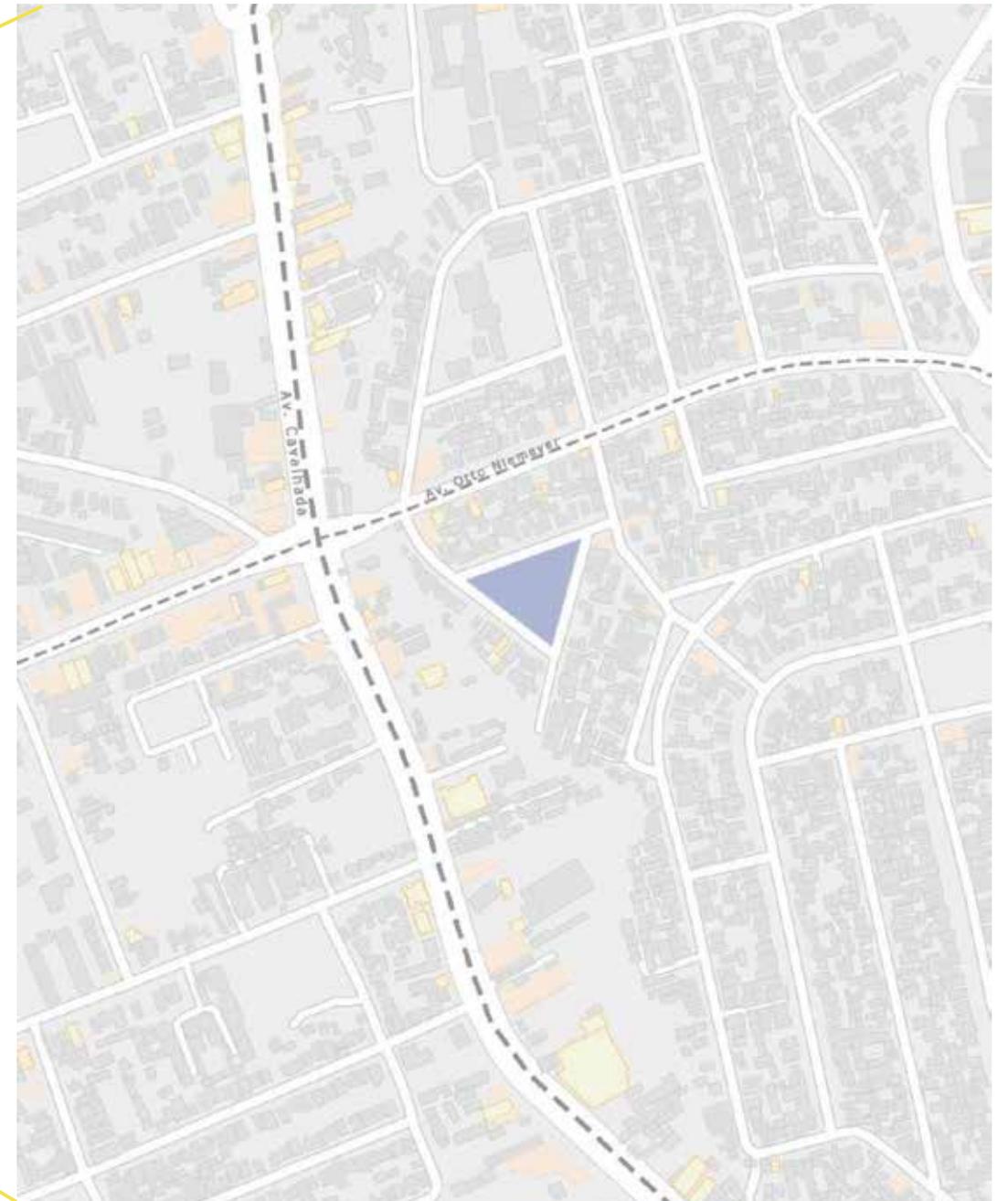


TCC 2020/1
KAROLINE DA SILVA TRINDADE
ORIENTADORA: CLÁUDIA COSTA CABRAL



ESCOLA DE ENSINO FUNDAMENTAL PARA A ZONA SUL DE PORTO ALEGRE

LOCALIZAÇÃO



Porto Alegre

Bairro Cavahada

1. Edificação escolar que contemple diversas atividades voltadas a educação infantil;



1. Edificação escolar que contemple diversas atividades voltadas a educação infantil;

2. Espaço de convivência aberto a comunidade;



- 1.** Edificação escolar que contemple diversas atividades voltadas a educação infantil;
- 2.** Espaço de convivência aberto a comunidade;
- 3.** Qualificar o espaço urbano onde está inserido;



1. Edificação precária e volumes fragmentados



2. Aumento da demanda de vagas

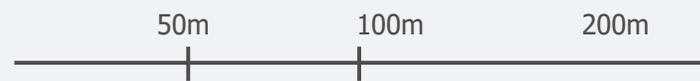
ano	matrículas ens. regular	matrículas EJA	matrículas totais
2018	454	119	573
2020	595	133	728

