flanking either side of the Historic Prison Building are laboratories totalling one-million square feet. Centered around the intersection of the major north-south axis and Avenida de Diego is the major commercial / retail component of the development. This area is primarily mixed use, allowing the commercial / retail programs to activate the surrounding streets and public open spaces. Other smaller scale retail is spread throughout the development, in particular along the perimeter of the Science City's central park. Professional / medical office space anchors the development to the north and south with highly visible towers marking the entrances to the development. Given the similarities in parcel size requirements, the professional office and laboratory areas can be exchanged as necessary given appropriate market forces.

PROGRAM DISTRIBUTION

- development limit
- topographic limit
- 4 building levels
- laboratory + research
- retail / commercial
- professional office

0 30 0 100
m ft
scale 1: 3000

TOTAL LABORATORY: 1,000,000SF
TOTAL RETAIL: 405,000 SF
TOTAL OFFICE: 396,000 SF
Note: All Areas in Gross SF

PROGRAM DISTRIBUTION: RESIDENTIAL / CIVIC / HOTEL + CONFERENCE

In addition to the laboratory program, the primary programmatic element of the Science City development is residential. This program is distributed across nearly 60% of the site – in a mixed use configuration along the major north-south route, and in a variety of residential configurations on the eastern half of the site. All told, the proposed configuration includes more than 3,000 housing units. In addition to the open space amenities the Science City proposal offers, there is also a major civic building at the center of the development that would house a school, science museum and library. This iconic element anchors the central opens space, and acts as a visible prow to those moving along the Science City Boulevard from Centro Médico. The historic prison is envisioned to include a number of programs including hotel and conference facilities, 100 units of housing, as well as the administrative offices for the Science, Technology and Research Trust.

PROGRAM DISTRIBUTION

- development limit
- topographic limit
- residential program
- civic program
- hotel / conference

0 30 0 100
m ft
scale 1: 3000

TOTAL RESIDENTIAL: 3,078 units (5,028,00 SF)
TOTAL HOTEL: 112 rooms (94,550 SF)
TOTAL CONFERENCE: 60,000 SF
TOTAL CIVIC: 90,000 SF
Note: All Areas in Gross SF

PARKING DISTRIBUTION

Given the amount of program proposed for the Science City development, the major logistical hurdle is providing adequate parking facilities. Though the project is considered a Transit Oriented Development (TOD), a significant amount of parking must be accommodated within a densely developed master plan vision, acknowledging that the Tren Urbano has been in operation for less than two years. The required parking quantity reached in the return on investment analysis for this report is 8,156 spaces (excluding on street parking). Though this quantity is quite high, it already reflects a reduction in parking parameters as they relate to current zoning codes given the TOD designation. More aggressive reductions will be dependent on the development and implementation of a viable regional transit system.

In all cases, structured parking should be oriented away from any active public space, including streets and must be screened or wrapped where ever possible. Larger structures like those required in the mixed use blocks at the center of the development are expected to locate the parking within the core of the building block, thereby screening it from public view. The given grade of the development site also affords opportunities to slide parking below grade without the expensive cost of excavation. Of particular note for this type of configuration is the residential areas of Zones D and E to the eastern side of the development along the Buena Vista Creek. In general wherever possible, below grade parking is a strong preference. On street metered parking is utilized to supplement structured parking, providing an active edge for commercial and retail street frontage as well as visitor parking for the residential component of the Science City.

PARKING DISTRIBUTION

- development limit
- topographic limit
- 4 parking totals
- on street parking
- structured parking
- parking at/below grade

0 30 0 100
m ft
scale 1: 3000

TOTAL PROVIDED PARKING:	8,674 SPACES
TOTAL REQUIRED PARKING:	8,276 SPACES
DIFFERENCE:	+398 SPACES
TOTAL STRUCTURED PKG:	4,605 SPACES
TOTAL BELOW-GRADE PKG:	3,715 SPACES
TOTAL ON-STREET PKG:	354 SPACES

GROSS BLOCK AREA (sq m)	6,354	6,412	8,491	3,684	11,947		9,226	10,364	9,475	8,389	12,461
GROSS BLOCK AREA (sq ft)	68,395	69,014	91,391	39,654	128,593		99,309	111,555	101,986	90,296	134,128
NET DEVELOPABLE AREA (sq m)	4,901	4,688	6,402	0	8,653		6,472	7,536	7,488	6,830	10,159
NET DEVELOPABLE AREA (sq ft)	52,753	50,459	68,914	0	93,141		69,661	81,117	80,603	73,520	109,355
INTENSITY (gross bldg area / net block)	388.60%	376.54%	326.49%		461.66%		373.24%	412.98%	490.05%	374.05%	539.53%
BLOCK ABLE TO BE SUB-DIVIDED (Y/N)	N	N	N	N	Y		N	N	N	N	N
BLOCK	A-1	A-2	A-3	A-4	A-5		B-1	B-2	B-3	B-4	B-5
RESIDENTIAL AREA (GROSS)	0	190,000	195,000	0	375,000		230,000	305,000	315,000	250,000	490,000
# OF UNITS	0	129	129	0	254		159	188	188	160	296
LABORATORY											
RETAIL (GROSS)	5,000	0	30,000	0	55,000		30,000	30,000	80,000	25,000	100,000
RETAIL (NET)	3,500	0	21,000	0	38,500		21,000	21,000	56,000	17,500	70,000
HOTEL	0	0	0	0	0		0	0	0	0	0
CONFERENCE	0	0	0	0	0		0	0	0	0	0
OFFICE (GROSS)	200,000	0	0	0	0		0	0	0	0	0
OFFICE (NET)	160,000	0	0	0	0		0	0	0	0	0
CIVIC	0	0	0	0	0		0	0	0	0	0
OPEN SPACE				39,654						52,000	
PARKING SPACES REQUIRED (NET)	494	194	300	0	574		344	387	562	283	794
STRCTD. PARKING SPACES PROVIDED	495	200	300	0	575		345	390	565	285	790
TOTAL GROSS AREA: BLOCK	205,000	190,000	225,000	0	430,000		260,000	335,000	395,000	275,000	590,000
RES. DENSITY (sq m / UNIT)		36.34	49.63		34.07		40.70	40.09	39.83	42.69	34.32
RES. DENSITY (DWELLING UNIT / acre)		108.16	79.19		115.37		96.56	98.05	98.68	92.07	114.51



PROGRAM QUANTITIES: DEVELOPMENT ZONES A + B

TOTAL: ZONE A

GROSS AREA (sq ft)	397,047
NET AREA (sq ft)	265,267
RESIDENTIAL AREA	760,000
# OF UNITS	512
LABORATORY	0
RETAIL (GROSS)	90,000
RETAIL (NET)	63,000
HOTEL	0
CONFERENCE	0
OFFICE (GROSS)	200,000
OFFICE (NET)	160,000
CIVIC	0
OPEN SPACE	39,654
PARKING SPACES REQUIRED (NET)	1,562
STRUCTURED PARKING SPACES PROVIDED	1,570

GROSS AREA

1,050,000

TOTAL: ZONE B

GROSS AREA (sq ft)	537,274
NET AREA (sq ft)	414,256
RESIDENTIAL AREA	1,590,000
# OF UNITS	991
LABORATORY	0
RETAIL (GROSS)	265,000
RETAIL (NET)	185,500
HOTEL	0
CONFERENCE	0
OFFICE (GROSS)	0
OFFICE (NET)	0
CIVIC	0
OPEN SPACE	52,000
PARKING SPACES REQUIRED (NET)	2,370
STRUCTURED PARKING SPACES PROVIDED	2,375

GROSS AREA

1,855,000

	GROSS BLOCK AREA (sq m)	13,674	13,799	20,338	13,728	13,406	7,079	23,294		1,582	10,577
	GROSS BLOCK AREA (sq ft)	147,181	148,529	218,914	147,768	144,299	76,198	250,732		17,033	113,846
	NET DEVELOPABLE AREA (sq m)	9,880	11,046	16,759	11,054	10,596	4,979	0			
	NET DEVELOPABLE AREA (sq ft)	106,350	118,898	180,389	118,979	114,053	53,591	0			
INTENSITY (gross bldg area / net block)		235.07%	210.26%	191.56%	210.12%	219.20%	167.94%				
BLOCK ABLE TO BE SUB-DIVIDED (Y/N)		N	N	N	N	N	N	N			N
	BLOCK	C-1	C-2	C-3	C-4	C-5	C-6	C-7	R-1		R-2
	RESIDENTIAL AREA (GROSS)	0	0	150,000	0	0	0	0			
	# OF UNITS	0	0	100	0	0	0	0			
	LABORATORY	250,000	250,000	0	250,000	250,000	0	0			
	RETAIL (GROSS)	0	0	5,000	0	0	0	0			
	RETAIL (NET)	0	0	3,500	0	0	0	0			
	HOTEL	0	0	94,550	0	0	0	0			
	CONFERENCE	0	0	60,000	0	0	0	0			
	OFFICE (GROSS)	0	0	36,000	0	0	0	0			
	OFFICE (NET)	0	0	28,800	0	0	0	0			
	CIVIC	0	0	0	0	0	90,000	0			
	OPEN SPACE						22,606	250,732	17,033		113,846
	PARKING SPACES REQUIRED (NET)	250	250	405	250	250	75	0			
	STRCTD. PARKING SPACES PROVIDED	260	260	380	260	260	80	0			
	TOTAL GROSS AREA	250,000	250,000	345,550	250,000	250,000	90,000	0			
RES. DENSITY (sq m / UNIT)				167.59							
RES. DENSITY (DWELLING UNIT / acre)				23.45							



PROGRAM QUANTITIES: DEVELOPMENT ZONES C + R

TOTAL: ZONE C

GROSS AREA (sq ft)	1,133,622
NET AREA (sq ft)	692,260
RESIDENTIAL AREA	150,000
# OF UNITS	100
LABORATORY	1,000,000
RETAIL (GROSS)	5,000
RETAIL (NET)	3,500
HOTEL	94,550
CONFERENCE	60,000
OFFICE (GROSS)	36,000
OFFICE (NET)	28,800
CIVIC	90,000
OPEN SPACE	273,339
PARKING SPACES REQUIRED (NET)	1,480
STRUCTURED PARKING SPACES PROVIDED	1,500
GROSS AREA	1,435,550

	GROSS BLOCK AREA (sq m)	7,575	6,344	6,978	8,634	9,772	7,777		12,716	4,753	4,953	9,744
	GROSS BLOCK AREA (sq ft)	81,532	68,285	75,113	92,931	105,183	83,711		136,874	51,165	53,313	104,885
	NET DEVELOPABLE AREA (sq m)	4,719	4,751	5,727	7,164	8,205	6,629		10,396	3,915	3,477	5,607
	NET DEVELOPABLE AREA (sq ft)	50,795	51,138	61,646	77,114	88,313	71,354		111,899	42,142	37,426	60,356
INTENSITY (gross bldg area / net block)		334.68%	307.01%	340.65%	337.16%	379.33%	518.54%		570.15%	379.67%	440.87%	444.03%
BLOCK ABLE TO BE SUB-DIVIDED (Y/N)		Y	Y	Y	Y	Y	Y		Y	Y	N	N
	BLOCK	D-1	D-2	D-3	D-4	D-5	D-6		E-1	E-2	E-3	E-4
	RESIDENTIAL AREA (GROSS)	165,000	152,000	205,000	255,000	330,000	365,000		628,000	160,000	0	268,000
	# OF UNITS	108	84	121	141	185	206		354	96	0	180
	LABORATORY											
	RETAIL (GROSS)	5,000	5,000	5,000	5,000	5,000	5,000		10,000	0	5,000	0
	RETAIL (NET)	3,500	3,500	3,500	3,500	3,500	3,500		7,000	0	3,500	0
	HOTEL								0	0	0	
	CONFERENCE								0	0	0	
	OFFICE (GROSS)	0	0	0	0	0	0		0	0	160,000	0
	OFFICE (NET)	0	0	0	0	0	0		0	0	128,000	0
	CIVIC	0	0	0	0	0	0		0	0	0	
	OPEN SPACE	30,737	17,147									39,670
	PARKING SPACES REQUIRED (NET)	180	144	200	230	296	340		566	144	494	270
	STRCTD. PARKING SPACES PROVIDED	180	145	200	230	300	350		560	150	480	280
	TOTAL GROSS AREA	170,000	157,000	210,000	260,000	335,000	370,000		638,000	160,000	165,000	268,000
RES. DENSITY (sq m / UNIT)		43.69	56.56	47.33	50.81	44.35	32.18		29.37	40.78		
RES. DENSITY (DWELLING UNIT / acre)		89.95	69.49	83.04	77.36	88.63	122.14		133.84	96.38		



PROGRAM QUANTITIES: DEVELOPMENT ZONES D + E

TOTAL: ZONE D

GROSS AREA (sq ft)	506,755
NET AREA (sq ft)	400,359
RESIDENTIAL AREA # OF UNITS	1,472,000 845
LABORATORY	0
RETAIL (GROSS)	30,000
RETAIL (NET)	21,000
HOTEL	0
CONFERENCE	0
OFFICE (GROSS)	0
OFFICE (NET)	0
CIVIC	0
OPEN SPACE	47,884
PARKING SPACES REQUIRED (NET)	1,390
STRUCTURED PARKING SPACES PROVIDED	1,405

GROSS AREA 1,502,000

TOTAL: ZONE E

GROSS AREA (sq ft)	346,236
NET AREA (sq ft)	251,824
RESIDENTIAL AREA # OF UNITS	1,056,000 630
LABORATORY	0
RETAIL (GROSS)	15,000
RETAIL (NET)	10,500
HOTEL	0
CONFERENCE	0
OFFICE (GROSS)	160,000
OFFICE (NET)	128,000
CIVIC	0
OPEN SPACE	39,670
PARKING SPACES REQUIRED (NET)	1,474
STRUCTURED PARKING SPACES PROVIDED	1,470

GROSS AREA 1,231,000

289,336	TOTAL AREA: OSO BLANCO (sq m)
3,114,387	TOTAL AREA: OSO BLANCO (sq ft)
41,583	TOTAL AREA: LAS AMAPOLAS (sq m)
447,596	TOTAL AREA: LAS AMAPOLAS (sq ft)
330,919	TOTAL AREA: SCIENCE CITY (sq m)
3,561,983	TOTAL AREA: SCIENCE CITY (sq ft)

283,523	TOTAL GROSS BLOCK AREA (sq m)
3,051,813	TOTAL GROSS BLOCK AREA (sq ft)
188,033	NET DEVELOPABLE AREA (sq m)
2,023,966	TOTAL NET DEVELOPABLE AREA (sq ft)