ÁREA DE INTERVENÇÃO

- Atividades Heterogêneas



MAPA USO DO SOLO



- residencial unif.
- residencial multi.
- institucional
- comercial
- misto

ÁREA DE INTERVENÇÃO



- Vias de alto fluxo nas proximidades
- Acesso facilitado

via arterial de 1º nível



via arterial de 2º nível



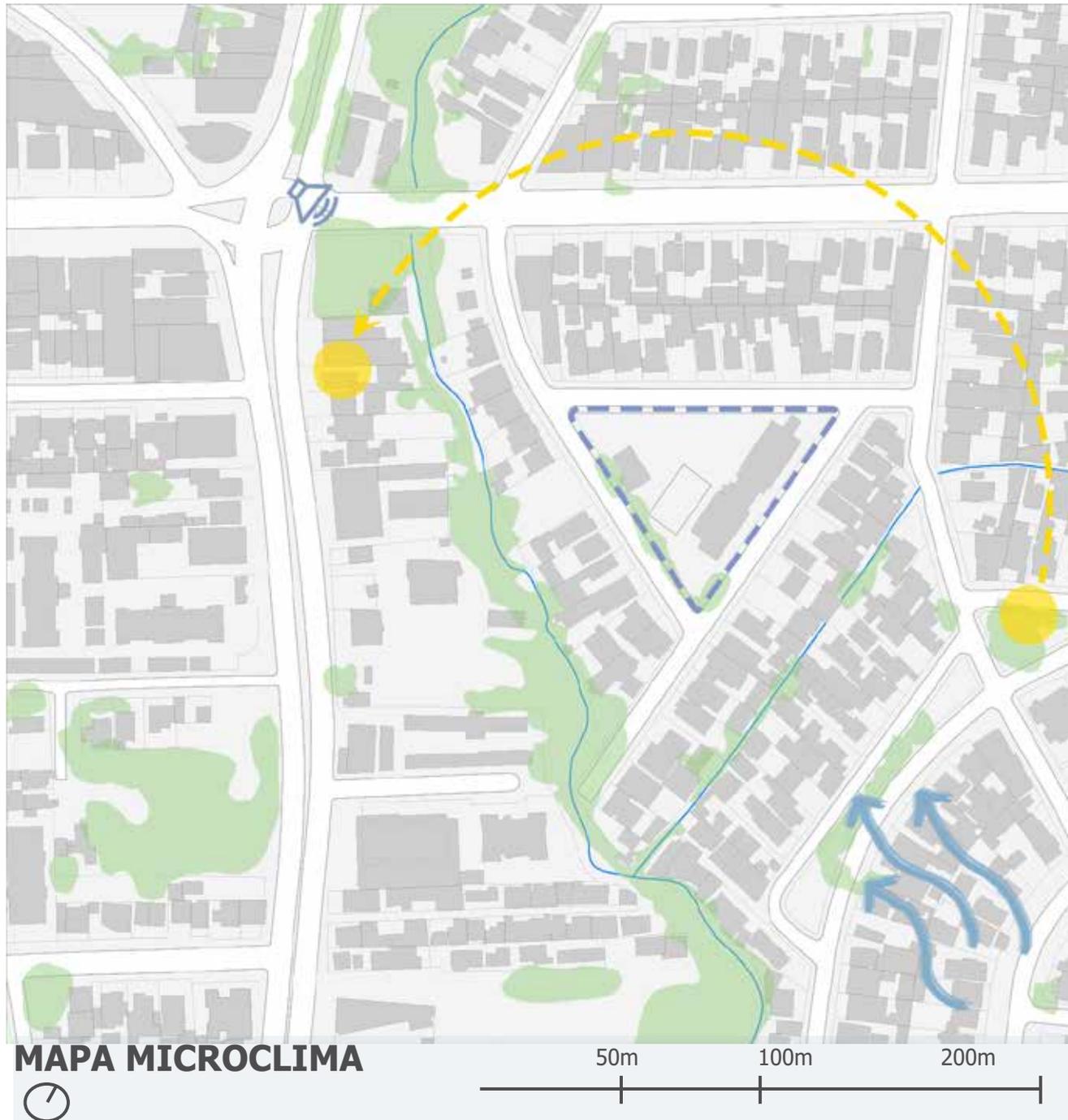
via local



ponto de onibus



ÁREA DE INTERVENÇÃO



ÁREA DE INTERVENÇÃO



Fotos do terreno

ENSINO

salas de aula

salas de oficinas

laboratório de ciências

laboratório de informática

biblioteca

sala vídeo

apoio

ADMINISTRAÇÃO

sala dos professores

coordenação

secretaria

enfermaria

diretoria

RECREAÇÃO E LAZER

quadra poliesportiva

playground

pátio coberto

pátio aberto

SERVIÇOS

refeitório

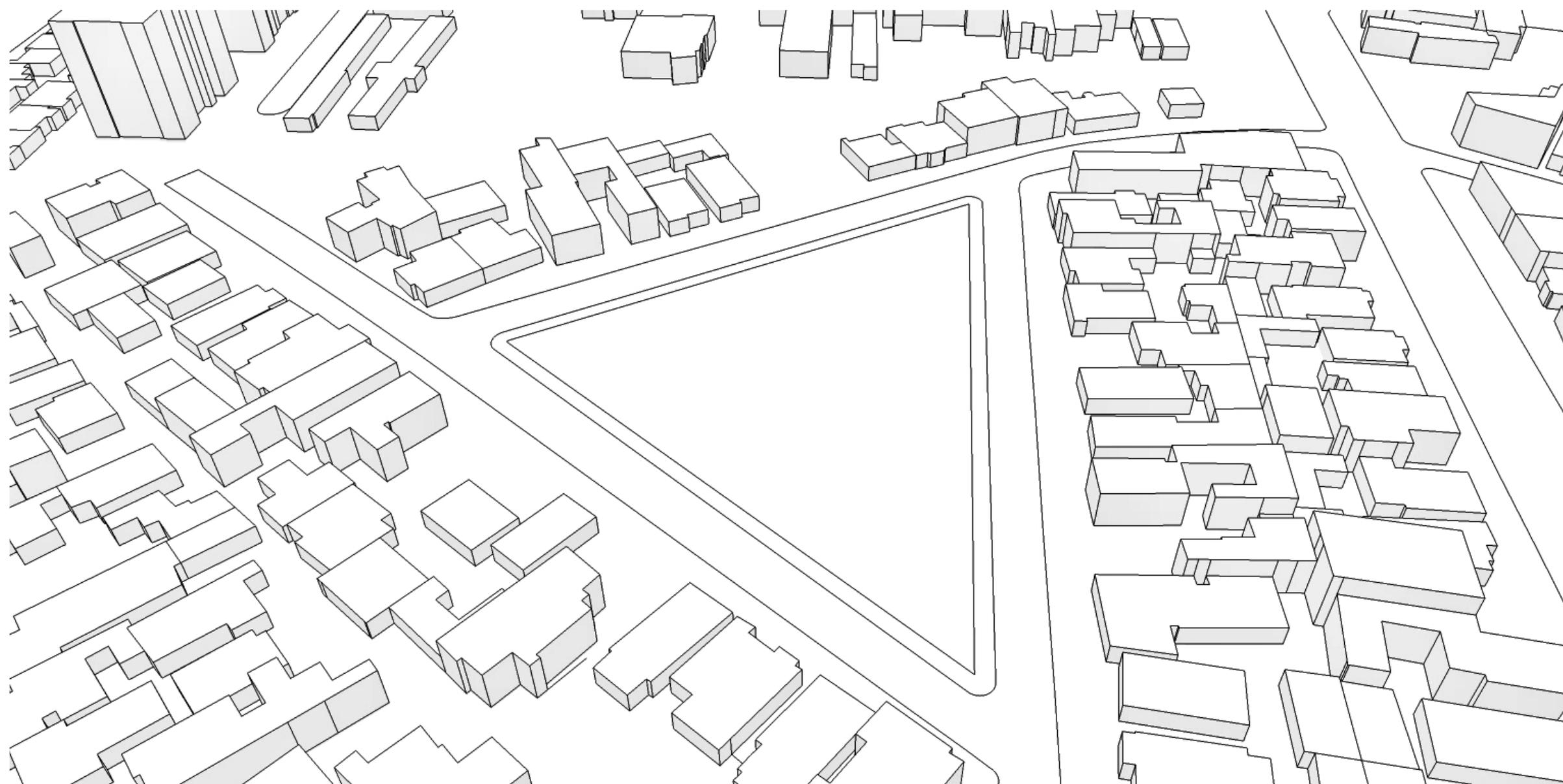