349.49% INTENSITY (gross bldg area total / net block total)

BLOCK

5,028,000	TOTAL RESIDENTIAL AREA (GROSS)
3,078	TOTAL UNITS

1,000,000	TOTAL LABORATORY
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405,000	TOTAL RETAIL (GROSS)
283,500	TOTAL RETAIL (NET)

94,550	TOTAL HOTEL
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60,000	TOTAL CONFERENCE
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396,000	TOTAL OFFICE (GROSS)
316,800	TOTAL OFFICE (NET)

90,000	TOTAL CIVIC
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583,426	TOTAL OPEN SPACE
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8,276	TOTAL PARKING SPACES REQUIRED (NET)
8,320	STRUCTURED PARKING SPACES PROVIDED

7,073,550	TOTAL GROSS AREA: PROJECT
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PROGRAM QUANTITIES: PROJECT DEVELOPMENT TOTALS

SCIENCE CITY ECOLOGICAL + PHYSICAL IDENTITY

**ECOLOGICAL INNOVATION PAIRED WITH
EXCEPTIONAL PUBLIC OPEN SPACES
WILL PROVIDE THE SCIENCE CITY WITH A
DISTINCT + MEMORABLE PHYSICAL IDENTITY**



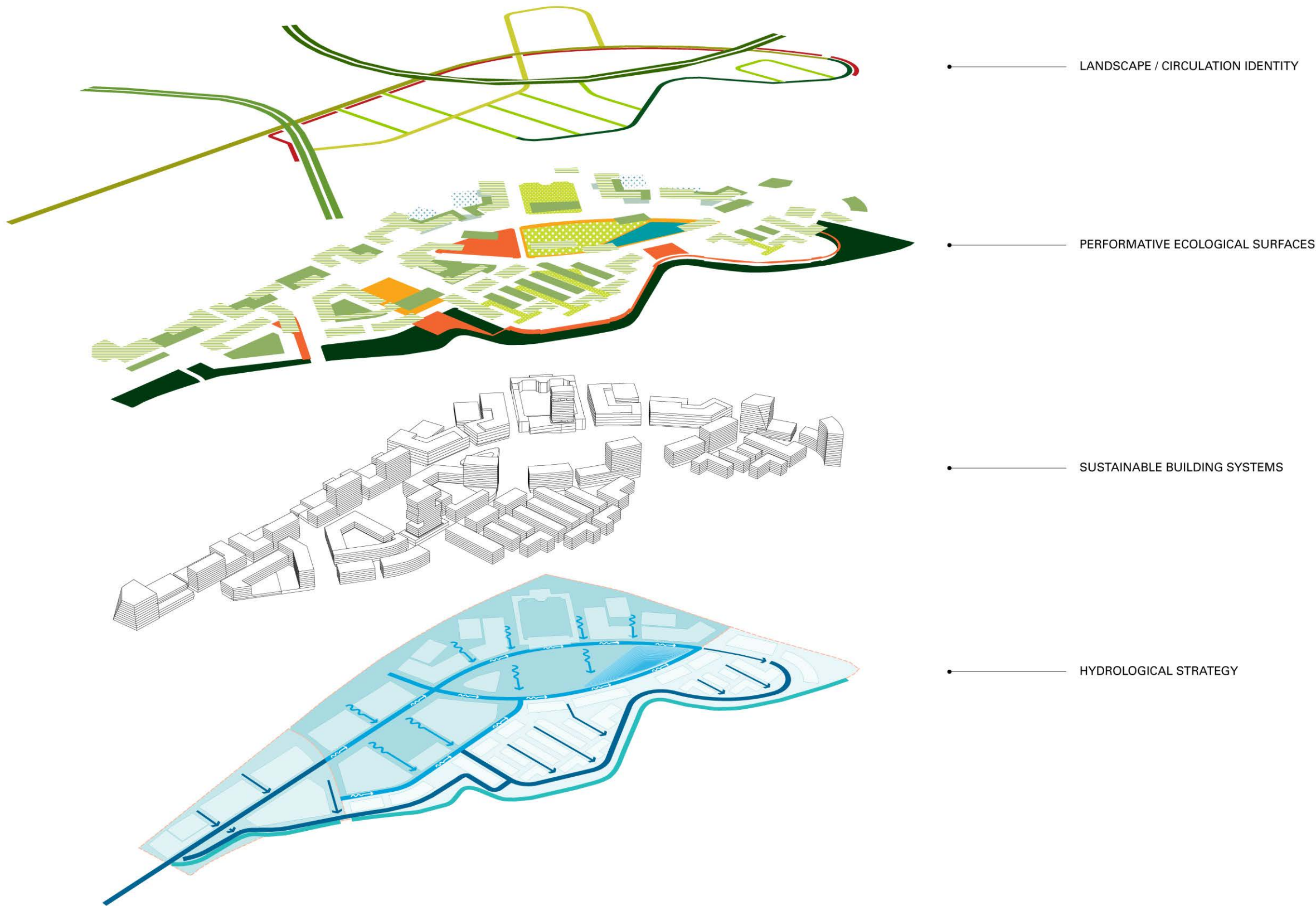
ECOLOGICAL + PHYSICAL IDENTITY

The Science City Development at Oso Blanco positions itself in relation to a growing Knowledge Economy on Island. Science and Research are the foundation of this project and should be evident in every aspect of the development. The presence of laboratories alone will not make this a true Science City. Rather, we propose a fully integrated matrix of sustainable building, responsible hydrologic strategies, performative ecological surfaces and strong, clear physical design for public open spaces to exemplify the aspirations of such a project.

The information in the following section of this document outlines the various components of this matrix. In addition to content relating to the components listed above, this section also includes typological design recommendations for three building types (typical residential block; laboratories; and mixed-use blocks), as well as for the proposed hierarchy of streets within the development. It should be noted we are not defining specific requirements or guidelines here since each of the systems outlined below requires a significant technical expertise outside of the scope of this report. However, it is understood that these systems are appropriate on an order of magnitude for a development like Oso Blanco, and therefore should be considered and studied further as the project moves forward.

The strong physical presence of innovative and compelling ecological and sustainable systems will provide the Science City at Oso Blanco with an immediate and recognizable brand, as well as a physical character that will structure the long-term development of the project from its onset through completion.

ECOLOGICAL + PHYSICAL IDENTITY



ECOLOGICAL SURFACES

As was previously noted, development at the scale of the Science City will invariably cover permeable ground surfaces with impermeable building surfaces. However, its is possible (and perhaps imperative) to utilize these horizontal, built surfaces for positive effect. Where possible, any opportunity to retain a permeable surface is obviously the preference. However, there are many alternatives to an impermeable horizontal plane. Green roofs or roof gardens on the tops of buildings will both offer water collection for potential reuse in buildings, as well as provide cooling (both internal to the building and at the broader urban level) through a reduction in heat gain. Photovoltaics can be deployed on otherwise dormant building tops for energy production. Gardens surrounding buildings will provide shade both inside and outside of the structures, and in some cases may also provide water collection. In addition to the water basin in the central park, we also propose to use this green heart as a geothermal field capable of driving heat pumps for cooling (particularly in the laboratories). While the scale and magnitude of many of these systems has not yet been established, it should be clear that a new development of this scale offers abundant opportunity for the responsible deployment of sustainable ecological strategies and building systems.



civic plaza



recreation plaza



retention bladders / geothermal bed



water basin / lake



green roof



roof gardens



cooling gardens



riverway / eco corridor



palm canopy / wind field

ECOLOGICAL SURFACES

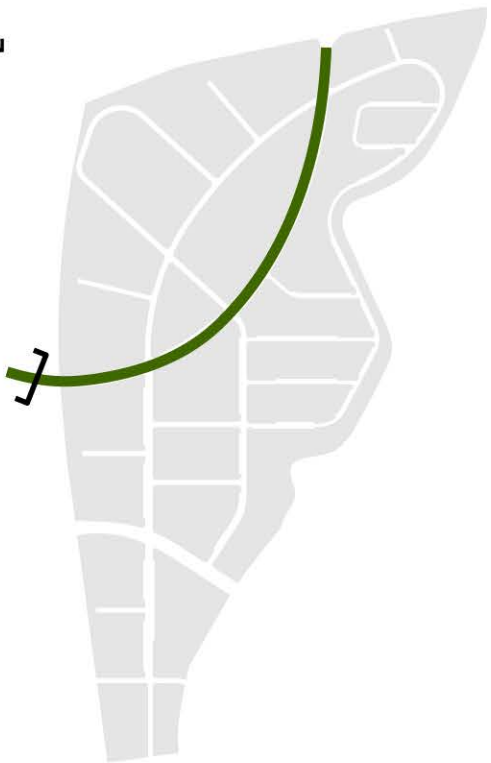
- civic plaza
- recreation plaza
- retention bladders / geothermal bed
- roof garden (ocupiable)
- green roof (cooling)
- photovoltaic cells
- residential garden
- basin
- cooling garden
- riverway / eco corridor
- palm canopy / wind field