cozinha

vestiários

apoio

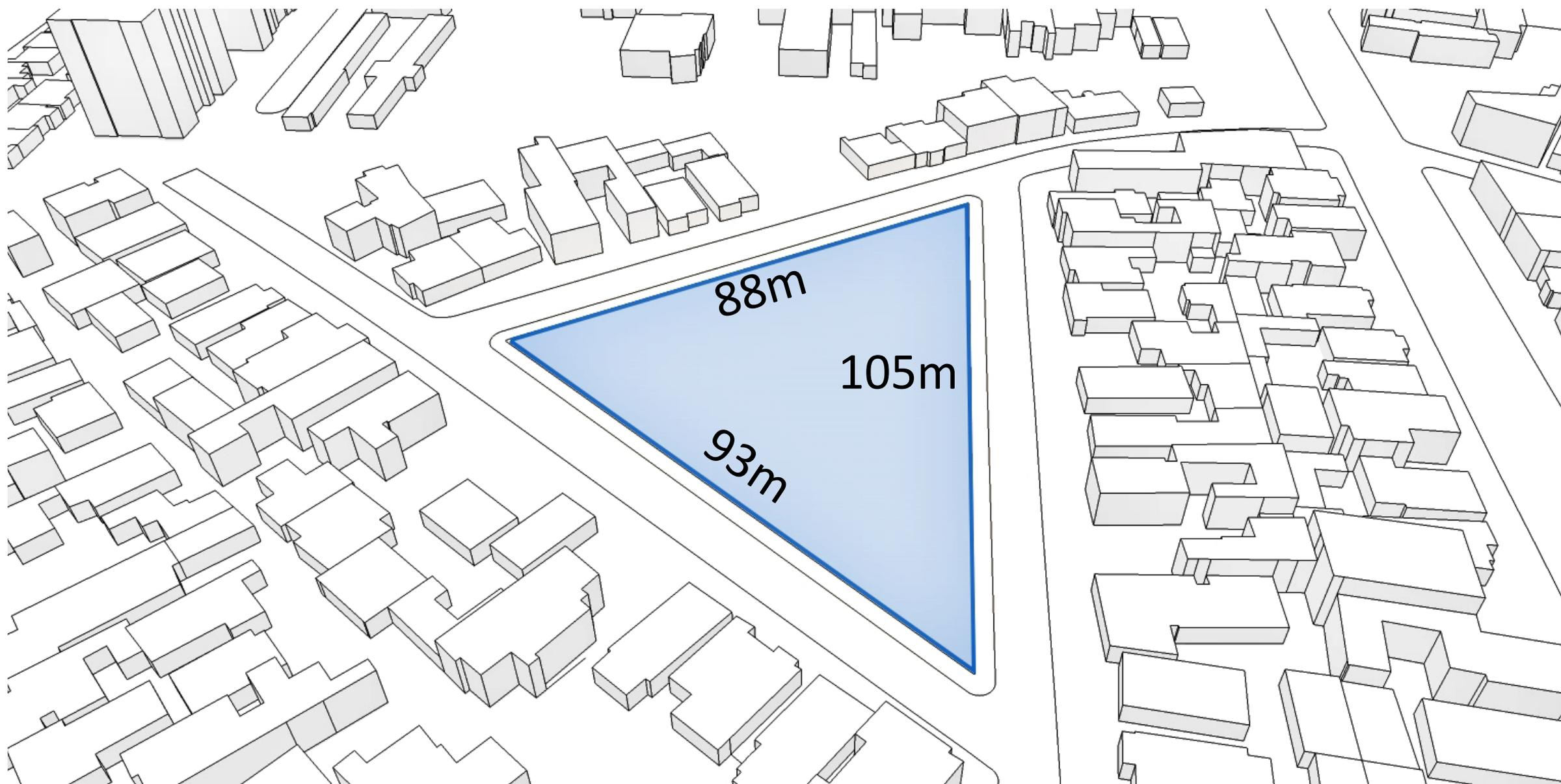
PROJETO

DIAGRAMA PARTIDO DE PROJETO



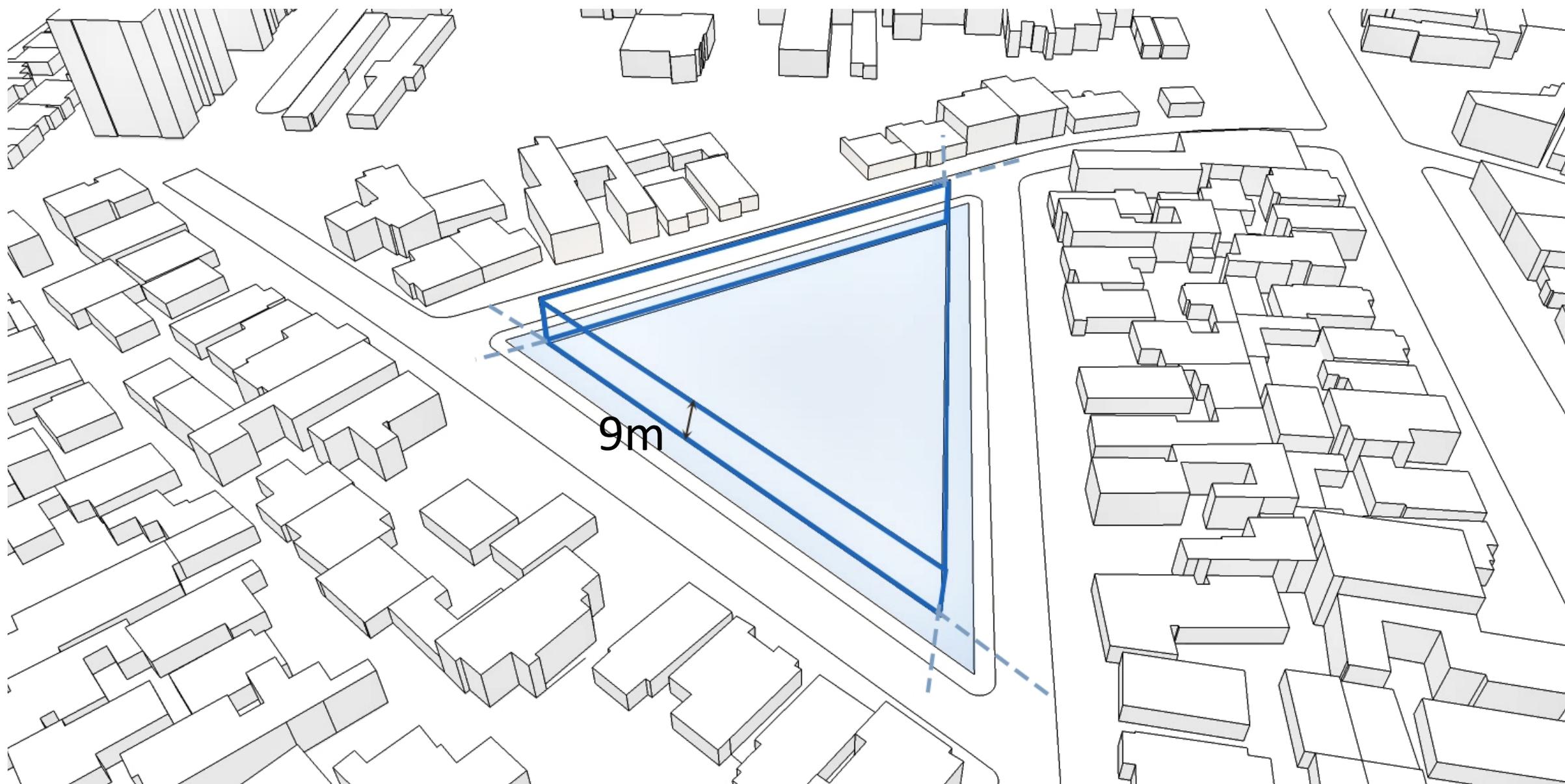
PROJETO

DIAGRAMA PARTIDO DE PROJETO



PROJETO

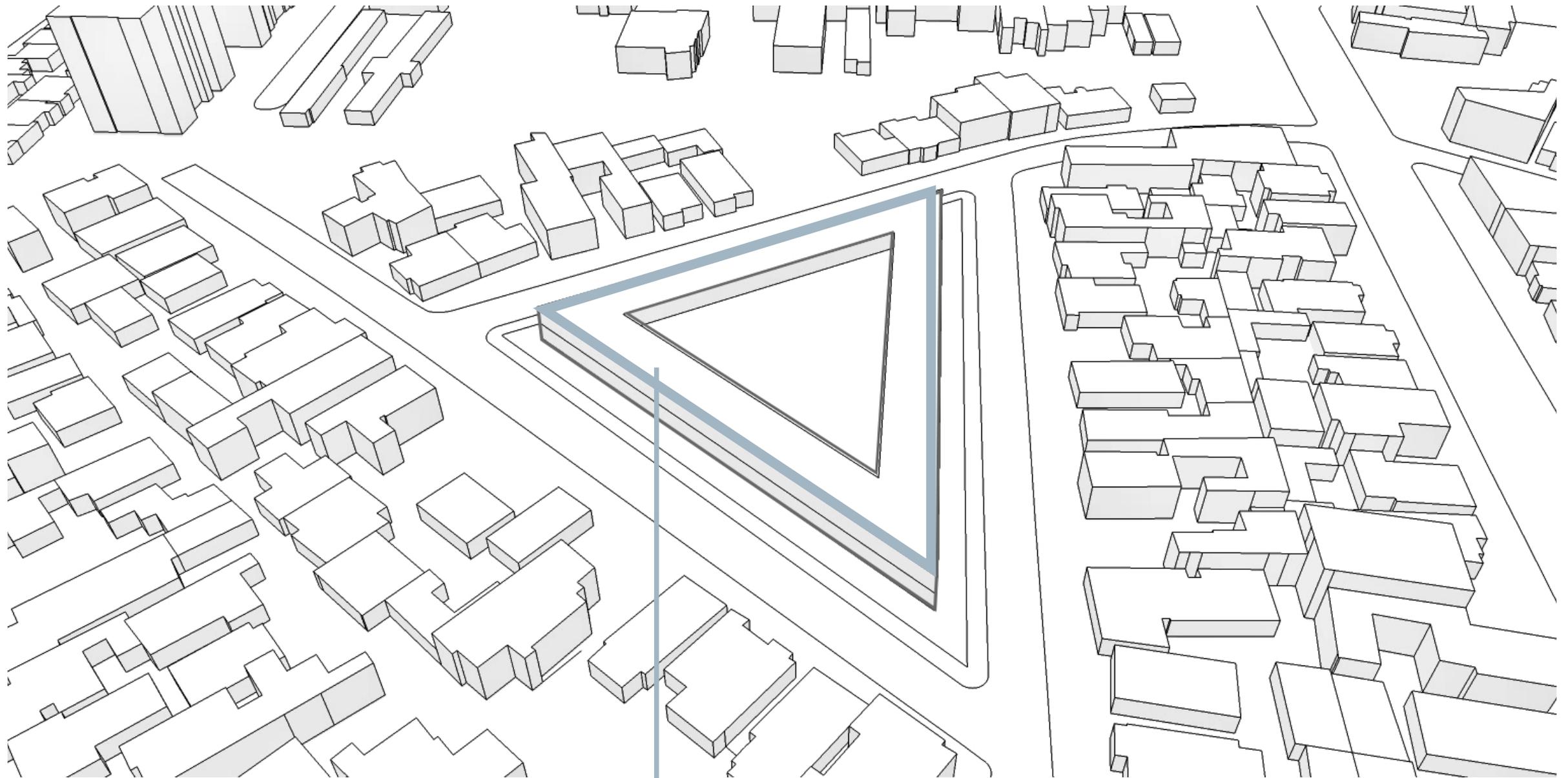
DIAGRAMA PARTIDO DE PROJETO



Altura máxima PDDUA
reco de 4m

PROJETO

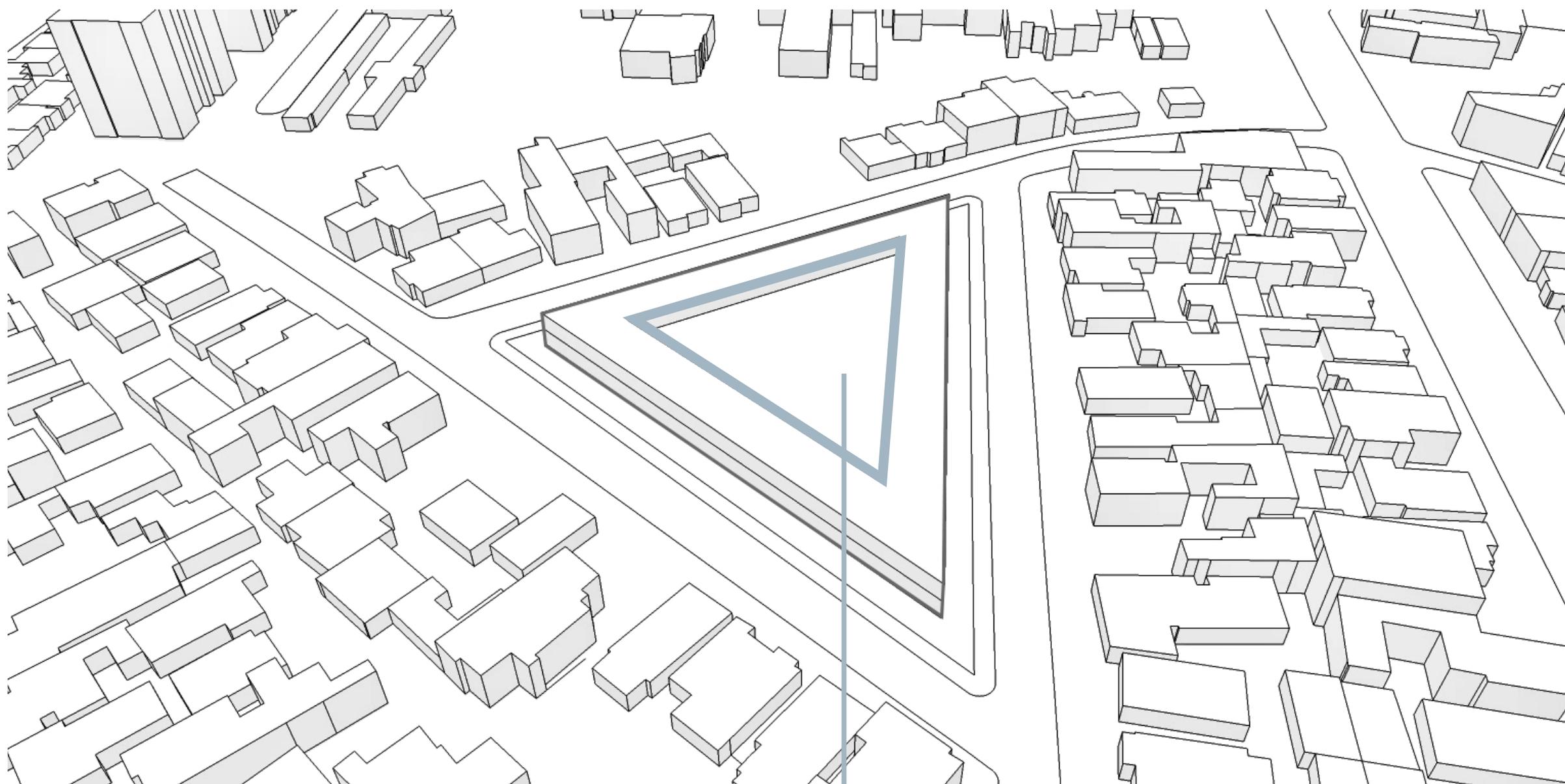
DIAGRAMA PARTIDO DE PROJETO



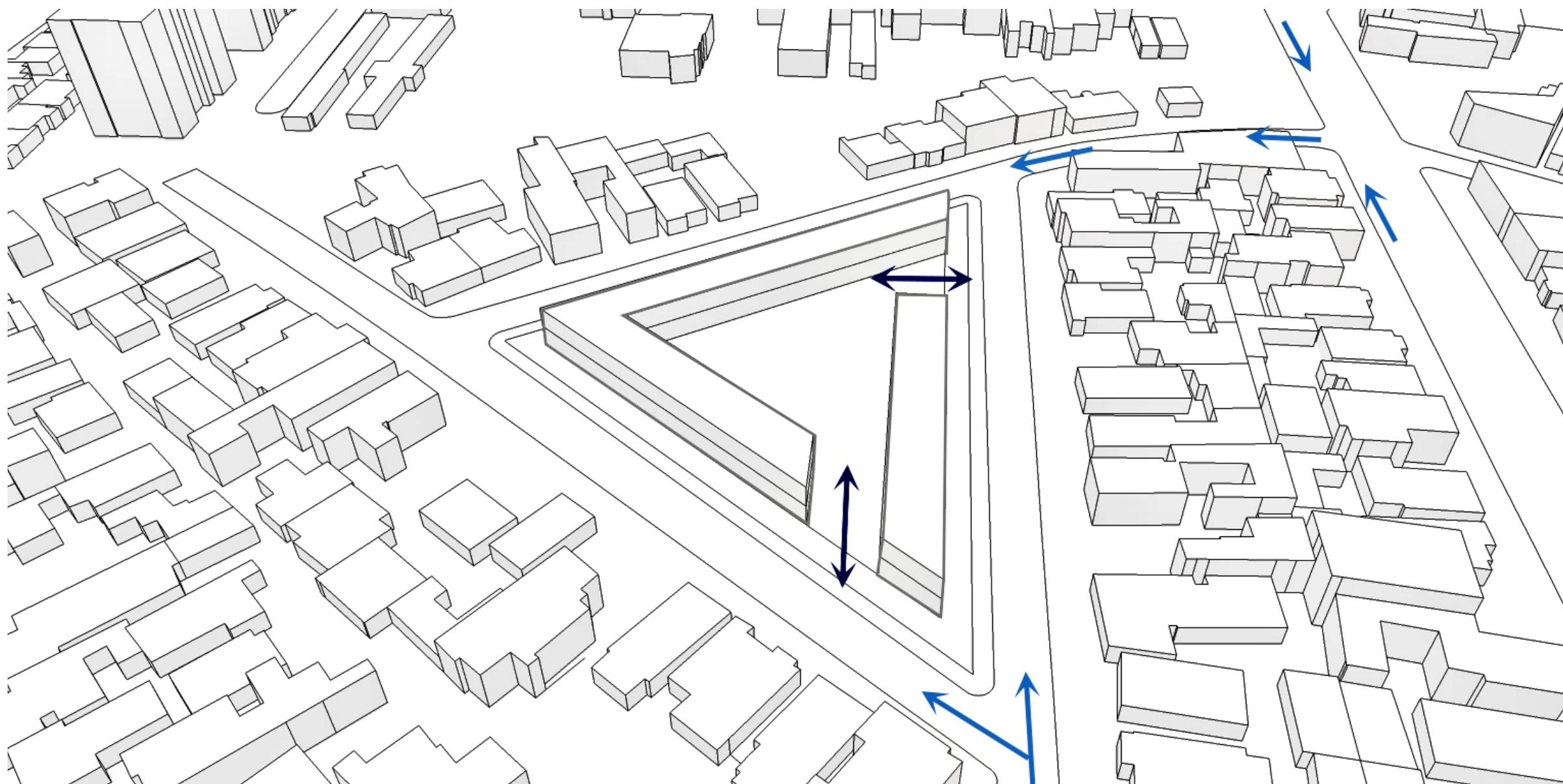
Maior aproveitamento do terreno

PROJETO

DIAGRAMA PARTIDO DE PROJETO



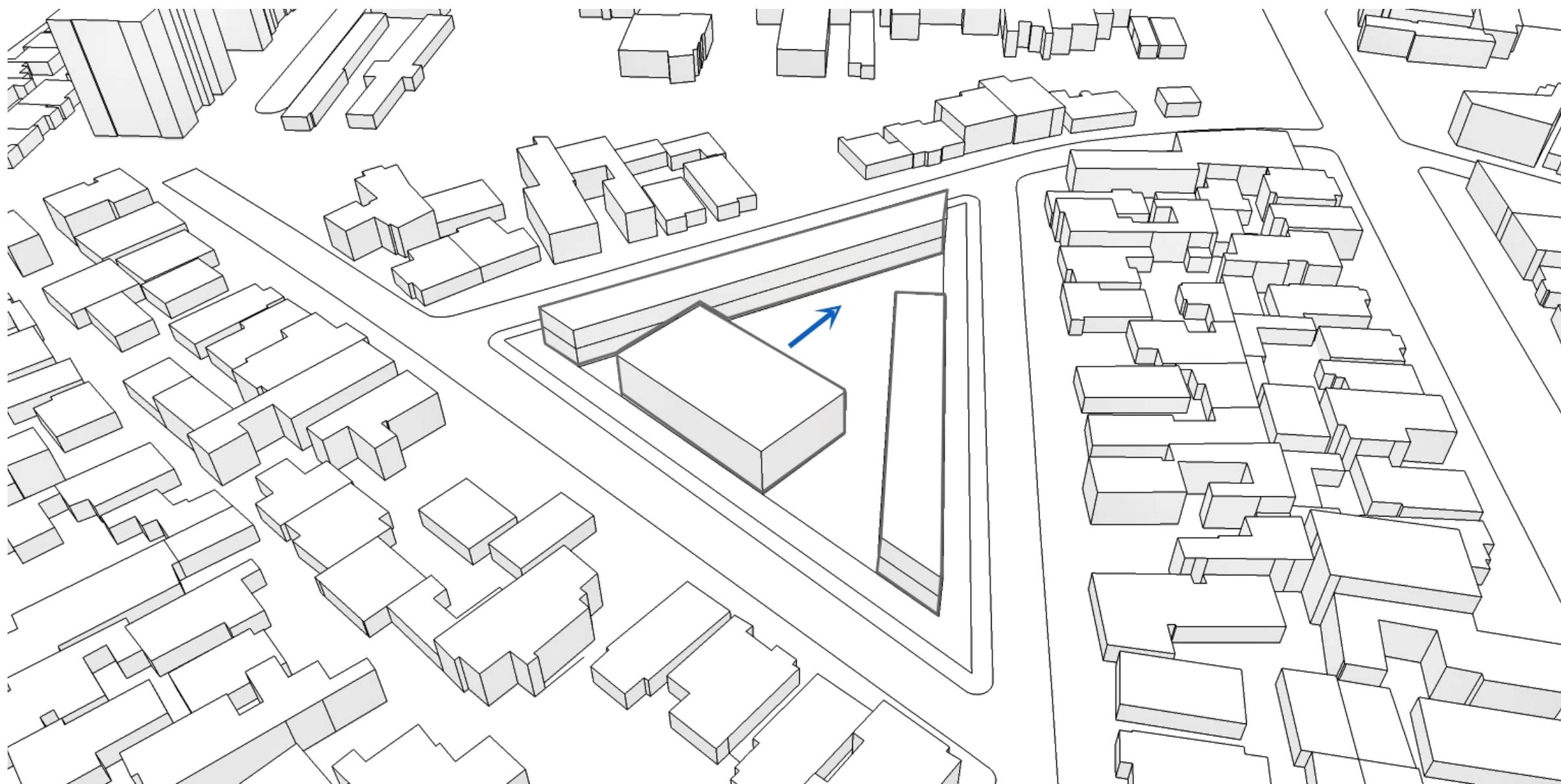
Pátio interno



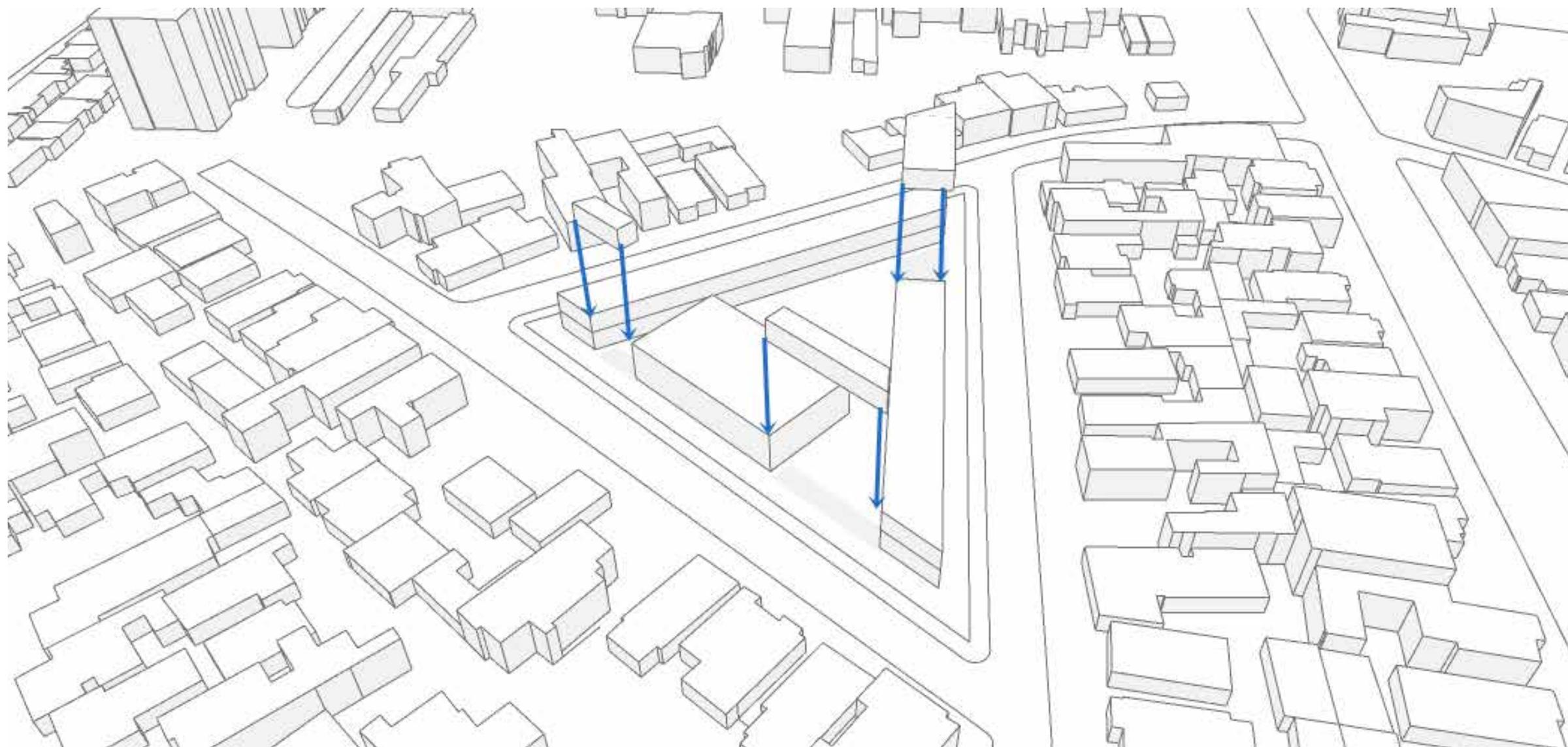
Acesso conforme os maiores fluxos

PROJETO

DIAGRAMA PARTIDO DE PROJETO



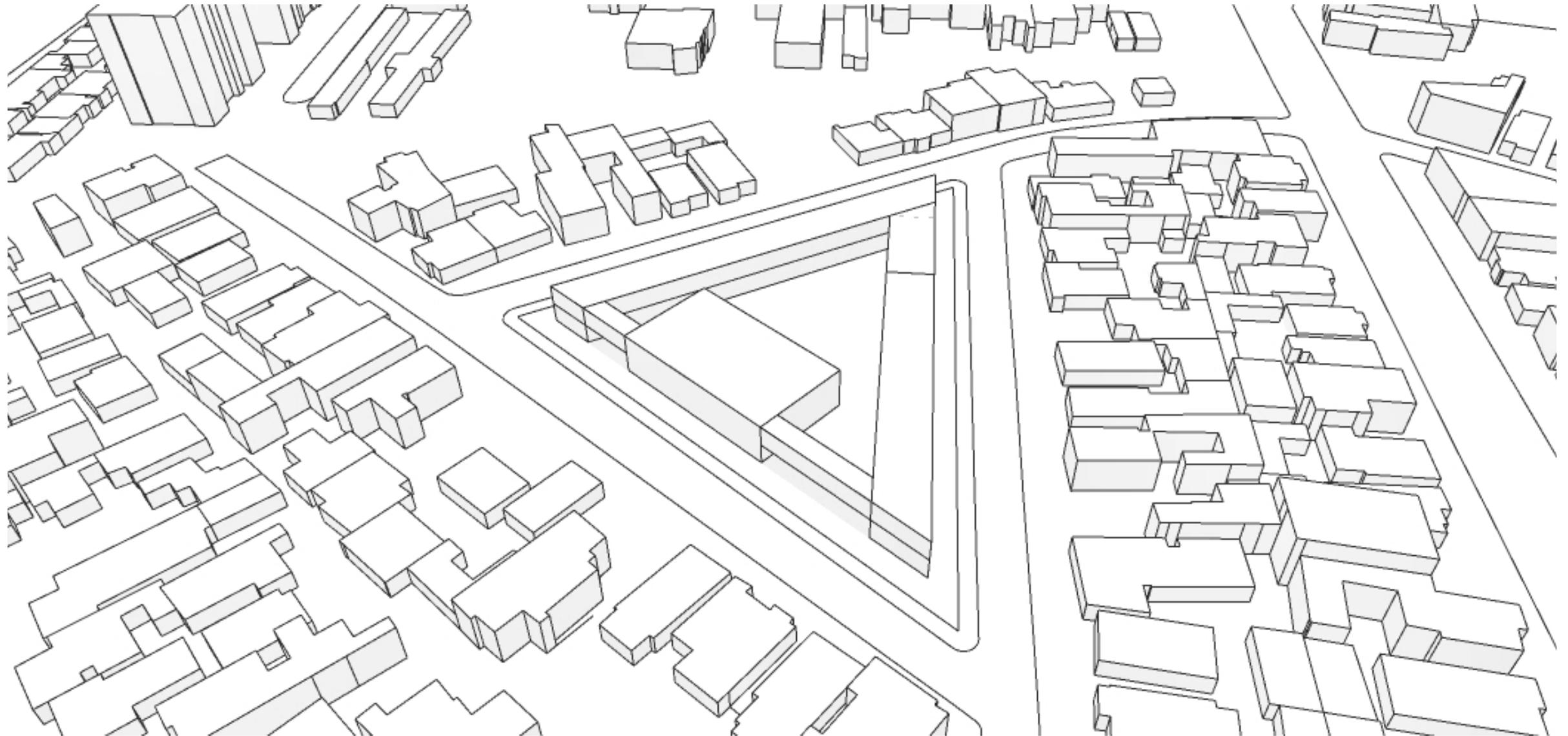
Adequação ao programa (quadra)



ligação entre volumes

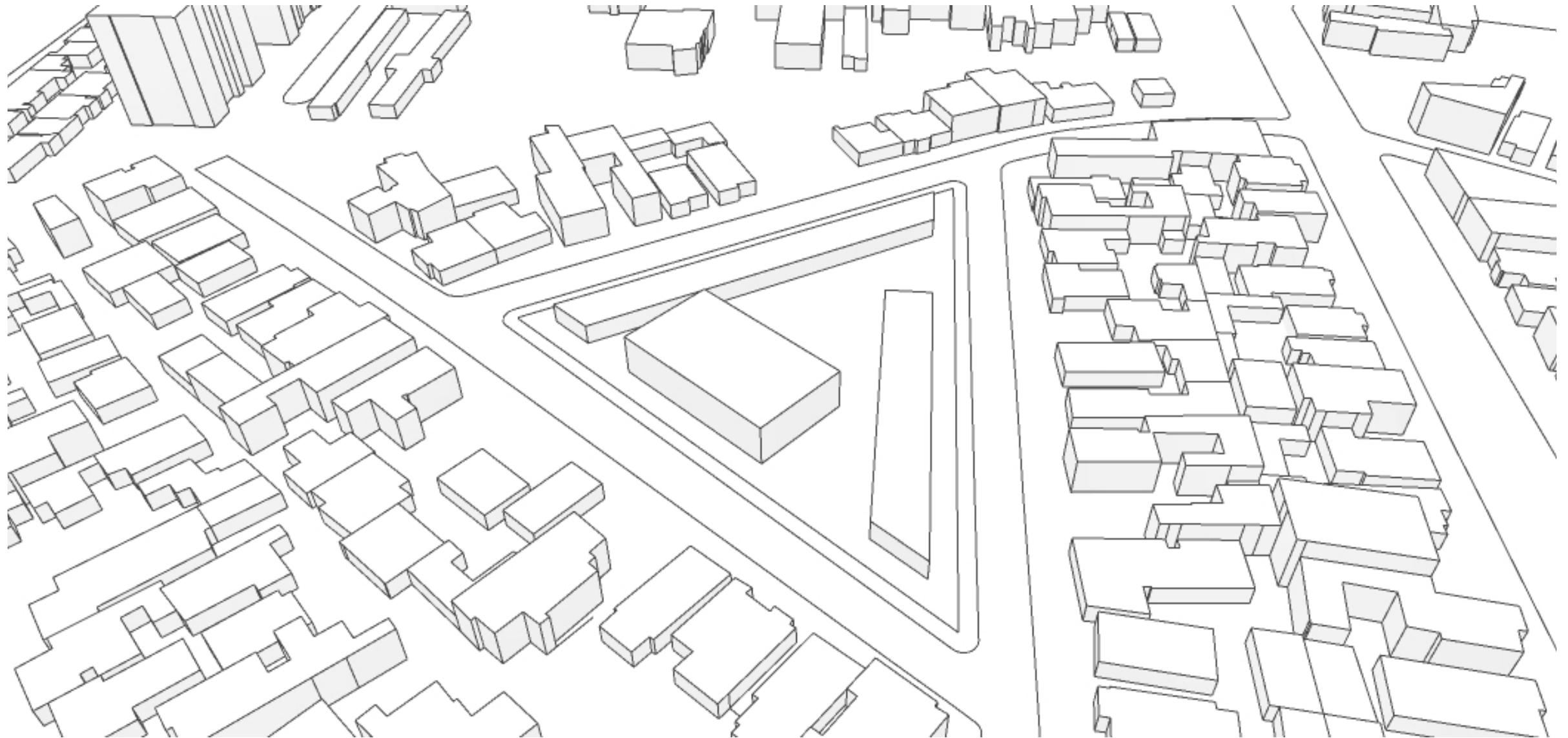
PROJETO

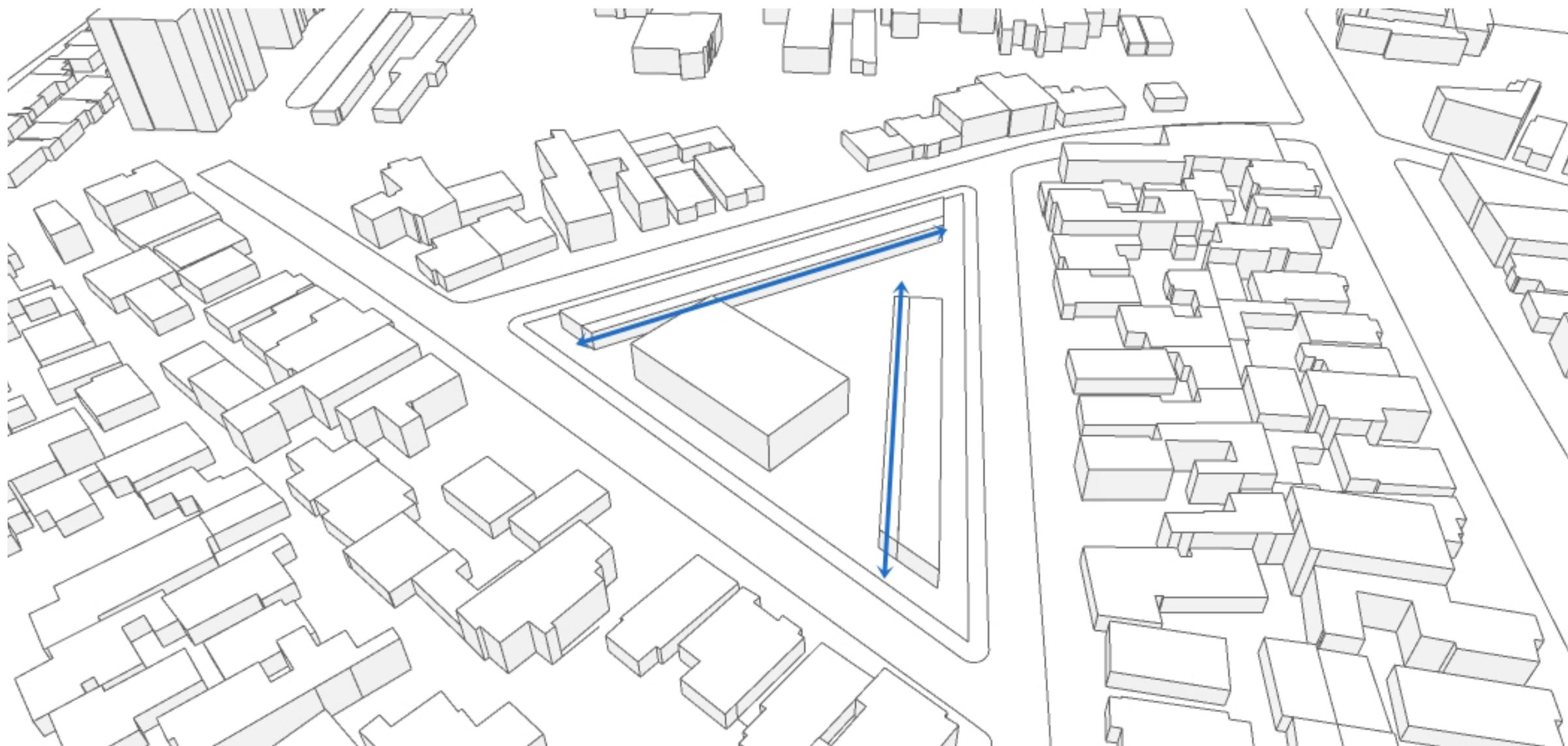
DIAGRAMA PARTIDO DE PROJETO



PROJETO

DIAGRAMA USOS



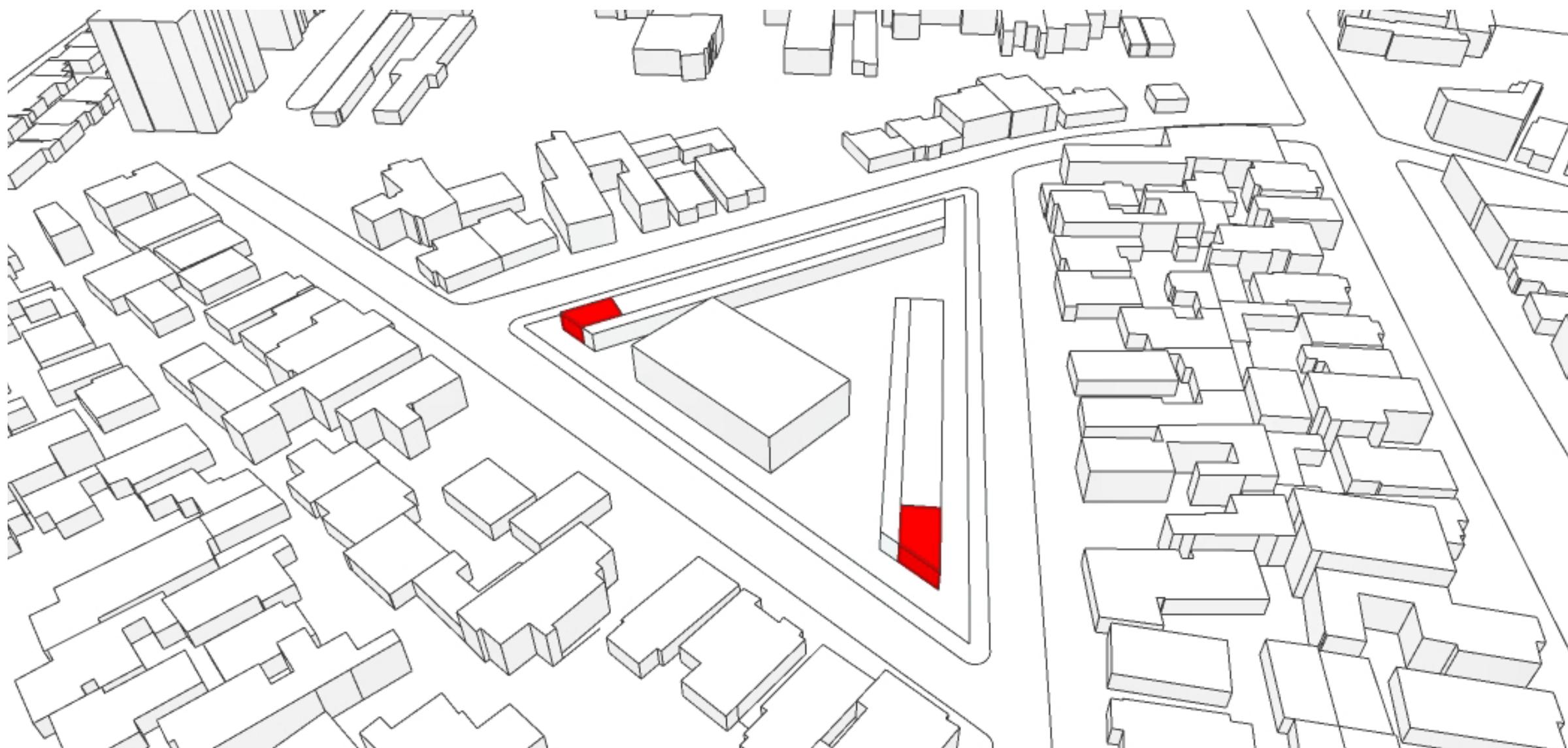


Circulação voltada para o pátio

PROJETO

DIAGRAMA USOS

TÉRREO



CIRCULAÇÃO VERTICAL

PROJETO

DIAGRAMA USOS

TÉRREO



INFRAESTRUTURA E SERVIÇOS



ADMINISTRAÇÃO

PROJETO

DIAGRAMA USOS

TÉRREO

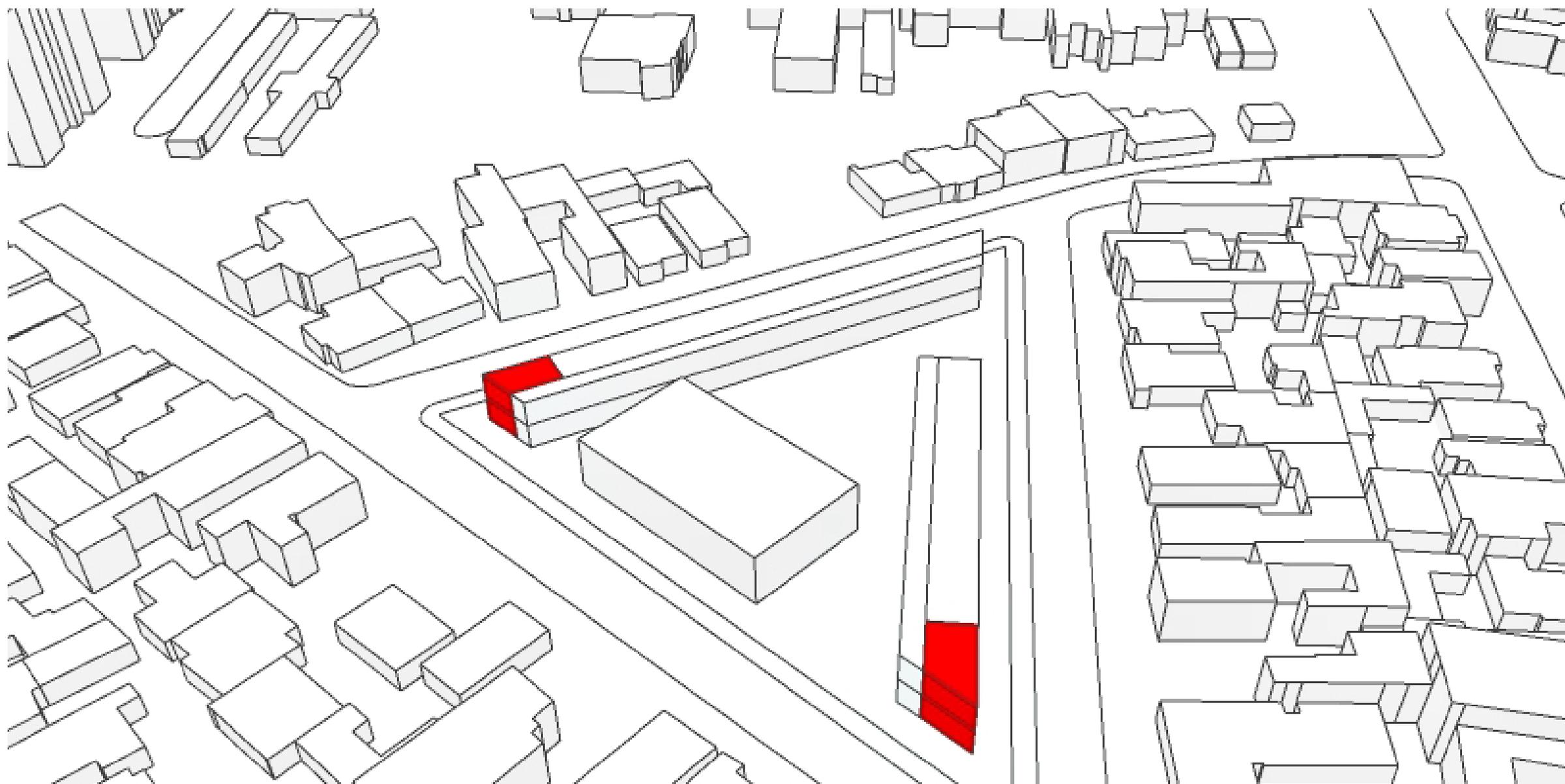


 SALAS DE AULA

PROJETO

DIAGRAMA USOS

2º PAVIMENTO

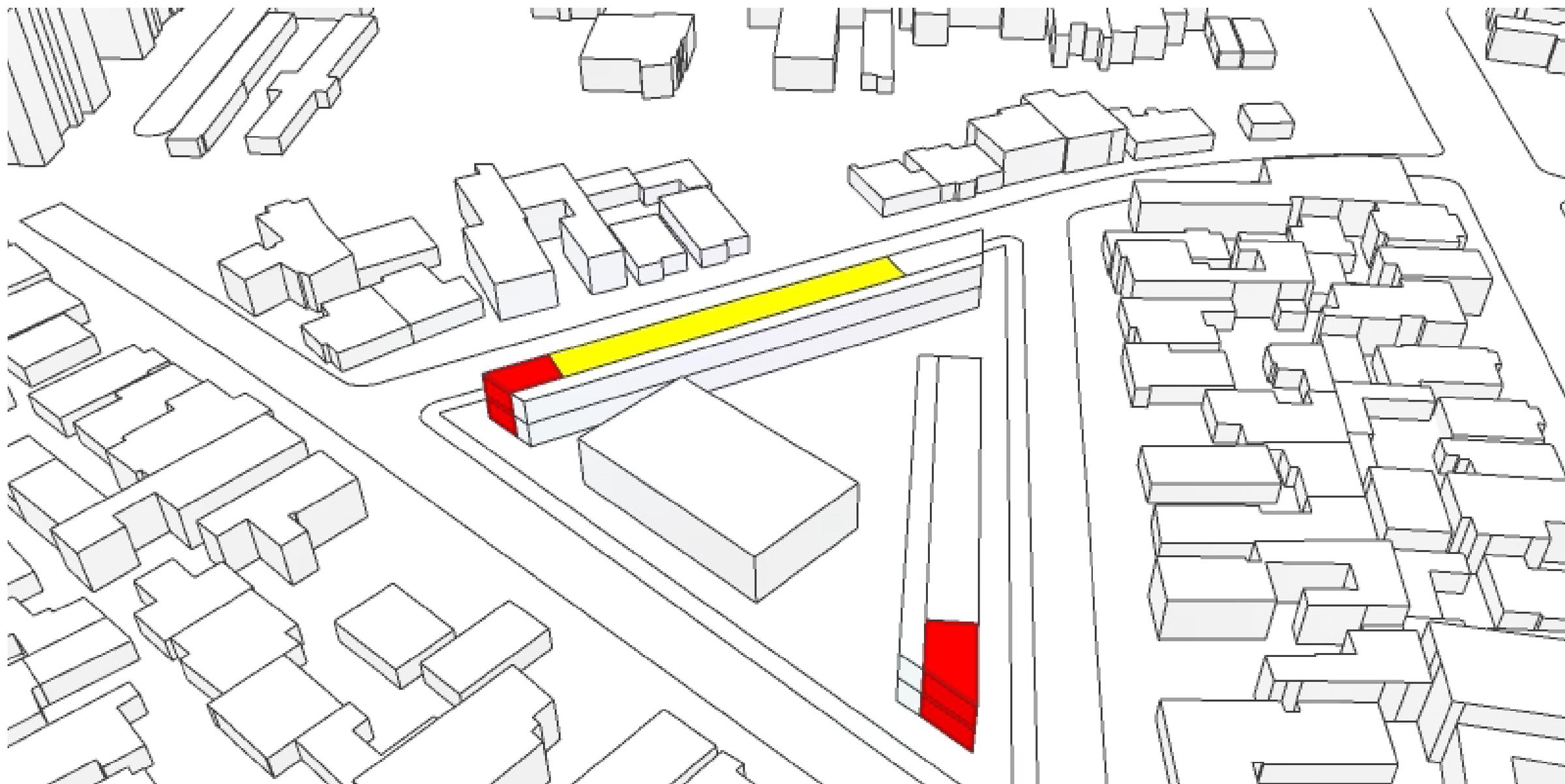


 CIRCULAÇÃO VERTICAL

PROJETO

DIAGRAMA USOS

2º PAVIMENTO

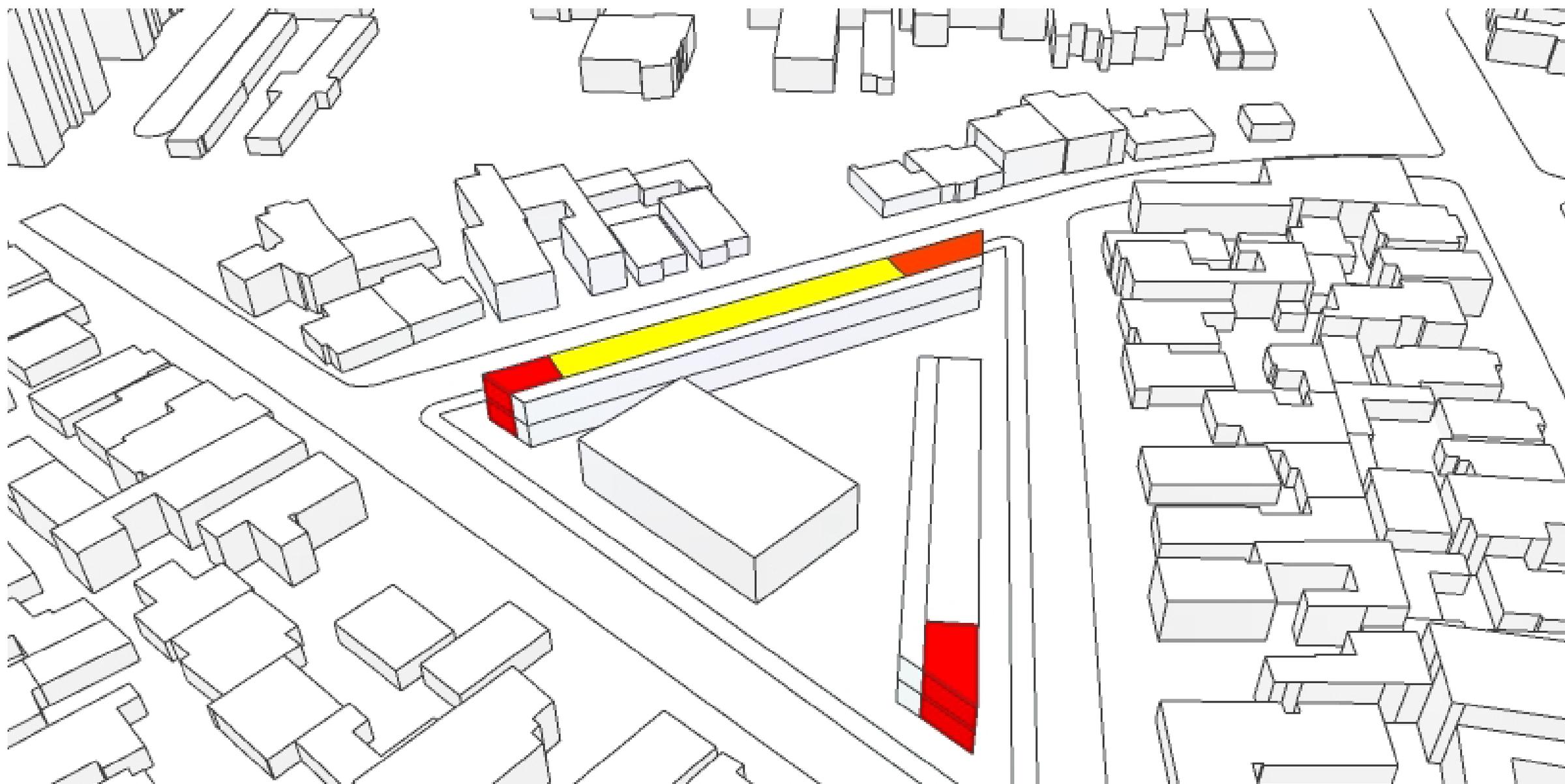


 APOIO DE ENSINO

PROJETO

DIAGRAMA USOS

2º PAVIMENTO



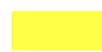
 BIBLIOTECA

PROJETO

DIAGRAMA USOS

2º PAVIMENTO

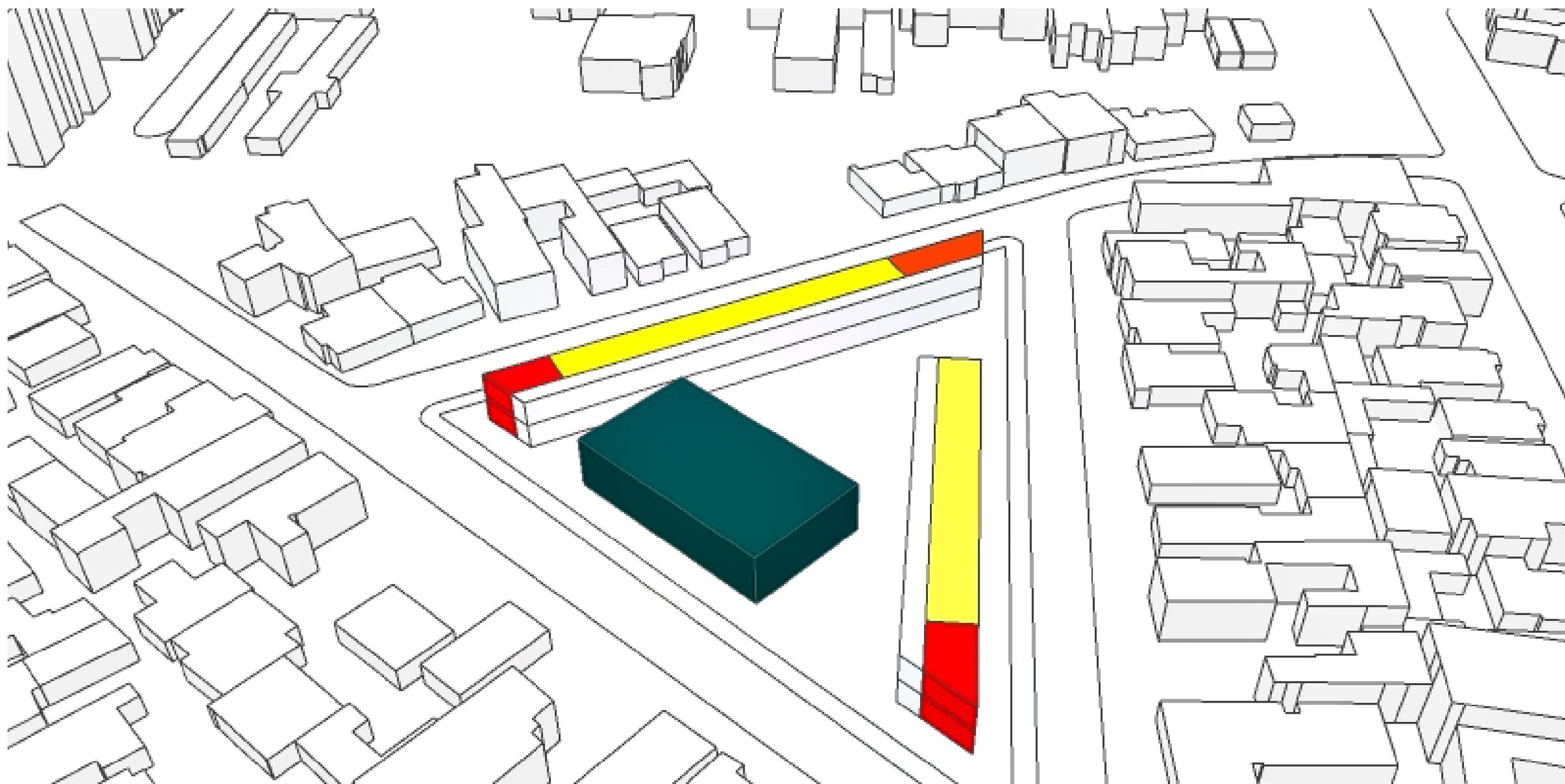


 SALAS DE AULA

PROJETO

DIAGRAMA USOS

2º PAVIMENTO



 QUADRA





VISTA ENTRADA PRINCIPAL



PLANTA BAIXA 2º PAVIMENTO



PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO SALAS DE AULA



CIRCULAÇÃO VERTICAL (ESCADA + ELEVADOR)



PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO SALAS DE AULA



SANITÁRIO ALUNOS



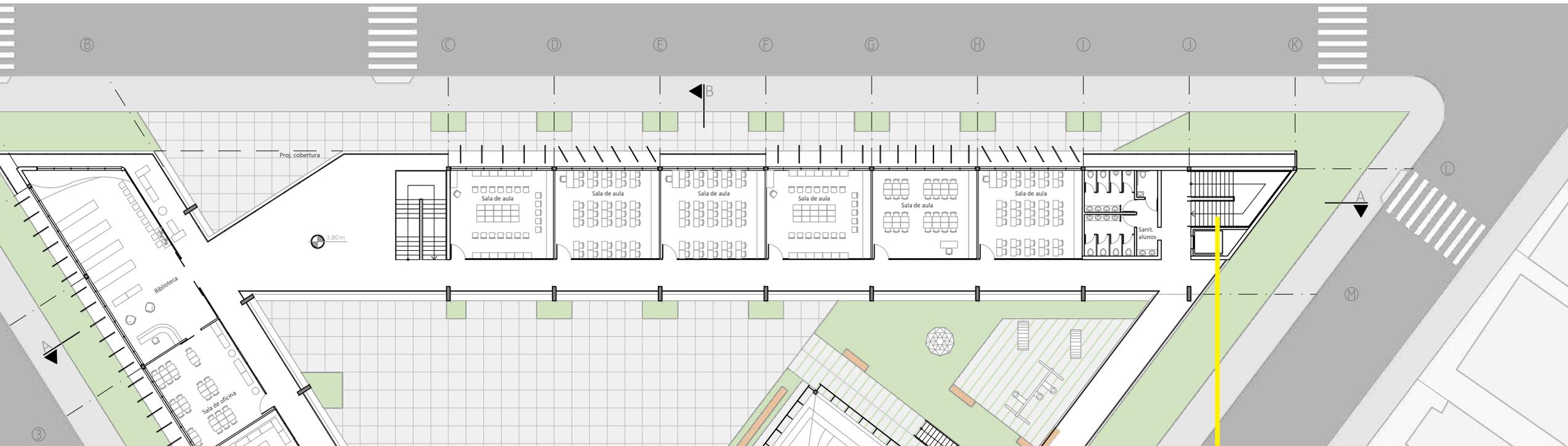
PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO SALAS DE AULA



SALAS DE AULA



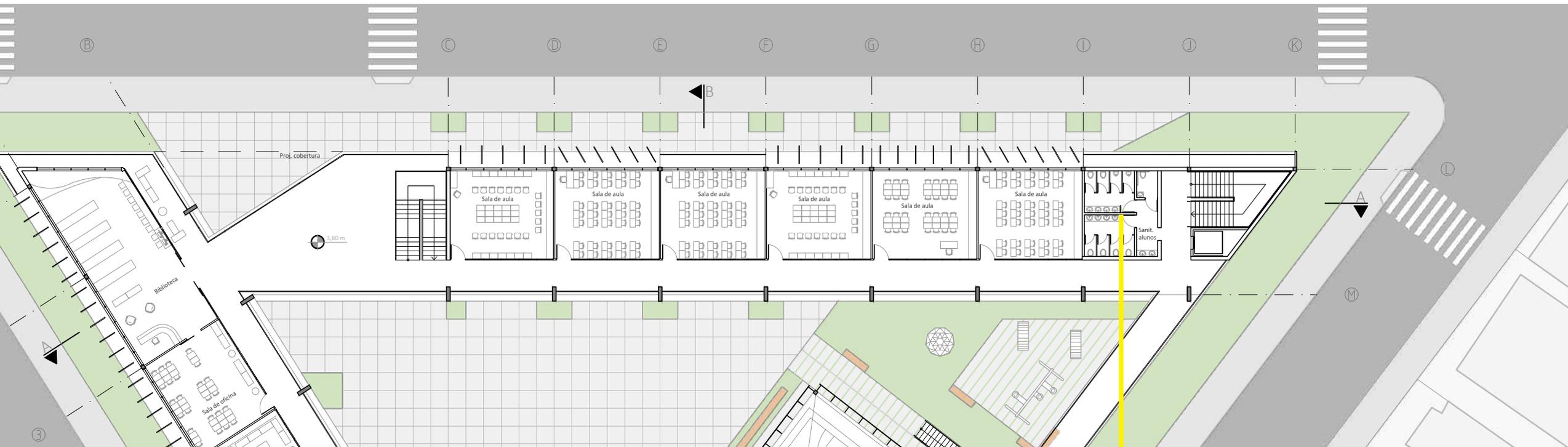
PLANTA BAIXA 2º PAVIMENTO
PRÉDIO SALAS DE AULA



CIRCULAÇÃO VERTICAL (ESCADA + ELEVADOR)



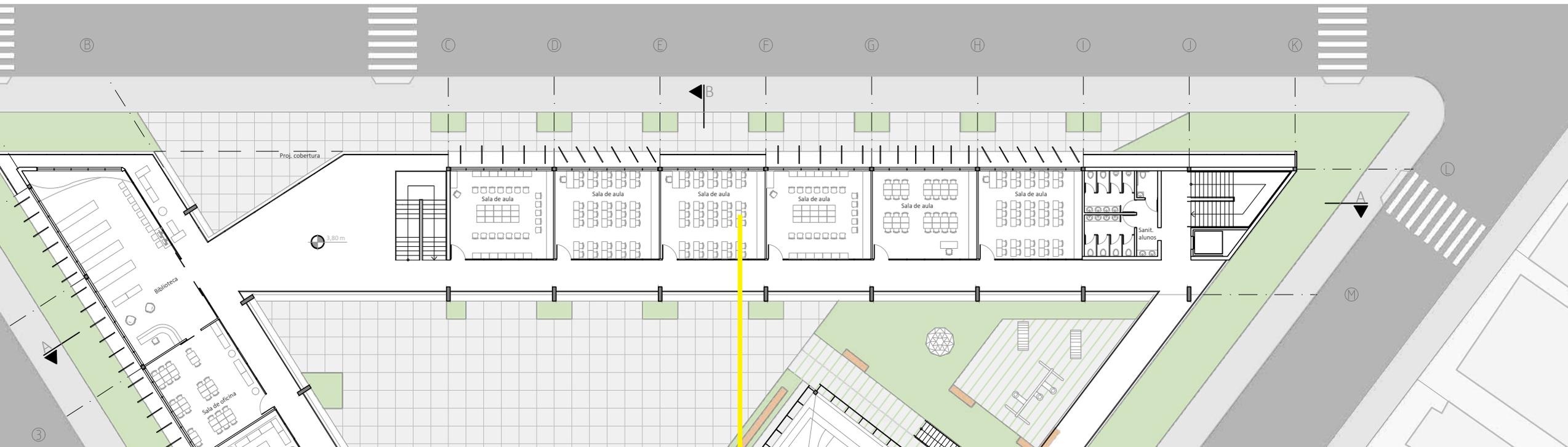
PLANTA BAIXA 2º PAVIMENTO
PRÉDIO SALAS DE AULA