scale 1: 3000



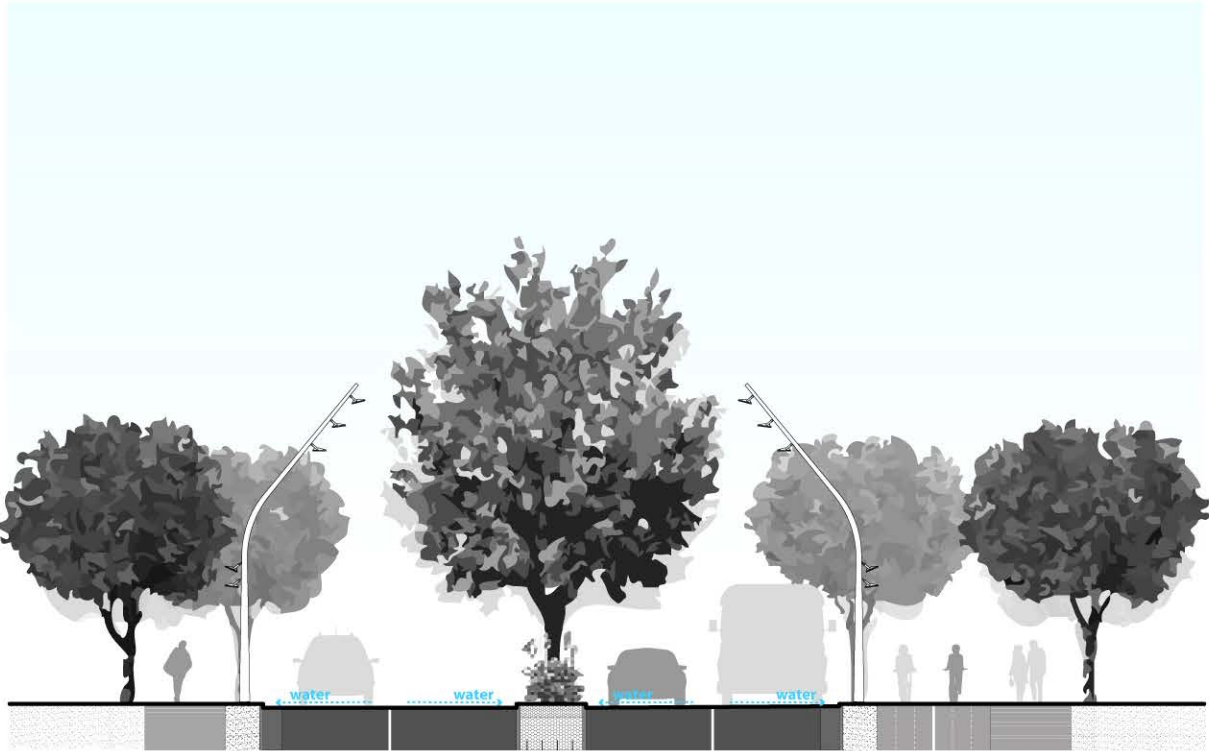


KEY PLAN

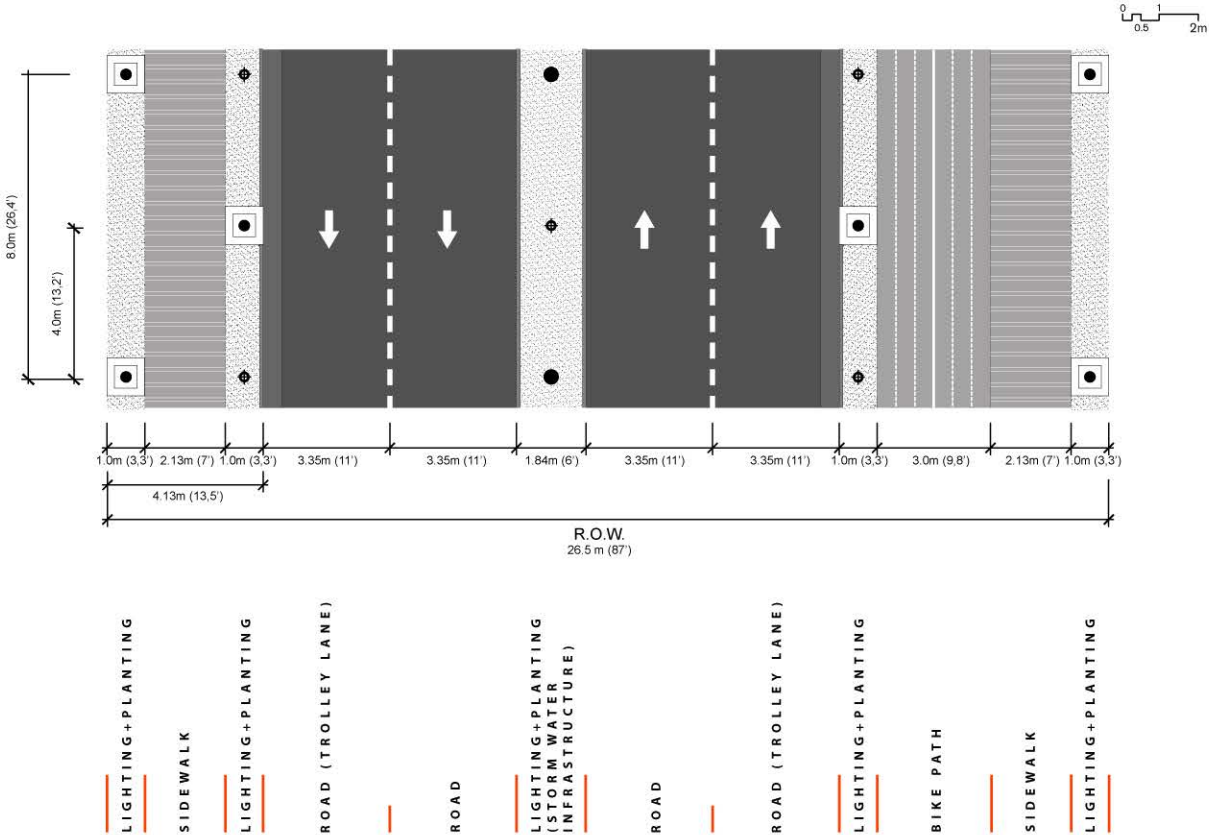


GATEWAY

SECTION

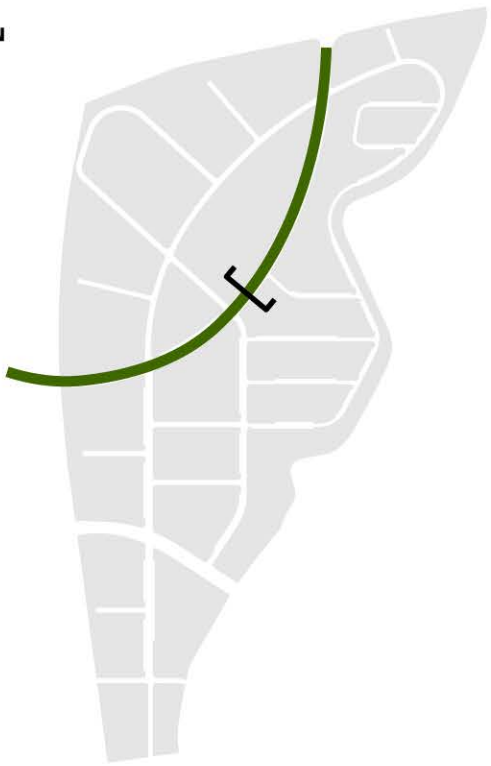


PLAN



BOULEVARD - COMPREHENSIVE CANCER CENTER SITE

KEY PLAN



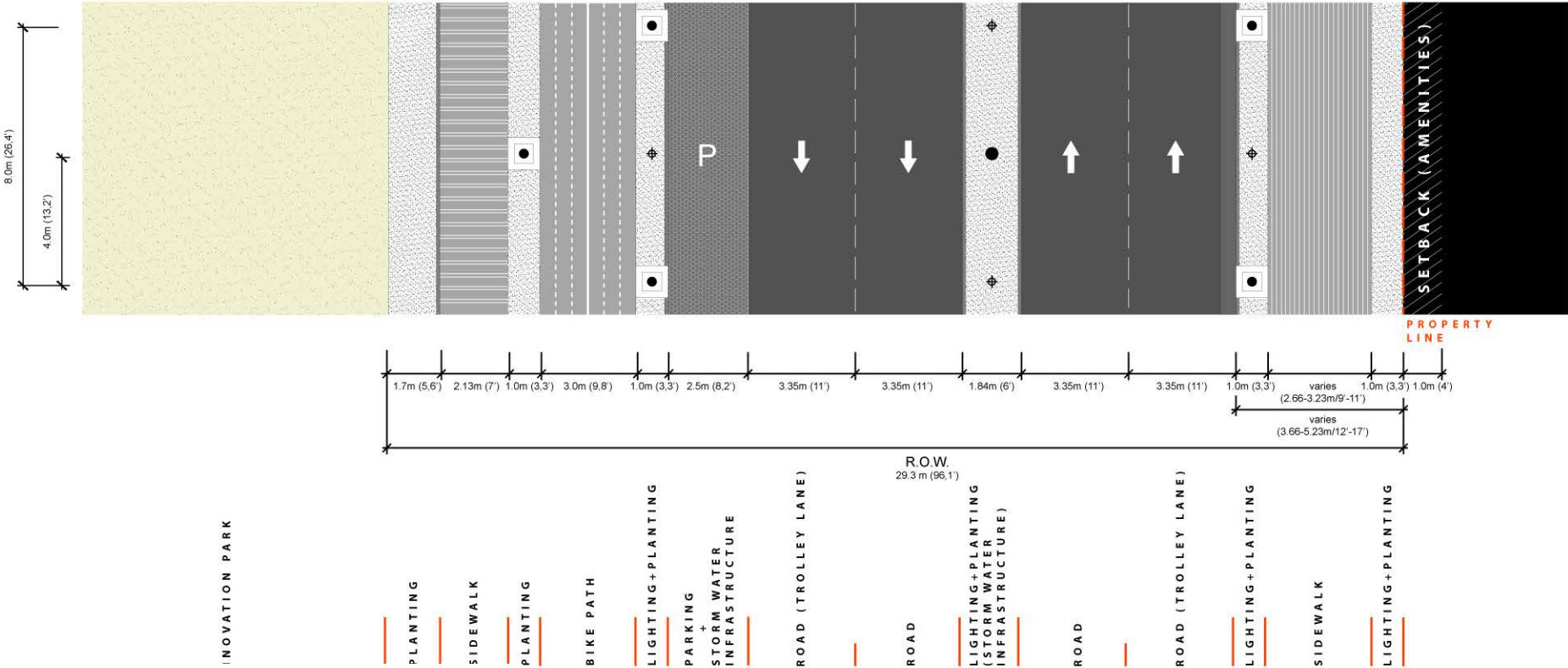
GATEWAY

BOULEVARD - SCIENCE CITY

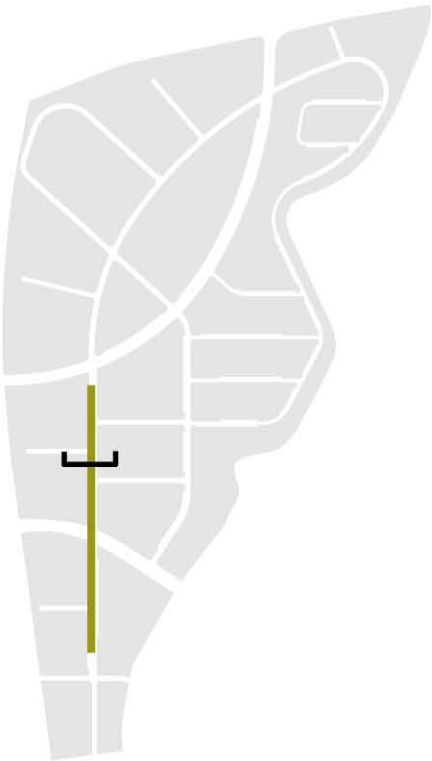
SECTION



PLAN



KEY PLAN

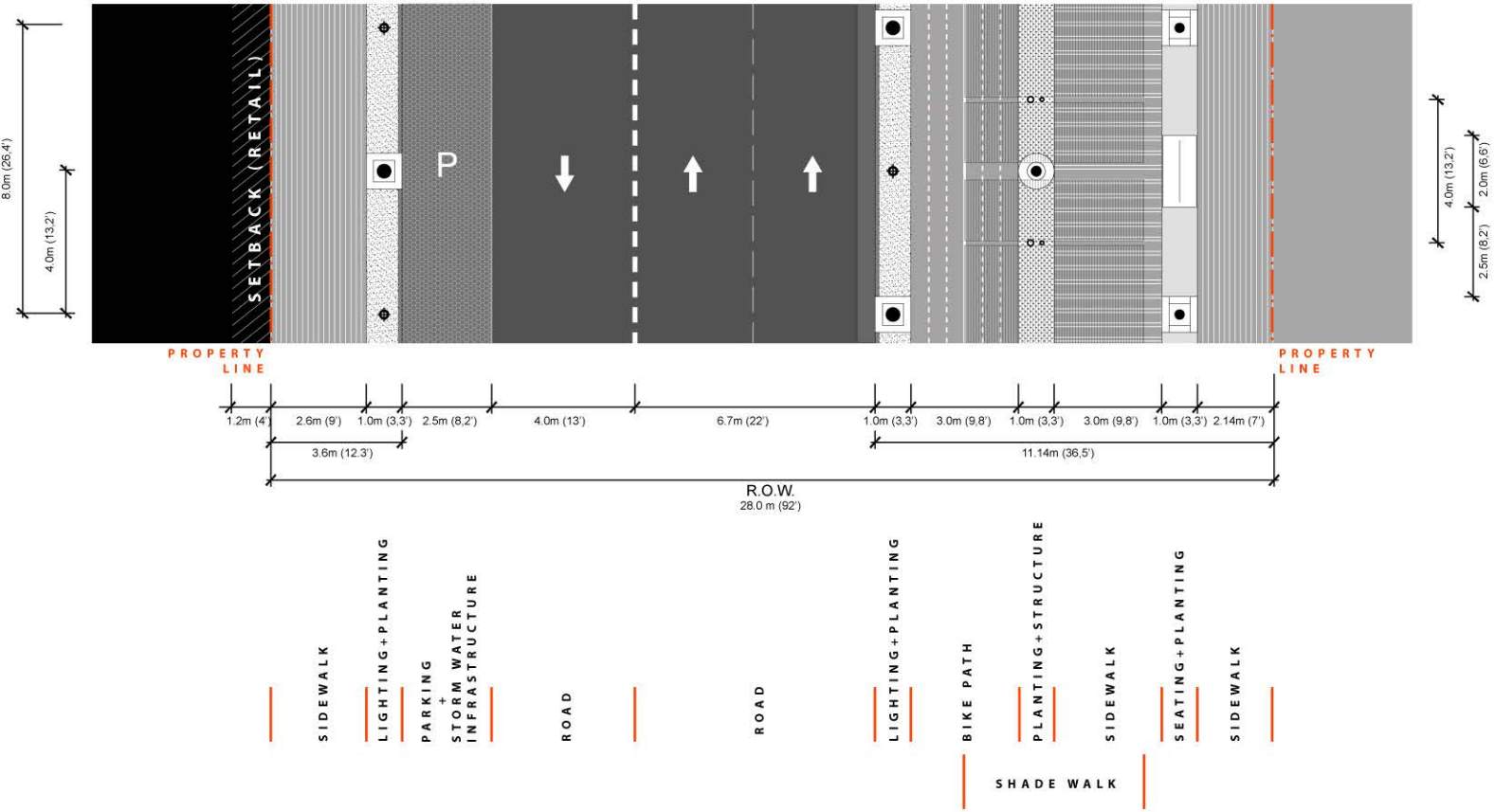


INSTITUTIONAL

SECTION



PLAN



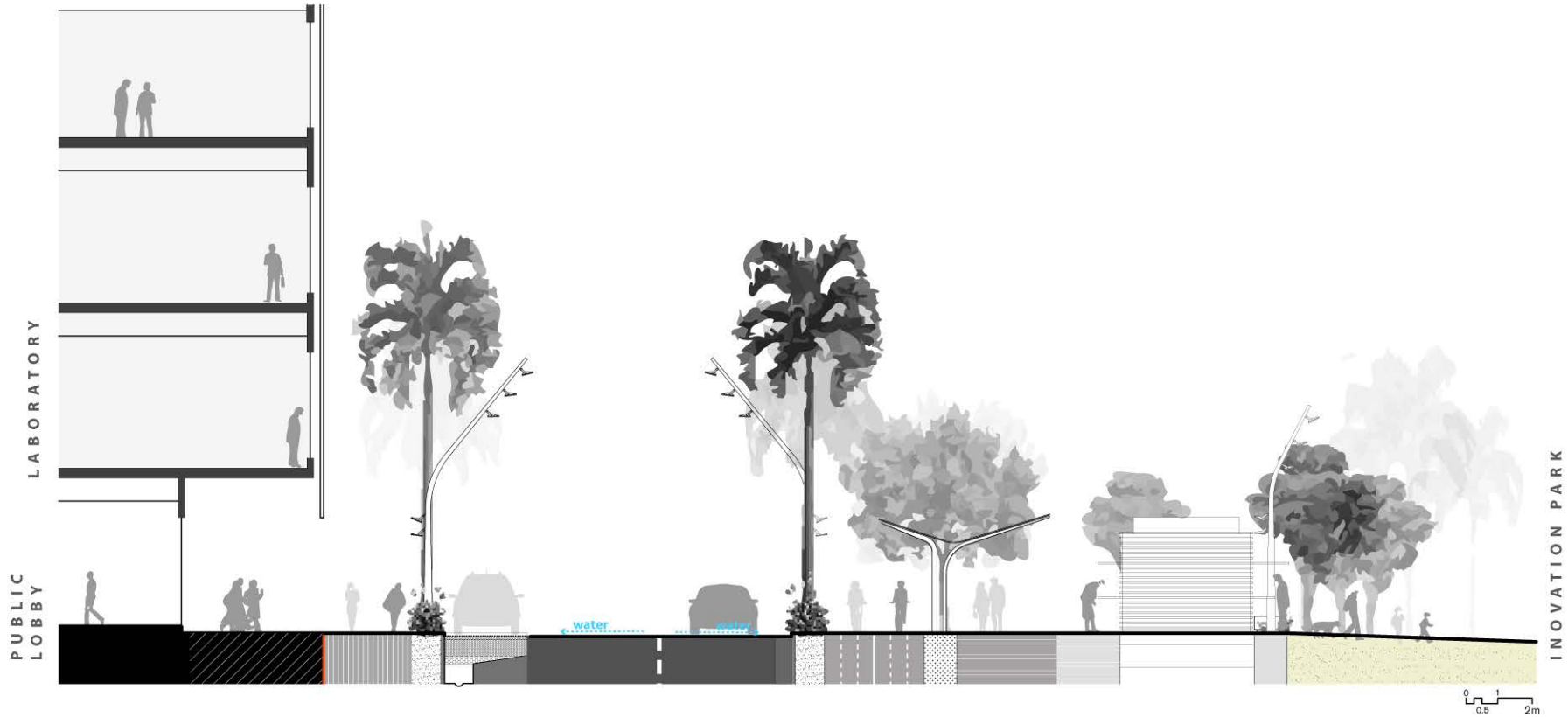
PRIMARY RETAIL/COMMERCIAL STREET

KEY PLAN

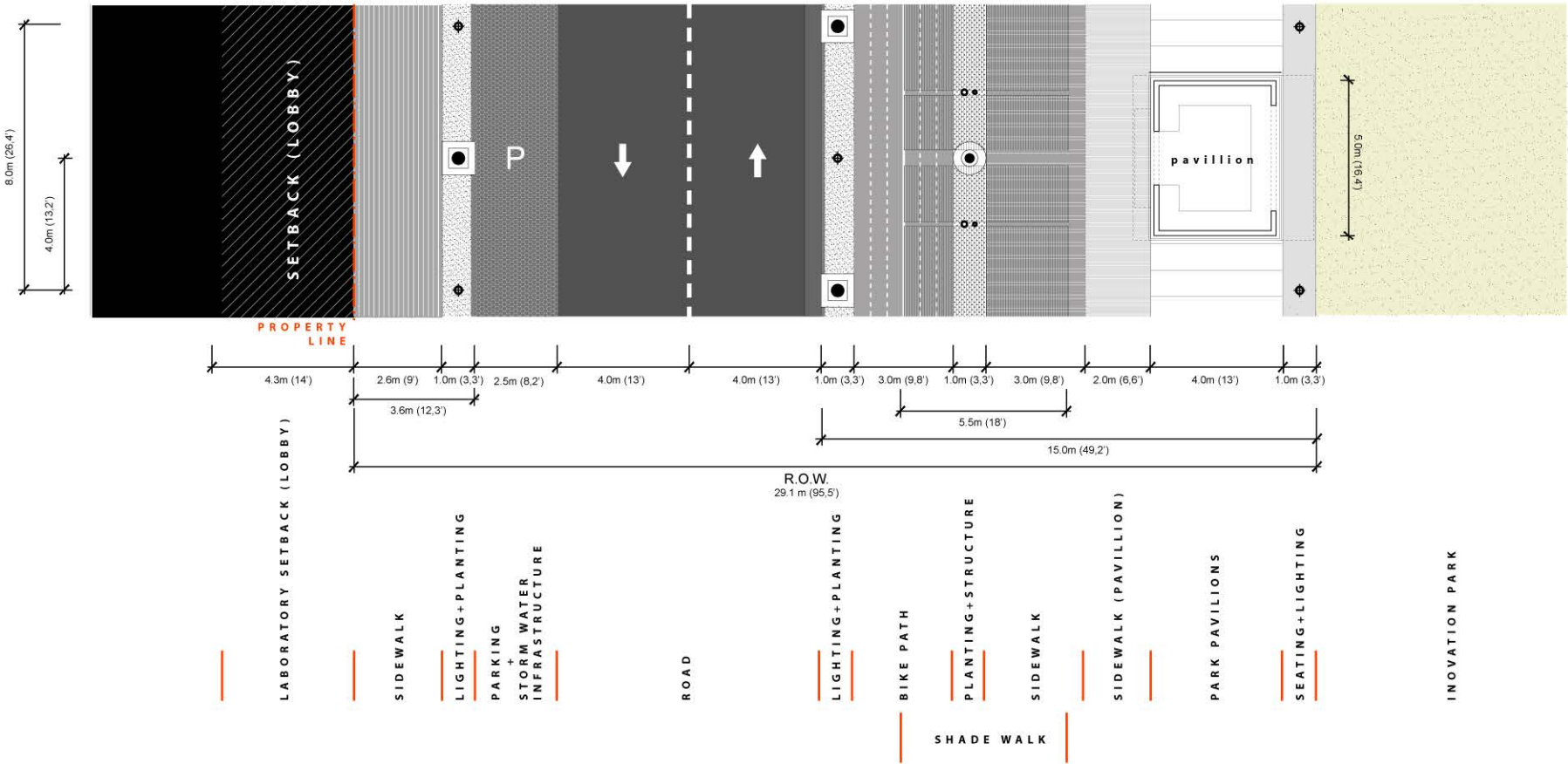


INSTITUTIONAL

SECTION



PLAN



LABORATORY STREET

**FULLY INTEGRATED SUSTAINABLE SYSTEMS
FOR BUILDINGS AND OPEN SPACE WILL
CREATE A UNIQUE URBAN ENCLAVE WITH
SCIENCE AT THE FOUNDATION OF ITS
MANDATE FOR DEVELOPMENT**



TYPOLOGIES

The Science City development is composed of three primary building types: *laboratory, primary residential and mixed use* (at both small and large scales). It is anticipated that in the next phase of the project’s development a full set of design guidelines per block will be developed, including recommendations for a design review/excellence program . In anticipation of that, the following typology studies have been undertaken. These are not meant as a specific proposal to any one type, but as set of recommendations that outline a type’s expected programmatic adjacencies; its orientation in relation to streets and open space; as well as critical points of articulation including size, scale, setback and surface articulation. The guidelines also offer a anticipated range for expected program size and possible configurations to resolve basic parking requirements.¹