SANITÁRIO ALUNOS



PLANTA BAIXA 2º PAVIMENTO
PRÉDIO SALAS DE AULA



SALAS DE AULA



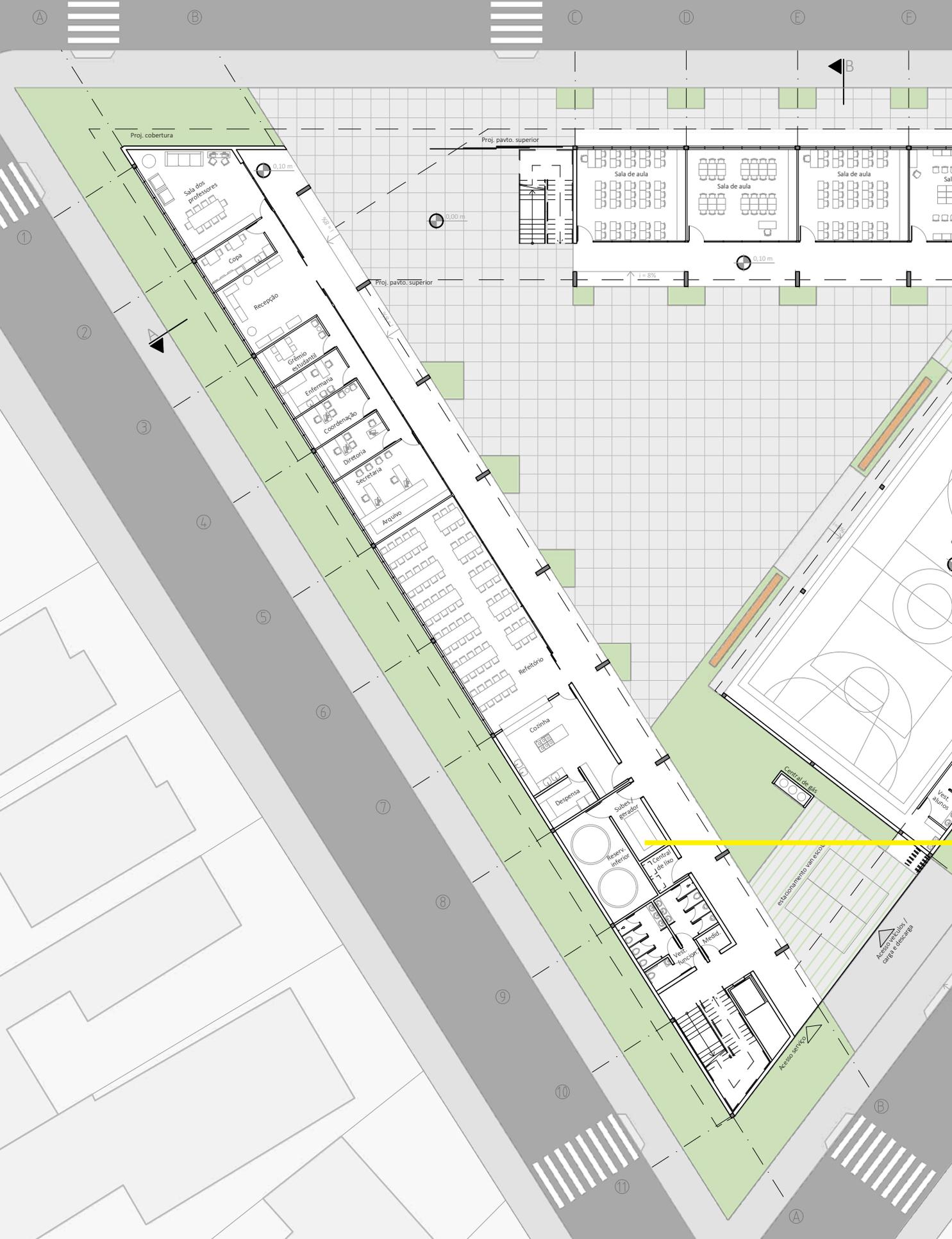
PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO APOIO



CIRCULAÇÃO VERTICAL



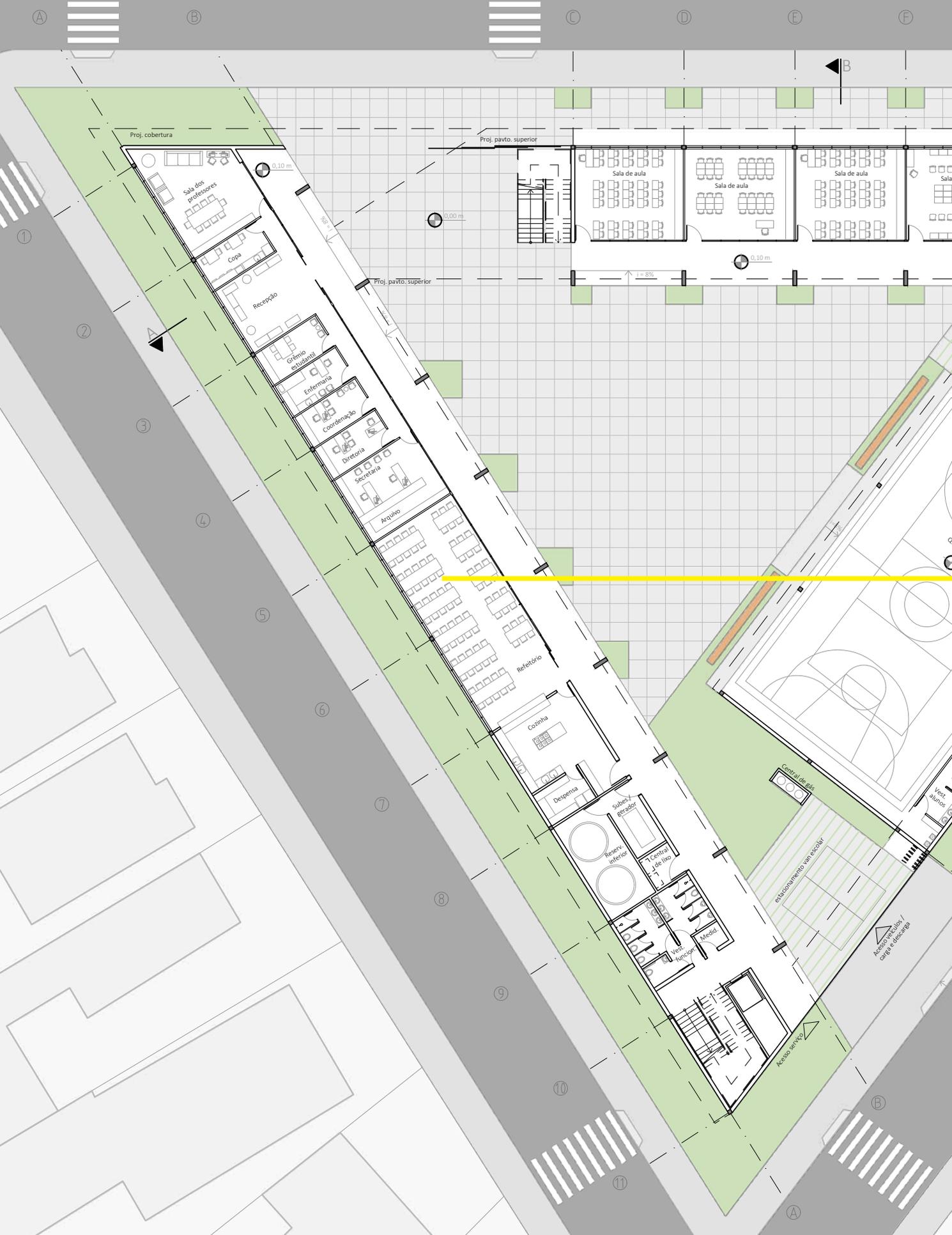
PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO APOIO



INFRAESTRUTURA



PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO APOIO



REFEITÓRIO



PLANTA BAIXA PAVIMENTO TÉRREO PRÉDIO APOIO



ADMINISTRAÇÃO:
SALA DOS PROFESSORES / COPA FUNCIONÁRIOS
/ RECEPÇÃO / GRÊMIO ESTUDANTIL /
ENFERMARIA / DIREÇÃO / COORDENADORIA /
SECRETARIA / ARQUIVO



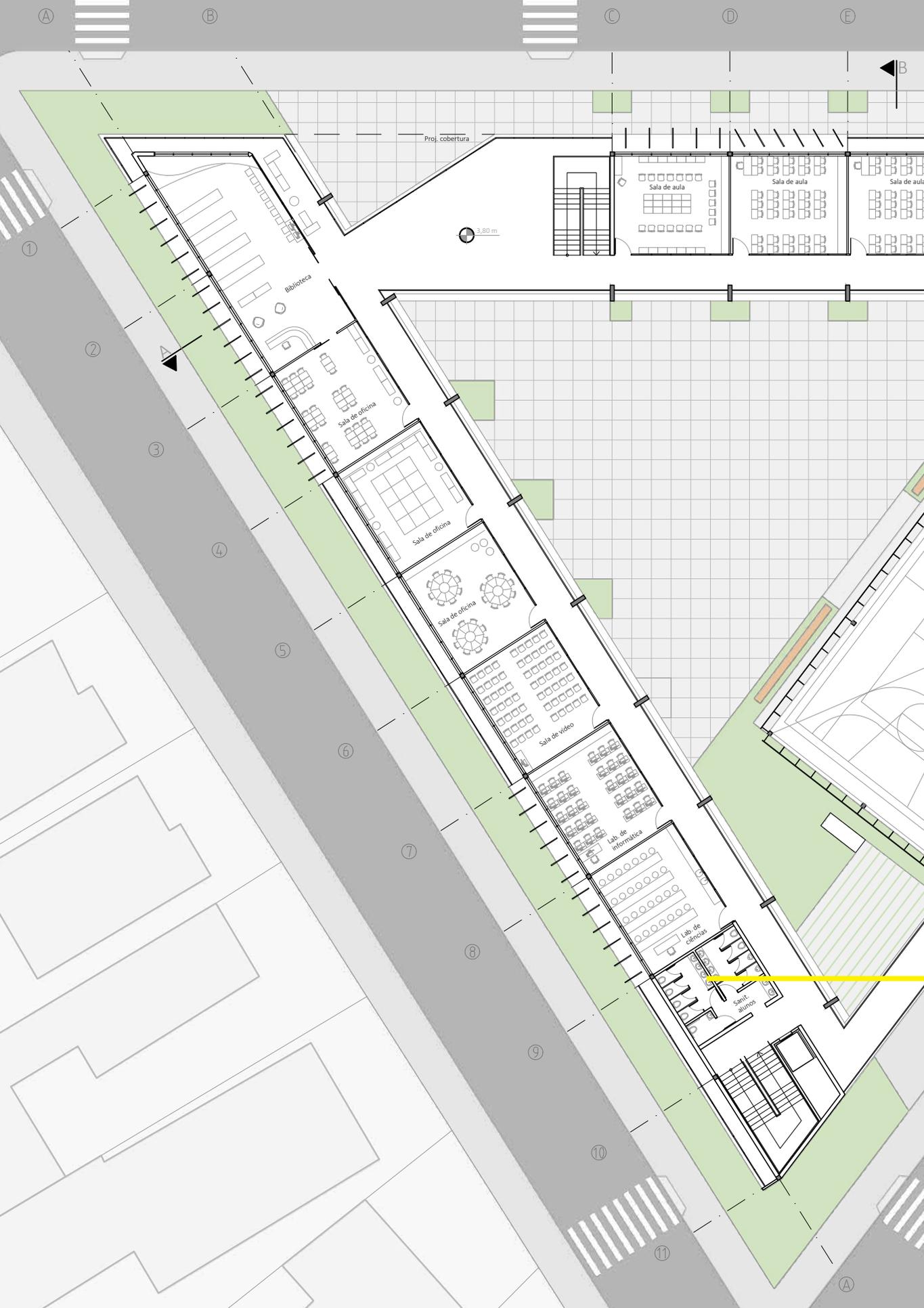
PLANTA BAIXA 2º PAVIMENTO PRÉDIO APOIO



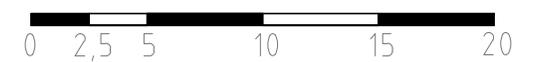
CIRCULAÇÃO VERTICAL



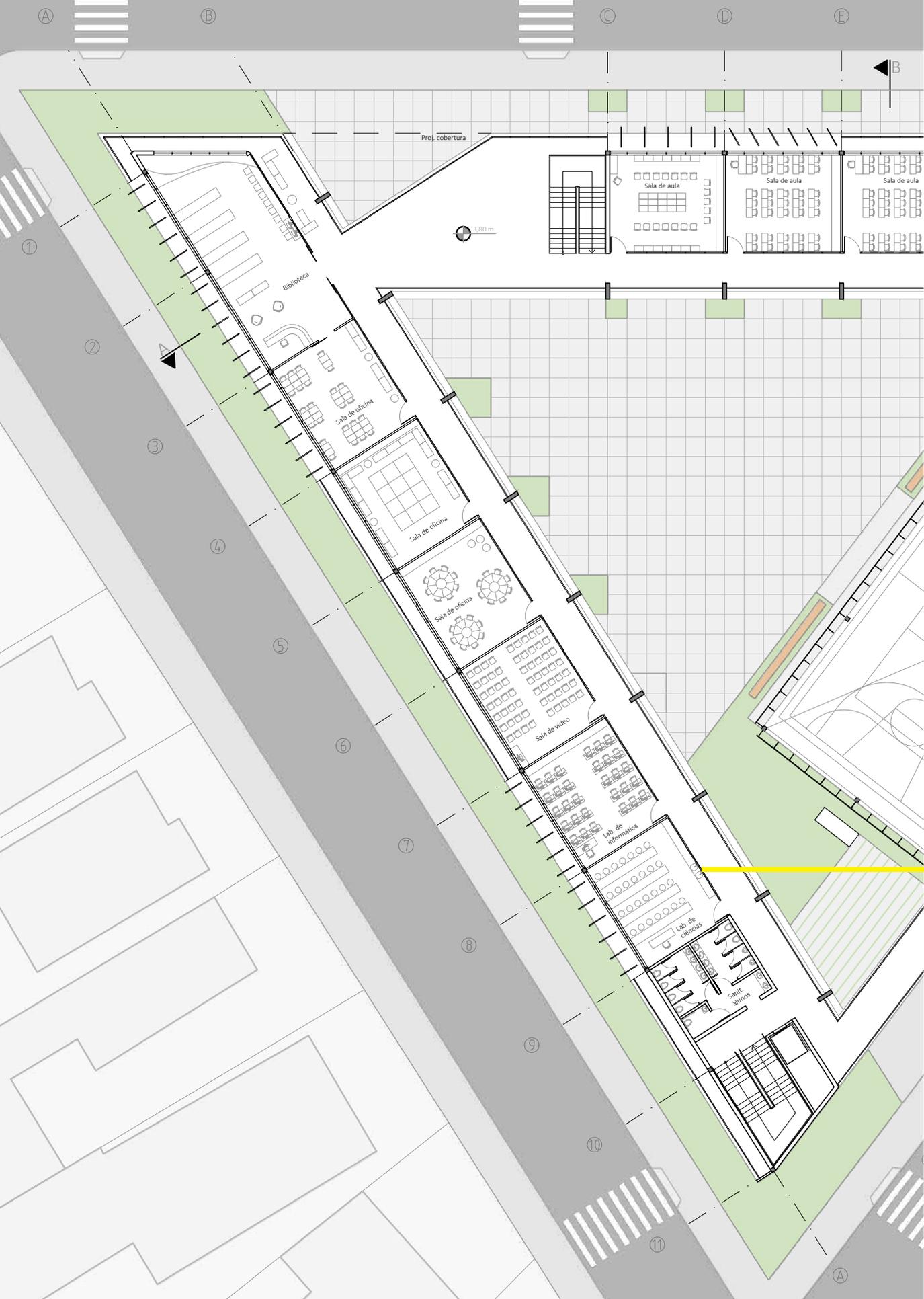
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SANITÁRIO ALUNOS



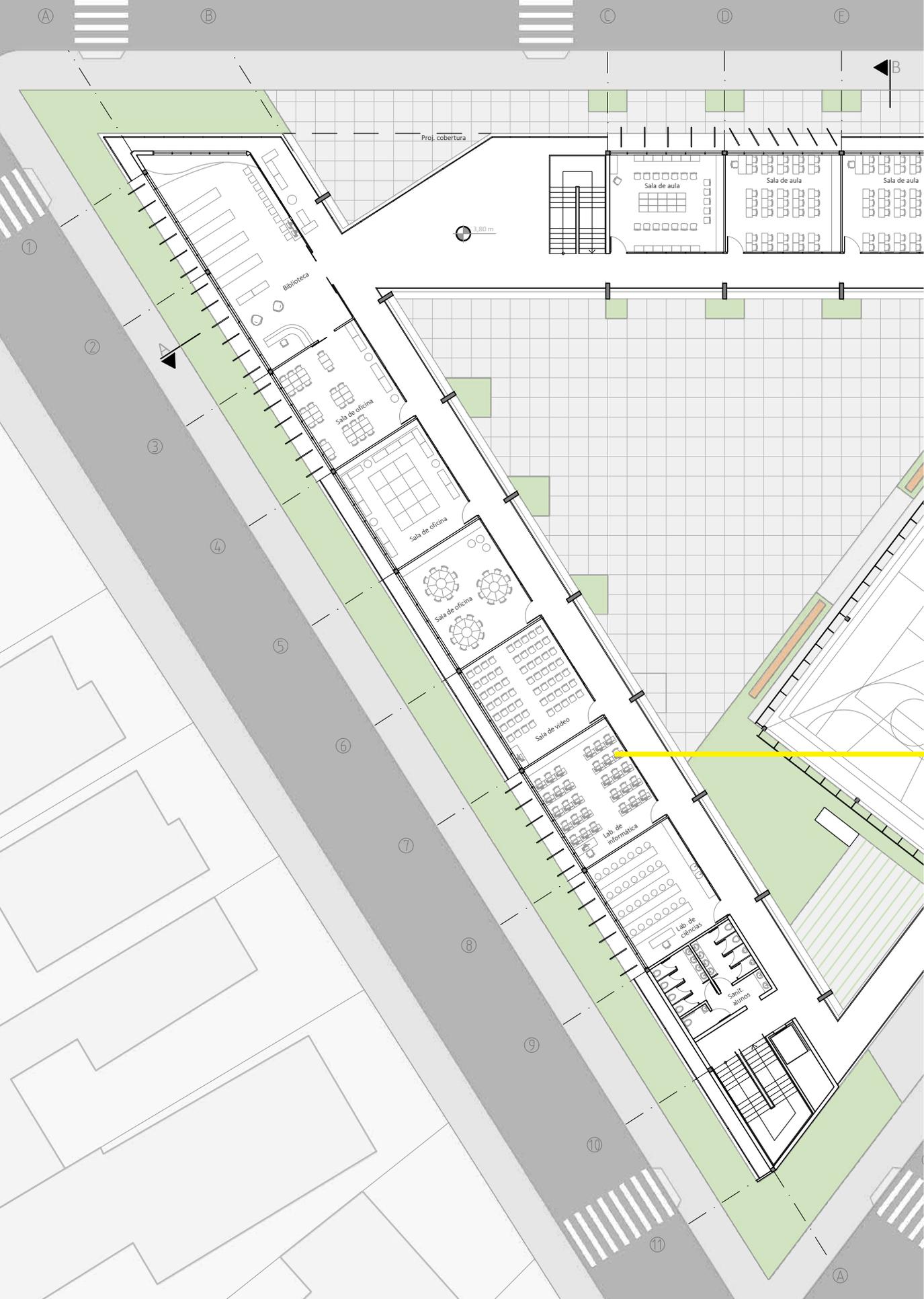
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LABORATÓRIO DE CIÊNCIAS



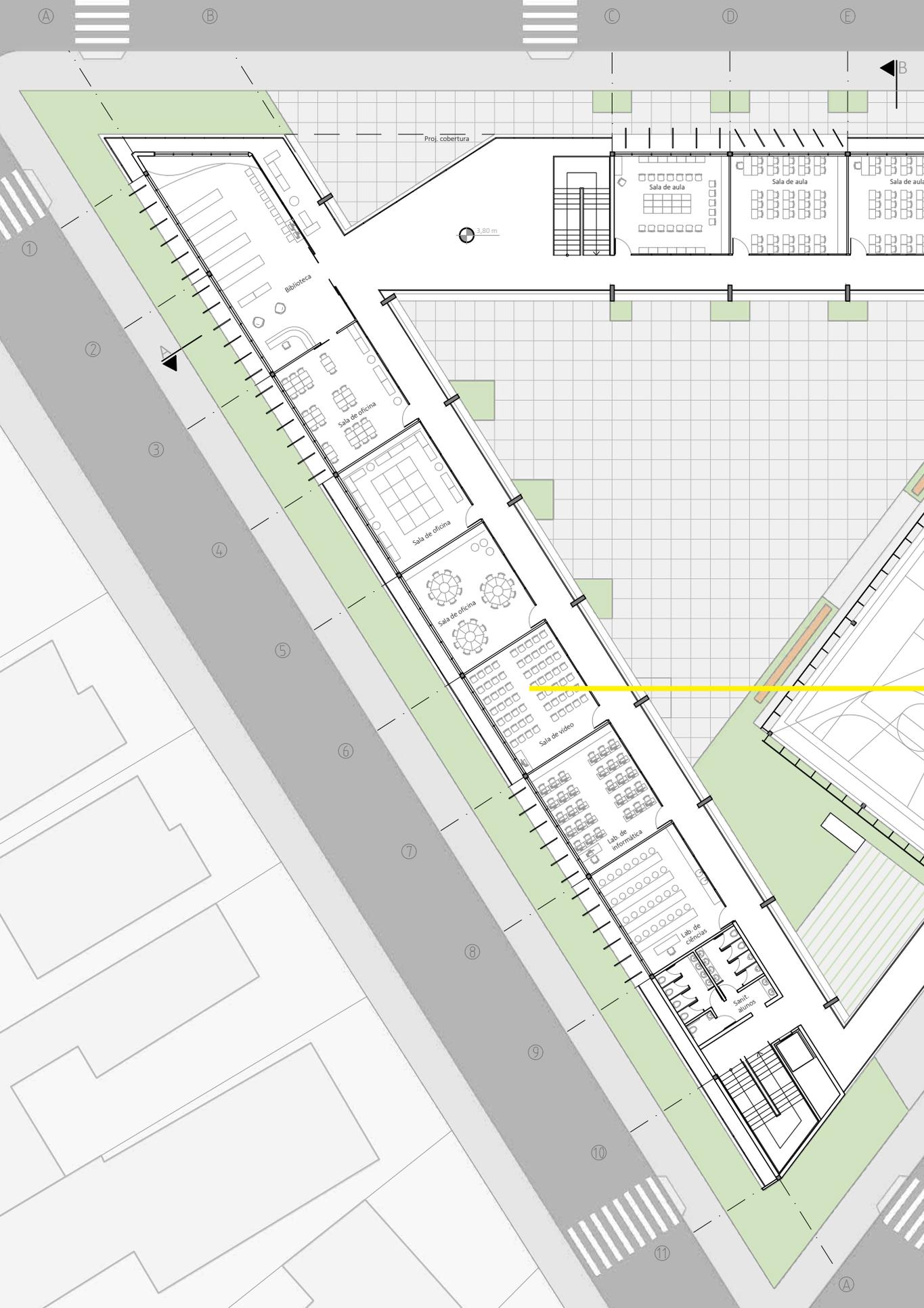
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LABORATÓRIO DE INFORMÁTICA



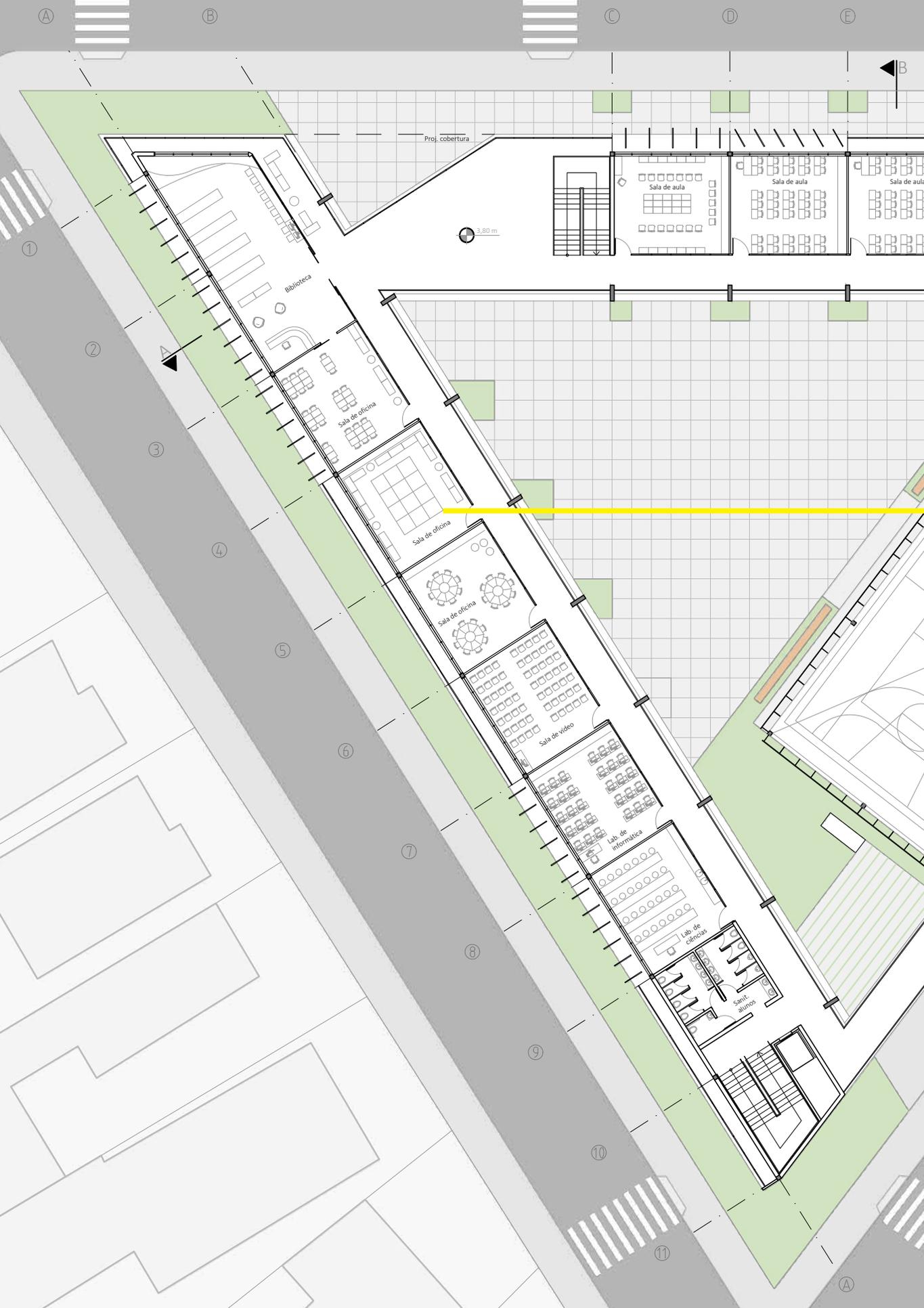
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SALA DE VÍDEO