¹ Though they are not indicated in the following diagrams, the sustainable building systems outlined above are all able to be accommodated within the typologies described below and should be integrated as such.



LABORATORY PRECEDENTS





MIXED-USE PRECEDENTS





IMPLEMENTATION STRATEGY

IMPLEMENTATION ENTITY, PRINCIPLES AND ASSUMPTIONS

The Science City at Oso Blanco/Las Amapolas is the most important strategic development zone within the San Juan Knowledge Corridor. The project presents a coherent programmatic concentration of uses and stakeholders necessary to achieve the goals of the Knowledge Corridor at an immediately realizable scale, while simultaneously acting as a catalyst for redevelopment throughout the broader Corridor territory.

The STRT is the right entity to implement the Science City Vision at all scales and levels given its empowerment by legislative decree. Its policy side will assist in establishing mechanisms that facilitate permit processing times, while its science and “green” agendas locate it at the forefront of the development community in Puerto Rico. The Trust’s public side guarantees that the Life Science initiative is a long term commitment of Puerto Rico – for its people, its economy, and its future.

The STRT will establish a scientific agenda that will clearly define priorities in the Life Science research and development fields. A real estate agenda, guided by the Science City Master Plan, will impact the Knowledge Corridor as a whole by facilitating collaboration between private and public entities and institutions in order to optimize the resources already present within the Knowledge Corridor.

The STRT’s mission to promote a Life Sciences agenda will be achieved by capitalizing the Oso Blanco / Las Amapolas development site through the implementation of the Science City. As a Master Developer – the STRT or its development entity – will not only be responsible for the initial research and development infrastructures, but will also fund nascent R+D initiatives on a short, and potentially long term basis. Within the Science City, these initial research and development infrastructures include a 250,000 SF laboratory/incubator; a hotel with conferencing facilities; and a science magnet school. The Trust will then sell all other development parcels to third parties under a controlled scenario that guarantees maximum financial return, compliance with design guidelines and consistency with the overall Science City Vision.

To be clear, the Science City is being instrumentalized to promote the Island’s new economic development agenda while also functioning as the financial vehicle that drives the Science, Technology and Research Trust. Ultimately, the Trusts’s role in the Science City is the support of a prosperous economic future for Puerto Rico in the Life Sciences and related research and development industries.