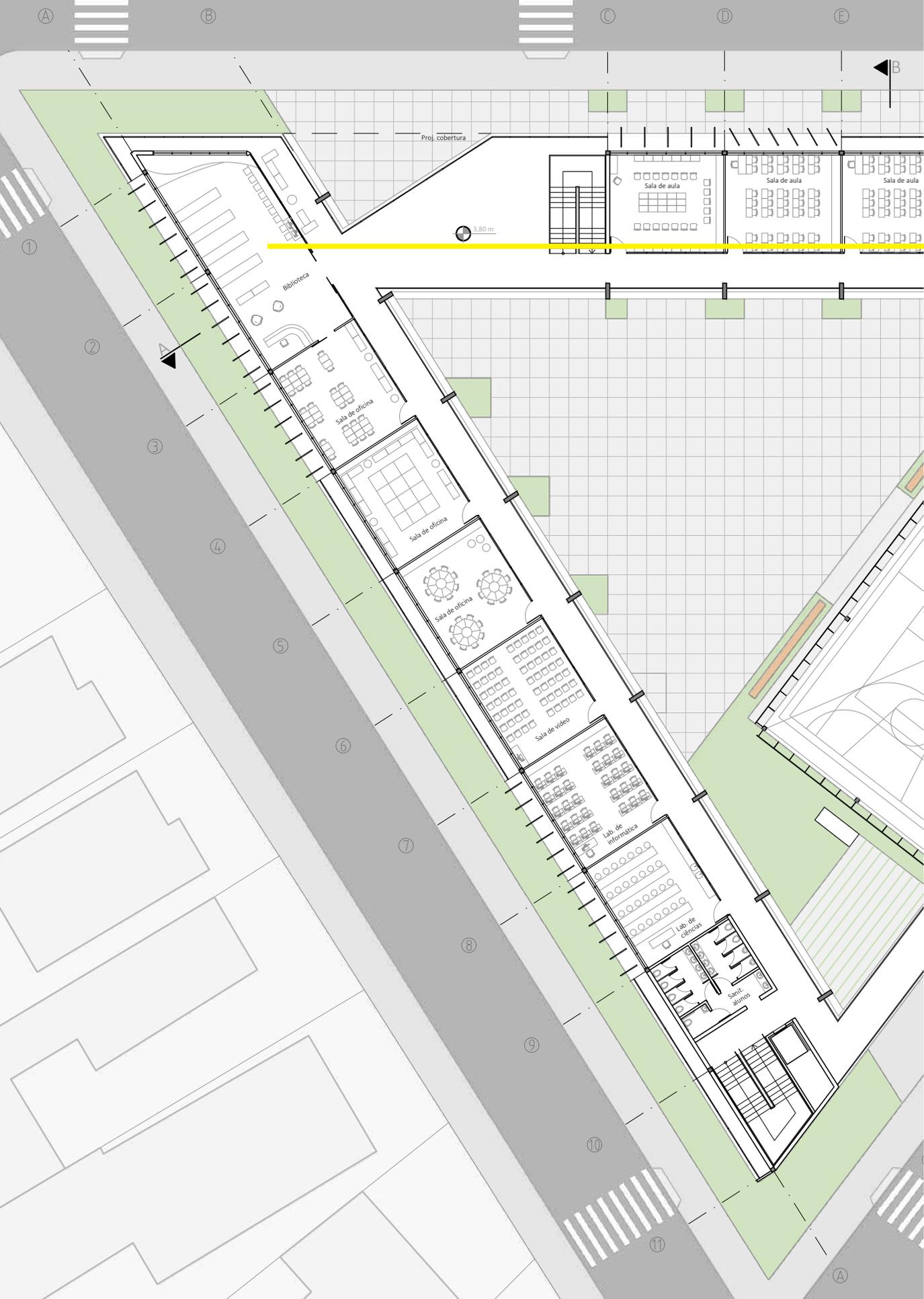
PLANTA BAIXA 2º PAVIMENTO PRÉDIO APOIO



SALAS DE OFICINAS



PLANTA BAIXA 2º PAVIMENTO PRÉDIO APOIO



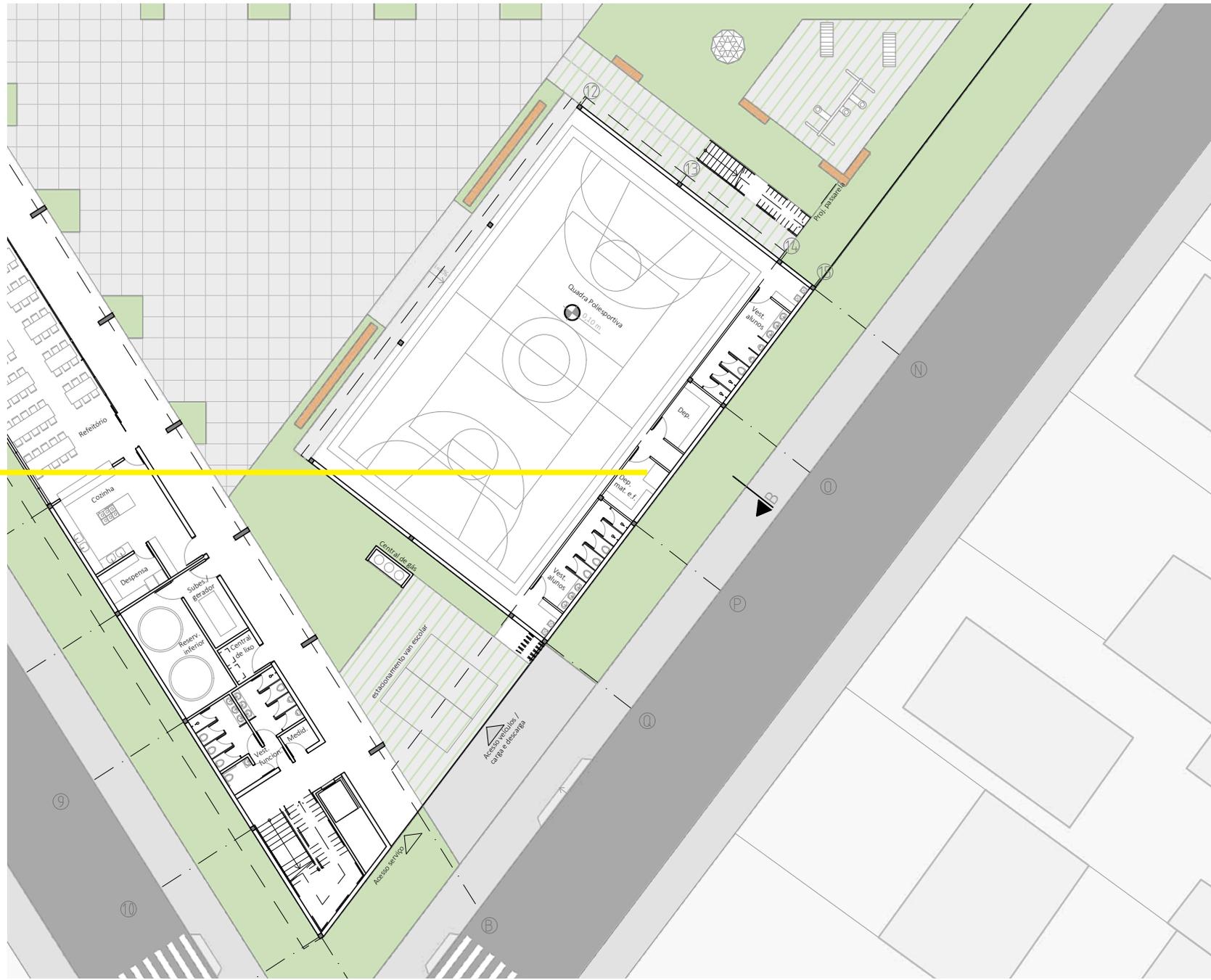
BIBLIOTECA



PLANTA BAIXA PAVIMENTO TÉRREO QUADRA



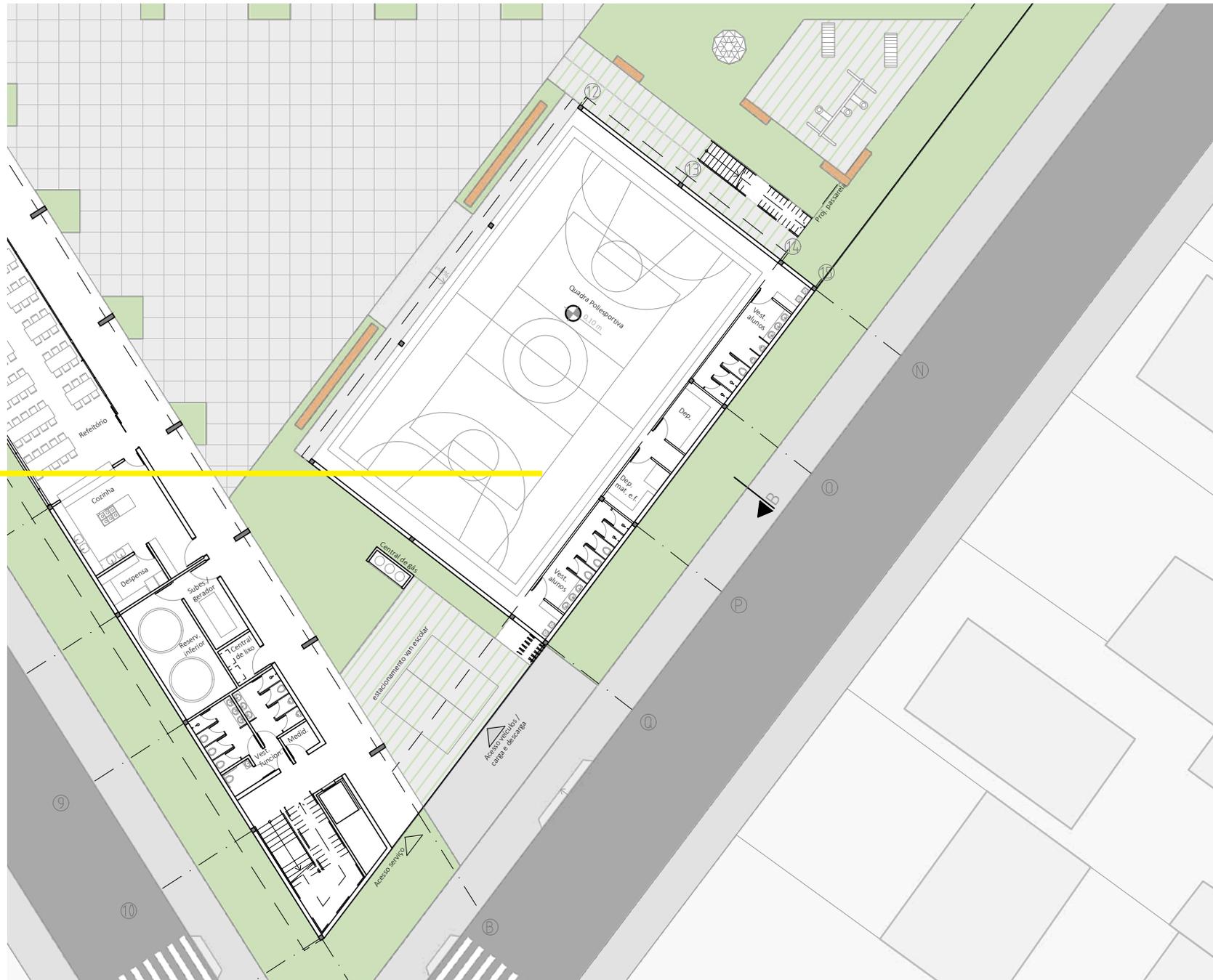
VESTIÁRIOS E DEPÓSITOS



PLANTA BAIXA PAVIMENTO TÉRREO QUADRA

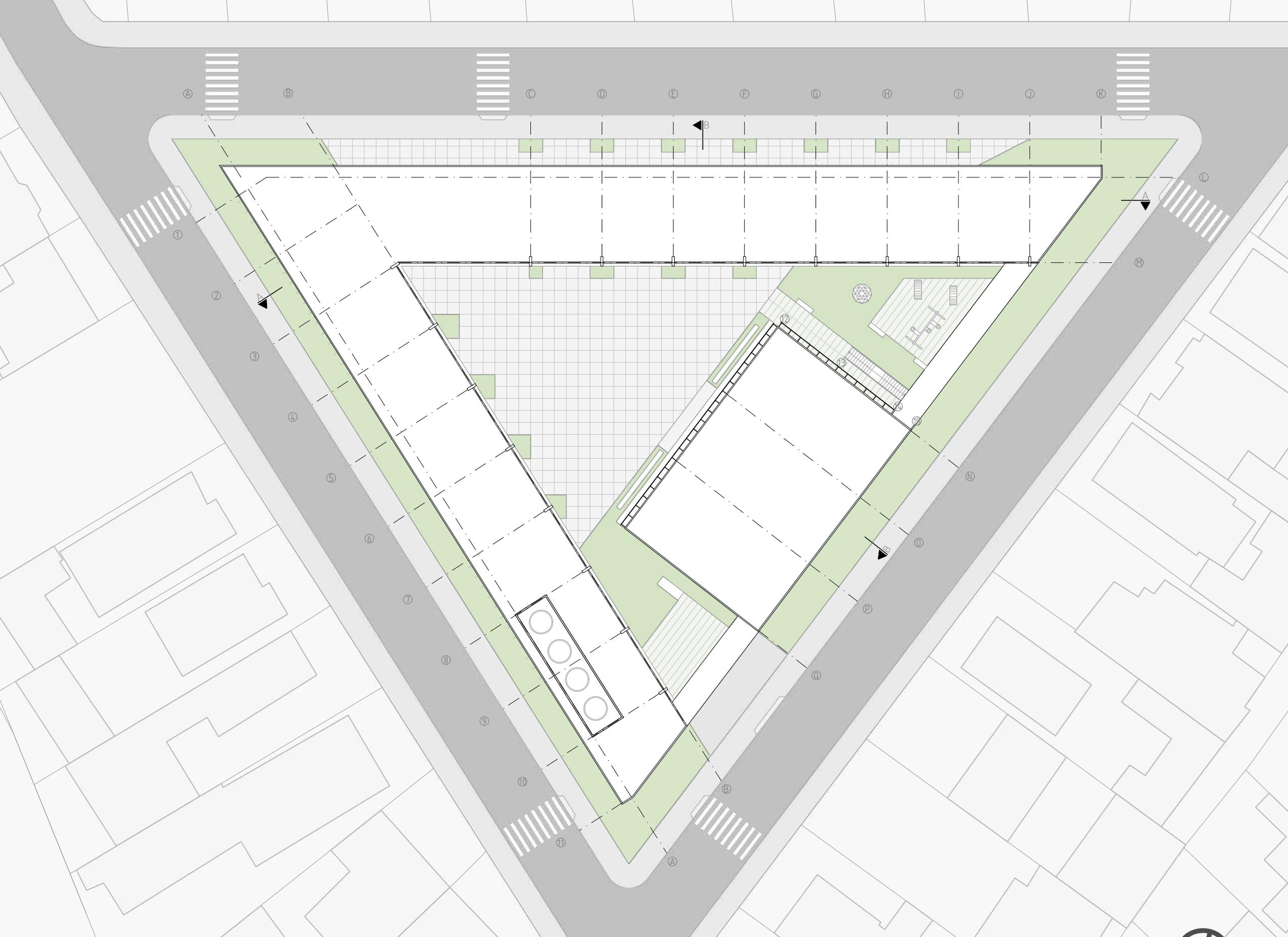


QUADRA COBERTA





QUADRA



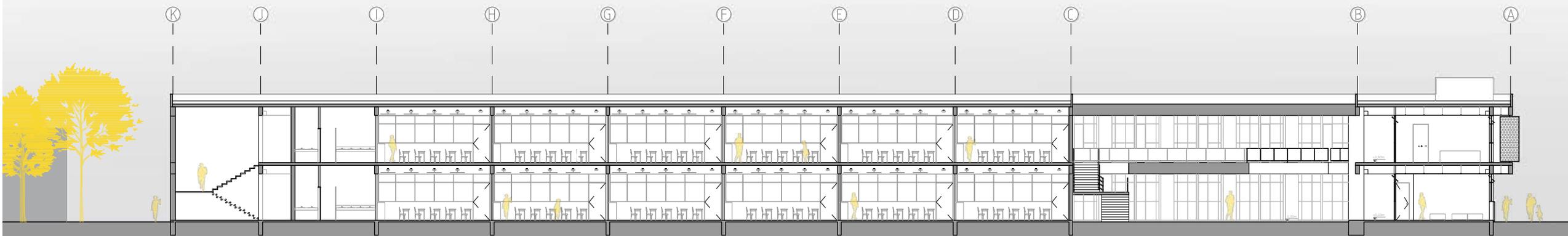
PLANTA DE COBERTURA





PLAYGROUND

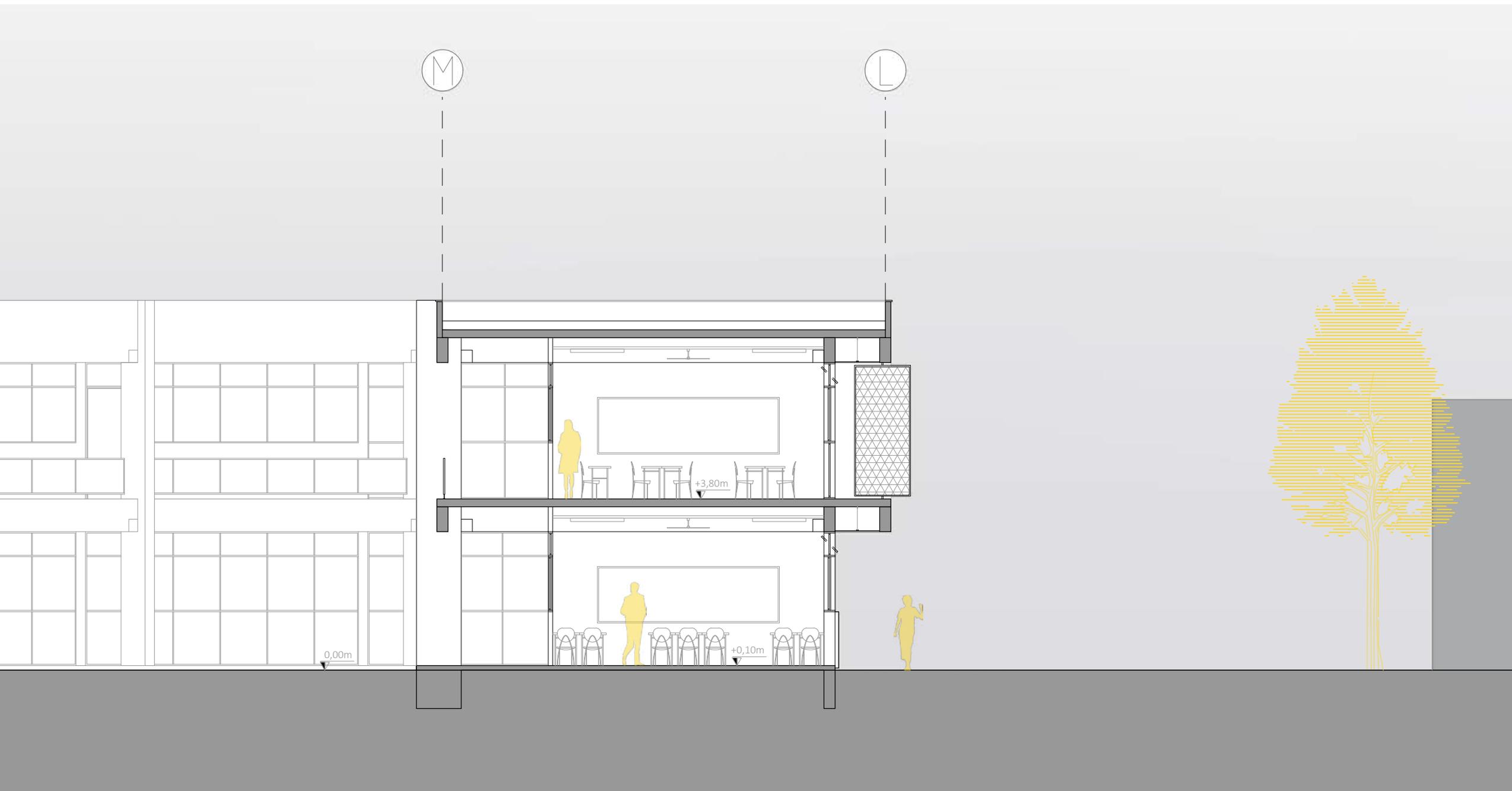
CORTE AA



CORTE BB



CORTE TRANSVERSAL PREDIOS SALAS DE AULA



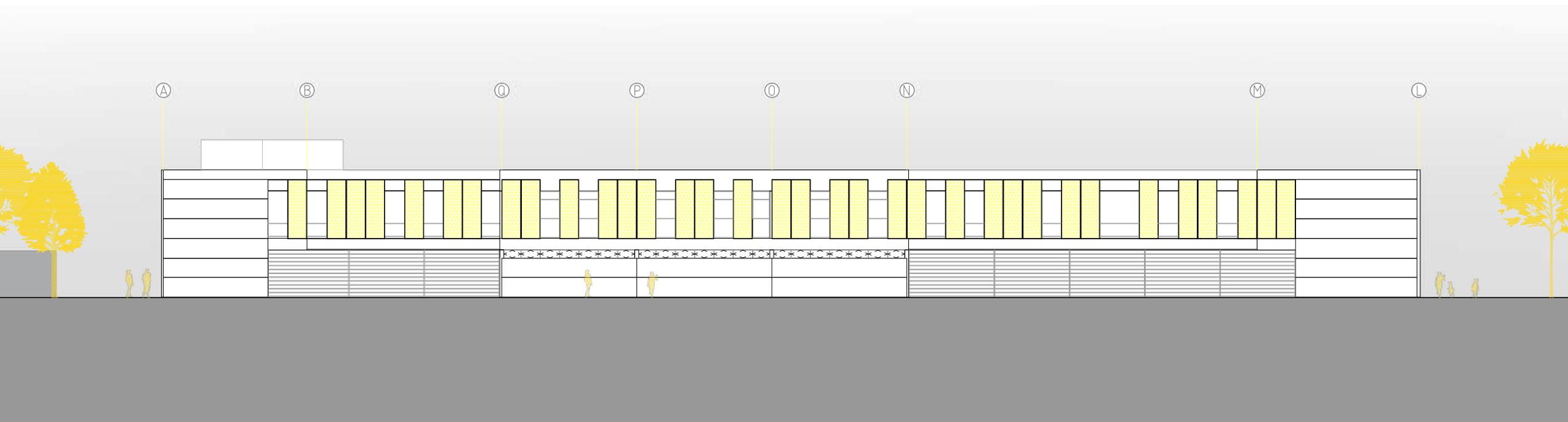
FACHADA NORTE



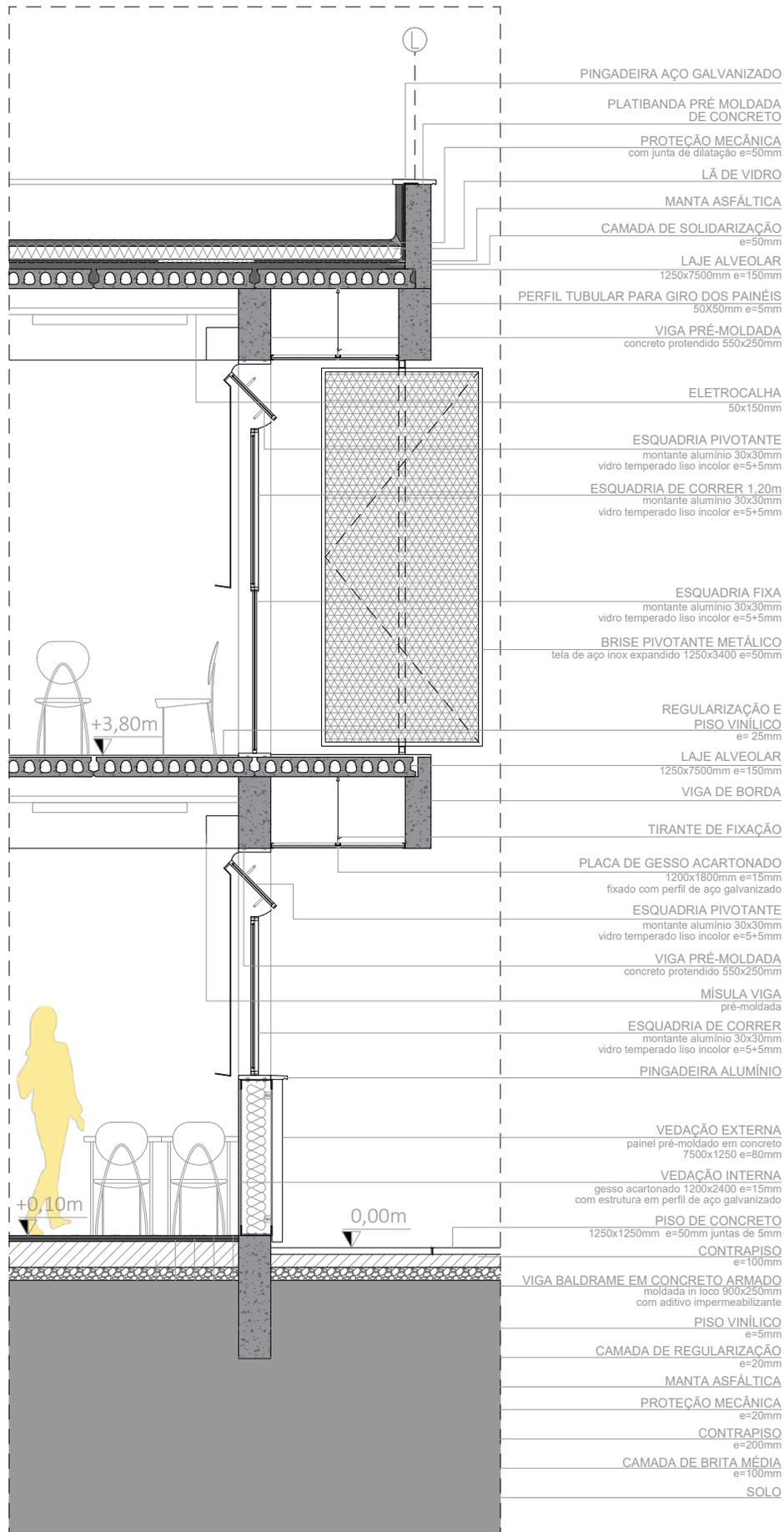
FACHADA SUDOESTE



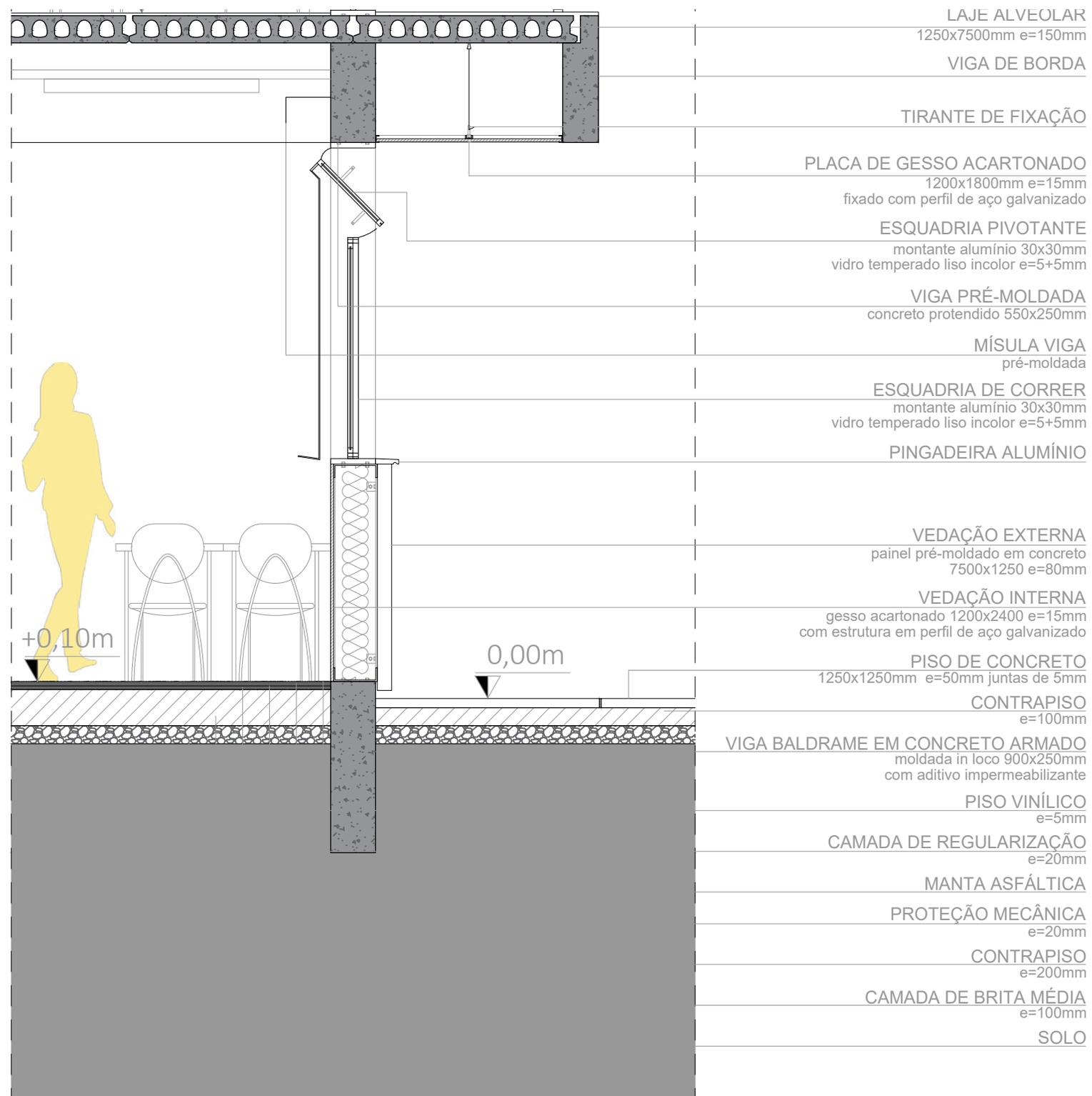
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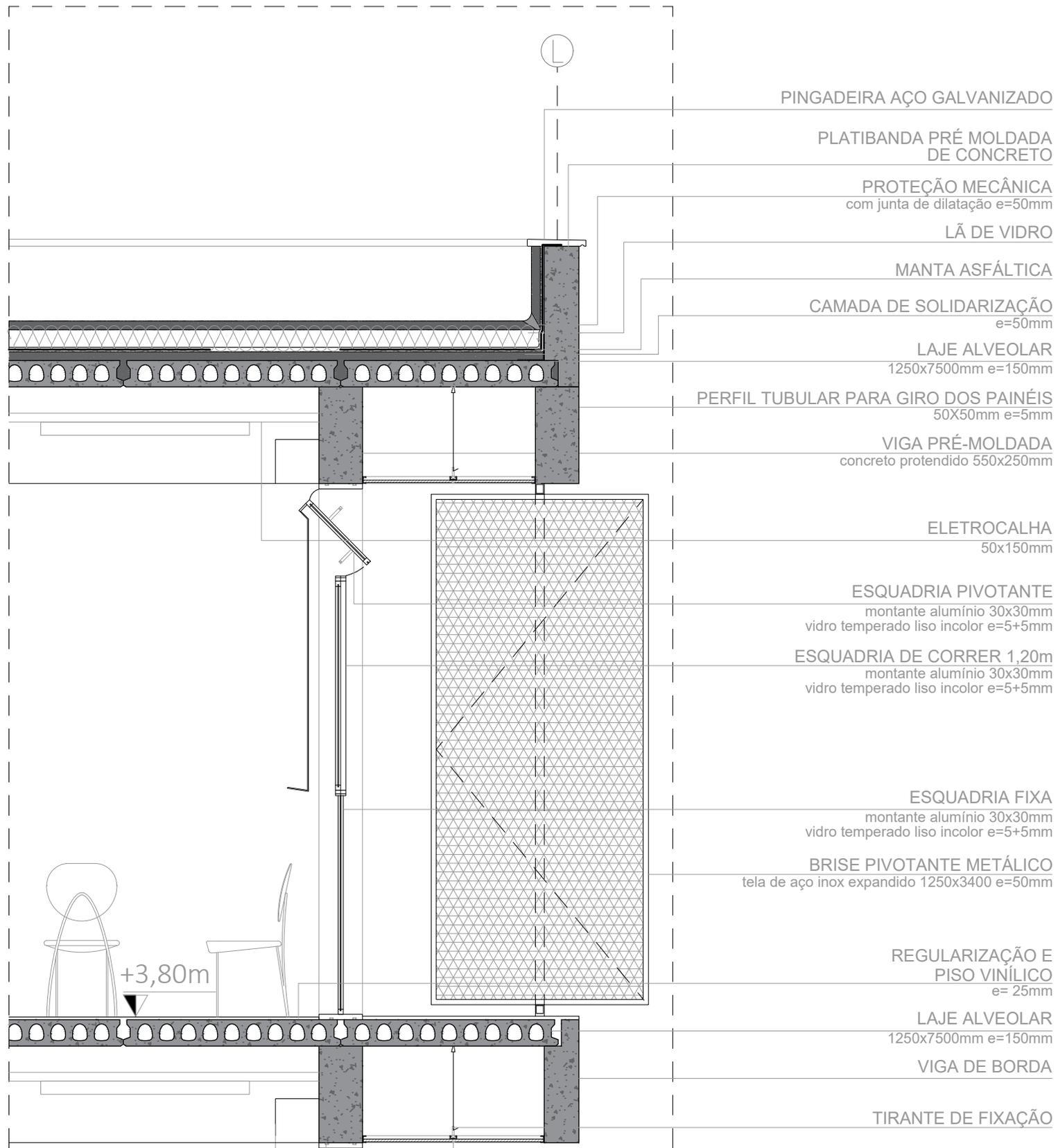