Beyond the role of the STRT and its master development entity, a series of planning principles and assumptions underlay the implementation strategies for the Science City:

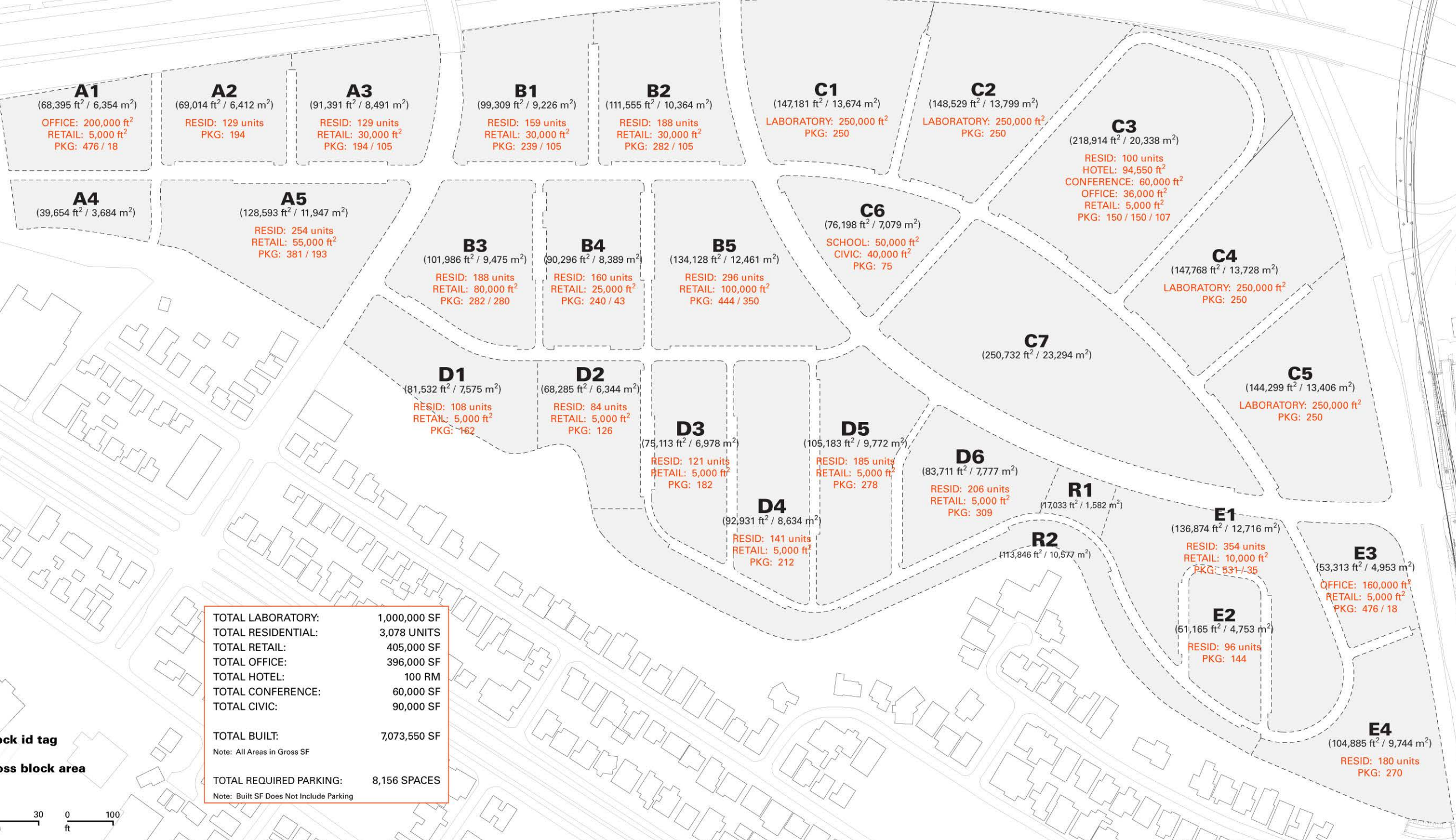
- 1)** The implementation of the Science City will imply reaching a complex set of agreements with those entities with the power to make changes, and at least the passive support of those with the potential to block them. Implementation should be guided by an open decision making process that encourages participation of all levels of government, related institutions, the community and the private sector with particular interest in the future development of the Knowledge Corridor. There are various existing land use, zoning, and institutional mechanisms that could channel the interaction of these interests.
- 2)** Envisioned as a twenty year development process, the Master Plan should be reviewed and/or revised every 5-7 years to react to market conditions as well to programmatic requirements or demands from the residential, commercial, retail or life science industries.
- 3)** The implementation strategy for Science City is rooted in a financial plan based on the proposed Development Template. Its corresponding investment and development schedule is consistent with the financial mechanisms proposed and/or available to assure a return on investment for the STRT – owner and Master Developer of the Science City.
- 4)** Investment in public transit is an action which could significantly improve financial and quality of life conditions over the life span of the Science City project. The recently inaugurated Tren Urbano heavy rail project enables the Science City to become a true Transit-Oriented Development (TOD) initiative that can, over time, allow significant reductions in parking facilities and thus enable higher residential densities and office/retail intensities with a net result of higher values of land and revenues for the STRT. Other means such as, but not limited to, parking meters and car sharing can support the proposed development initiative, either as revenue-generating sources or as cost-reduction alternatives, respectively.
- 5)** Notwithstanding its focus on the research and development community, the Science City should also become a socially diverse district of Metropolitan San Juan. It should provide housing, employment and cultural opportunities for a broad spectrum of the population. The community building strategy of the Science City must also incorporate workforce housing and/or employee assisted housing. An x-ray of the Corridor’s tenants and of the Science City’s programmatic components reflects that such a mix of housing types will be required to achieve a balanced, 24/7 live/work environment.
- 6)** The Science City should be a showcase of innovative urban strategies. The sustainable agenda of the Knowledge Corridor will present through the Science City development template, how mixed-use, high density developments can work for the environment, and in turn will provide the Science City with an immediately recognizable physical identity. The STRT must consider requiring LEED-compliance standards for all development efforts within Science City regardless of the nature of the proposed use. Furthermore, other “green” initiatives and investments at a site scale may also provide sustainable elements that can also contribute to the economic health and productivity of the Science City.
- 7)** Although Puerto Rico is well positioned globally as an industrial and manufacturing leader, it is of the utmost importance that a state of the art communications infrastructure is in place and available for each and every tenant of the Science City. High speed data communications such as microwave and fiber optics must be fully integrated in the proposed development.

SCIENCE CITY: OVERALL PHASING STRATEGY

The overall Science City program calls for a gross square footage of approximately 7,073,550 sq. ft of construction (excluding parking garages) along 25 development blocks (see Development Template Program Summary). Additional lot subdivision could be expected in blocks or parcels where mixed-use developments or stand-alone residential developments are proposed depending on market conditions and/or the final Business Plan to be carried by the STRT development entity. The program mix has been calculated based on the initial assessment for the Research & Development component and the support structure needed for the latter including all other uses that would be required in a city-building strategy for a live/work, 24/7 environment.

The Development Template timetable currently reflects two (2), ten (10) year phases for a total of twenty (20) years for its full-build condition after the rezoning process is completed. An infrastructure implementation plan will see completion within the first phase while the majority of pre-development activities take place from receipt of Title until approximately year three (3). The STRT should expect development ground-breaking for its Life Sciences components as well as for private development initiatives from year three (3) onwards. Phase I, will concentrate activities in the northern section of the proposed Science City (Oso Blanco prison site) while Phase II activities will expand the coverage to the southern section (Las Amapolas site). Some of the planning and management activities of the STRT master development entity will continue throughout the full completion of the various phases of the project.

PROGRAM DISTRIBUTION



TOTAL LABORATORY:	1,000,000 SF
TOTAL RESIDENTIAL:	3,078 UNITS
TOTAL RETAIL:	405,000 SF
TOTAL OFFICE:	396,000 SF
TOTAL HOTEL:	100 RM
TOTAL CONFERENCE:	60,000 SF
TOTAL CIVIC:	90,000 SF
TOTAL BUILT:	7,073,550 SF
Note: All Areas in Gross SF	
TOTAL REQUIRED PARKING:	8,156 SPACES
Note: Built SF Does Not Include Parking	

A5 block id tag

gross block area