DETALHAMENTO

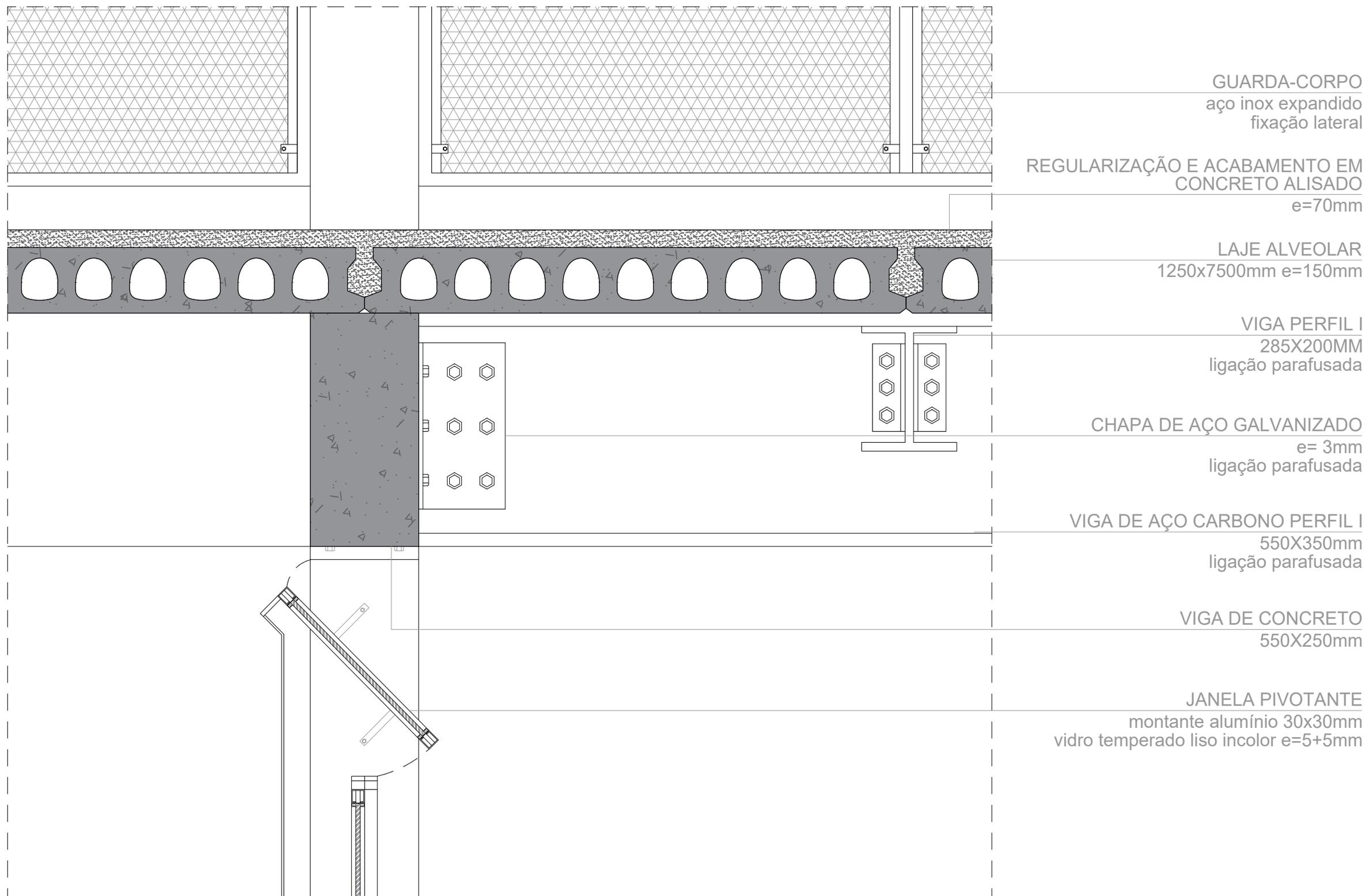


DETALHAMENTO





DETALHAMENTO



FIXAÇÃO PASSARELA



E.E.E.F. VISCONDE DO RIO GRANDE











Q.1 Find the roots of the equation $x^2 - 5x + 6 = 0$ by factorization.

Sol. $x^2 - 5x + 6 = 0$
 $x^2 - 2x - 3x + 6 = 0$
 $x(x - 2) - 3(x - 2) = 0$
 $(x - 2)(x - 3) = 0$
 $x - 2 = 0$ or $x - 3 = 0$
 $x = 2$ or $x = 3$

Q.2 Find the roots of the equation $2x^2 - 7x + 3 = 0$ by factorization.

Sol. $2x^2 - 7x + 3 = 0$
 $2x^2 - 4x - 3x + 3 = 0$
 $2x(x - 2) - 3(x - 2) = 0$
 $(2x - 3)(x - 2) = 0$
 $2x - 3 = 0$ or $x - 2 = 0$
 $x = \frac{3}{2}$ or $x = 2$

Q.3 Find the roots of the equation $x^2 + 10x + 21 = 0$ by factorization.

Sol. $x^2 + 10x + 21 = 0$
 $x^2 + 7x + 3x + 21 = 0$
 $x(x + 7) + 3(x + 7) = 0$
 $(x + 7)(x + 3) = 0$
 $x + 7 = 0$ or $x + 3 = 0$
 $x = -7$ or $x = -3$

Q.4 Find the roots of the equation $x^2 - 12x + 36 = 0$ by factorization.

Sol. $x^2 - 12x + 36 = 0$
 $x^2 - 6x - 6x + 36 = 0$
 $x(x - 6) - 6(x - 6) = 0$
 $(x - 6)(x - 6) = 0$
 $x - 6 = 0$
 $x = 6$

Q.5 Find the roots of the equation $x^2 - 15x + 54 = 0$ by factorization.

Sol. $x^2 - 15x + 54 = 0$
 $x^2 - 6x - 9x + 54 = 0$
 $x(x - 6) - 9(x - 6) = 0$
 $(x - 6)(x - 9) = 0$
 $x - 6 = 0$ or $x - 9 = 0$
 $x = 6$ or $x = 9$

Q.6 Find the roots of the equation $x^2 - 13x + 42 = 0$ by factorization.

Sol. $x^2 - 13x + 42 = 0$
 $x^2 - 7x - 6x + 42 = 0$
 $x(x - 7) - 6(x - 7) = 0$
 $(x - 7)(x - 6) = 0$
 $x - 7 = 0$ or $x - 6 = 0$
 $x = 7$ or $x = 6$

Q.7 Find the roots of the equation $x^2 - 11x + 28 = 0$ by factorization.

Sol. $x^2 - 11x + 28 = 0$
 $x^2 - 4x - 7x + 28 = 0$
 $x(x - 4) - 7(x - 4) = 0$
 $(x - 4)(x - 7) = 0$
 $x - 4 = 0$ or $x - 7 = 0$
 $x = 4$ or $x = 7$

Q.8 Find the roots of the equation $x^2 - 14x + 48 = 0$ by factorization.

Sol. $x^2 - 14x + 48 = 0$
 $x^2 - 6x - 8x + 48 = 0$
 $x(x - 6) - 8(x - 6) = 0$
 $(x - 6)(x - 8) = 0$
 $x - 6 = 0$ or $x - 8 = 0$
 $x = 6$ or $x = 8$

Q.9 Find the roots of the equation $x^2 - 16x + 63 = 0$ by factorization.

Sol. $x^2 - 16x + 63 = 0$
 $x^2 - 9x - 7x + 63 = 0$
 $x(x - 9) - 7(x - 9) = 0$
 $(x - 9)(x - 7) = 0$
 $x - 9 = 0$ or $x - 7 = 0$
 $x = 9$ or $x = 7$

Q.10 Find the roots of the equation $x^2 - 17x + 72 = 0$ by factorization.

Sol. $x^2 - 17x + 72 = 0$
 $x^2 - 8x - 9x + 72 = 0$
 $x(x - 8) - 9(x - 8) = 0$
 $(x - 8)(x - 9) = 0$
 $x - 8 = 0$ or $x - 9 = 0$
 $x = 8$ or $x = 9$

Q.11 Find the roots of the equation $x^2 - 18x + 81 = 0$ by factorization.

Sol. $x^2 - 18x + 81 = 0$
 $x^2 - 9x - 9x + 81 = 0$
 $x(x - 9) - 9(x - 9) = 0$
 $(x - 9)(x - 9) = 0$
 $x - 9 = 0$
 $x = 9$

Q.12 Find the roots of the equation $x^2 - 19x + 90 = 0$ by factorization.

Sol. $x^2 - 19x + 90 = 0$
 $x^2 - 10x - 9x + 90 = 0$
 $x(x - 10) - 9(x - 10) = 0$
 $(x - 10)(x - 9) = 0$
 $x - 10 = 0$ or $x - 9 = 0$
 $x = 10$ or $x = 9$

Q.13 Find the roots of the equation $x^2 - 20x + 99 = 0$ by factorization.

Sol. $x^2 - 20x + 99 = 0$
 $x^2 - 11x - 9x + 99 = 0$
 $x(x - 11) - 9(x - 9) = 0$
 $(x - 11)(x - 9) = 0$
 $x - 11 = 0$ or $x - 9 = 0$
 $x = 11$ or $x = 9$

Q.14 Find the roots of the equation $x^2 - 21x + 108 = 0$ by factorization.

Sol. $x^2 - 21x + 108 = 0$
 $x^2 - 12x - 9x + 108 = 0$
 $x(x - 12) - 9(x - 12) = 0$
 $(x - 12)(x - 9) = 0$
 $x - 12 = 0$ or $x - 9 = 0$
 $x = 12$ or $x = 9$

Q.15 Find the roots of the equation $x^2 - 22x + 120 = 0$ by factorization.

Sol. $x^2 - 22x + 120 = 0$
 $x^2 - 13x - 9x + 120 = 0$
 $x(x - 13) - 9(x - 12) = 0$
 $(x - 13)(x - 12) = 0$
 $x - 13 = 0$ or $x - 12 = 0$
 $x = 13$ or $x = 12$

Q.16 Find the roots of the equation $x^2 - 23x + 132 = 0$ by factorization.

Sol. $x^2 - 23x + 132 = 0$
 $x^2 - 14x - 9x + 132 = 0$
 $x(x - 14) - 9(x - 12) = 0$
 $(x - 14)(x - 12) = 0$
 $x - 14 = 0$ or $x - 12 = 0$
 $x = 14$ or $x = 12$

Q.17 Find the roots of the equation $x^2 - 24x + 144 = 0$ by factorization.

Sol. $x^2 - 24x + 144 = 0$
 $x^2 - 12x - 12x + 144 = 0$
 $x(x - 12) - 12(x - 12) = 0$
 $(x - 12)(x - 12) = 0$
 $x - 12 = 0$
 $x = 12$

Q.18 Find the roots of the equation $x^2 - 25x + 150 = 0$ by factorization.

Sol. $x^2 - 25x + 150 = 0$
 $x^2 - 16x - 9x + 150 = 0$
 $x(x - 16) - 9(x - 15) = 0$
 $(x - 16)(x - 15) = 0$
 $x - 16 = 0$ or $x - 15 = 0$
 $x = 16$ or $x = 15$

Q.19 Find the roots of the equation $x^2 - 26x + 165 = 0$ by factorization.

Sol. $x^2 - 26x + 165 = 0$
 $x^2 - 17x - 9x + 165 = 0$
 $x(x - 17) - 9(x - 15) = 0$
 $(x - 17)(x - 15) = 0$
 $x - 17 = 0$ or $x - 15 = 0$
 $x = 17$ or $x = 15$

Q.20 Find the roots of the equation $x^2 - 27x + 176 = 0$ by factorization.

Sol. $x^2 - 27x + 176 = 0$
 $x^2 - 18x - 9x + 176 = 0$
 $x(x - 18) - 9(x - 16) = 0$
 $(x - 18)(x - 16) = 0$
 $x - 18 = 0$ or $x - 16 = 0$
 $x = 18$ or $x = 16$

Q.21 Find the roots of the equation $x^2 - 28x + 187 = 0$ by factorization.

Sol. $x^2 - 28x + 187 = 0$
 $x^2 - 19x - 9x + 187 = 0$
 $x(x - 19) - 9(x - 17) = 0$
 $(x - 19)(x - 17) = 0$
 $x - 19 = 0$ or $x - 17 = 0$
 $x = 19$ or $x = 17$

Q.22 Find the roots of the equation $x^2 - 29x + 196 = 0$ by factorization.

Sol. $x^2 - 29x + 196 = 0$
 $x^2 - 20x - 9x + 196 = 0$
 $x(x - 20) - 9(x - 18) = 0$
 $(x - 20)(x - 18) = 0$
 $x - 20 = 0$ or $x - 18 = 0$
 $x = 20$ or $x = 18$

Q.23 Find the roots of the equation $x^2 - 30x + 201 = 0$ by factorization.

Sol. $x^2 - 30x + 201 = 0$
 $x^2 - 21x - 9x + 201 = 0$
 $x(x - 21) - 9(x - 19) = 0$
 $(x - 21)(x - 19) = 0$
 $x - 21 = 0$ or $x - 19 = 0$
 $x = 21$ or $x = 19$

Q.24 Find the roots of the equation $x^2 - 31x + 210 = 0$ by factorization.

Sol. $x^2 - 31x + 210 = 0$
 $x^2 - 22x - 9x + 210 = 0$
 $x(x - 22) - 9(x - 20) = 0$
 $(x - 22)(x - 20) = 0$
 $x - 22 = 0$ or $x - 20 = 0$
 $x = 22$ or $x = 20$

Q.25 Find the roots of the equation $x^2 - 32x + 224 = 0$ by factorization.

Sol. $x^2 - 32x + 224 = 0$
 $x^2 - 23x - 9x + 224 = 0$
 $x(x - 23) - 9(x - 21) = 0$
 $(x - 23)(x - 21) = 0$
 $x - 23 = 0$ or $x - 21 = 0$
 $x = 23$ or $x = 21$

Q.26 Find the roots of the equation $x^2 - 33x + 231 = 0$ by factorization.

Sol. $x^2 - 33x + 231 = 0$
 $x^2 - 24x - 9x + 231 = 0$
 $x(x - 24) - 9(x - 21) = 0$
 $(x - 24)(x - 21) = 0$
 $x - 24 = 0$ or $x - 21 = 0$
 $x = 24$ or $x = 21$

Q.27 Find the roots of the equation $x^2 - 34x + 240 = 0$ by factorization.

Sol. $x^2 - 34x + 240 = 0$
 $x^2 - 25x - 9x + 240 = 0$
 $x(x - 25) - 9(x - 24) = 0$
 $(x - 25)(x - 24) = 0$
 $x - 25 = 0$ or $x - 24 = 0$
 $x = 25$ or $x = 24$

Q.28 Find the roots of the equation $x^2 - 35x + 252 = 0$ by factorization.

Sol. $x^2 - 35x + 252 = 0$
 $x^2 - 26x - 9x + 252 = 0$
 $x(x - 26) - 9(x - 24) = 0$
 $(x - 26)(x - 24) = 0$
 $x - 26 = 0$ or $x - 24 = 0$
 $x = 26$ or $x = 24$

Q.29 Find the roots of the equation $x^2 - 36x + 264 = 0$ by factorization.

Sol. $x^2 - 36x + 264 = 0$
 $x^2 - 27x - 9x + 264 = 0$
 $x(x - 27) - 9(x - 24) = 0$
 $(x - 27)(x - 24) = 0$
 $x - 27 = 0$ or $x - 24 = 0$
 $x = 27$ or $x = 24$

Q.30 Find the roots of the equation $x^2 - 37x + 273 = 0$ by factorization.

Sol. $x^2 - 37x + 273 = 0$
 $x^2 - 28x - 9x + 273 = 0$
 $x(x - 28) - 9(x - 24) = 0$
 $(x - 28)(x - 24) = 0$
 $x - 28 = 0$ or $x - 24 = 0$
 $x = 28$ or $x = 24$

Q.31 Find the roots of the equation $x^2 - 38x + 282 = 0$ by factorization.

Sol. $x^2 - 38x + 282 = 0$
 $x^2 - 29x - 9x + 282 = 0$
 $x(x - 29) - 9(x - 24) = 0$
 $(x - 29)(x - 24) = 0$
 $x - 29 = 0$ or $x - 24 = 0$
 $x = 29$ or $x = 24$

Q.32 Find the roots of the equation $x^2 - 39x + 291 = 0$ by factorization.

Sol. $x^2 - 39x + 291 = 0$
 $x^2 - 30x - 9x + 291 = 0$
 $x(x - 30) - 9(x - 24) = 0$
 $(x - 30)(x - 24) = 0$
 $x - 30 = 0$ or $x - 24 = 0$
 $x = 30$ or $x = 24$

Q.33 Find the roots of the equation $x^2 - 40x + 300 = 0$ by factorization.

Sol. $x^2 - 40x + 300 = 0$
 $x^2 - 31x - 9x + 300 = 0$
 $x(x - 31) - 9(x - 24) = 0$
 $(x - 31)(x - 24) = 0$
 $x - 31 = 0$ or $x - 24 = 0$
 $x = 31$ or $x = 24$

Q.34 Find the roots of the equation $x^2 - 41x + 309 = 0$ by factorization.

Sol. $x^2 - 41x + 309 = 0$
 $x^2 - 32x - 9x + 309 = 0$
 $x(x - 32) - 9(x - 24) = 0$
 $(x - 32)(x - 24) = 0$
 $x - 32 = 0$ or $x - 24 = 0$
 $x = 32$ or $x = 24$

Q.35 Find the roots of the equation $x^2 - 42x + 318 = 0$ by factorization.

Sol. $x^2 - 42x + 318 = 0$
 $x^2 - 33x - 9x + 318 = 0$
 $x(x - 33) - 9(x - 24) = 0$
 $(x - 33)(x - 24) = 0$
 $x - 33 = 0$ or $x - 24 = 0$
 $x = 33$ or $x = 24$

Q.36 Find the roots of the equation $x^2 - 43x + 327 = 0$ by factorization.

Sol. $x^2 - 43x + 327 = 0$
 $x^2 - 34x - 9x + 327 = 0$
 $x(x - 34) - 9(x - 24) = 0$
 $(x - 34)(x - 24) = 0$
 $x - 34 = 0$ or $x - 24 = 0$
 $x = 34$ or $x = 24$

Q.37 Find the roots of the equation $x^2 - 44x + 336 = 0$ by factorization.

Sol. $x^2 - 44x + 336 = 0$
 $x^2 - 35x - 9x + 336 = 0$
 $x(x - 35) - 9(x - 24) = 0$
 $(x - 35)(x - 24) = 0$
 $x - 35 = 0$ or $x - 24 = 0$
 $x = 35$ or $x = 24$

Q.38 Find the roots of the equation $x^2 - 45x + 345 = 0$ by factorization.

Sol. $x^2 - 45x + 345 = 0$
 $x^2 - 36x - 9x + 345 = 0$
 $x(x - 36) - 9(x - 24) = 0$
 $(x - 36)(x - 24) = 0$
 $x - 36 = 0$ or $x - 24 = 0$
 $x = 36$ or $x = 24$

Q.39 Find the roots of the equation $x^2 - 46x + 354 = 0$ by factorization.

Sol. $x^2 - 46x + 354 = 0$
 $x^2 - 37x - 9x + 354 = 0$
 $x(x - 37) - 9(x - 24) = 0$
 $(x - 37)(x - 24) = 0$
 $x - 37 = 0$ or $x - 24 = 0$
 $x = 37$ or $x = 24$

Q.40 Find the roots of the equation $x^2 - 47x + 363 = 0$ by factorization.

Sol. $x^2 - 47x + 363 = 0$
 $x^2 - 38x - 9x + 363 = 0$
 $x(x - 38) - 9(x - 24) = 0$
 $(x - 38)(x - 24) = 0$
 $x - 38 = 0$ or $x - 24 = 0$
 $x = 38$ or $x = 24$

Q.41 Find the roots of the equation $x^2 - 48x + 372 = 0$ by factorization.

Sol. $x^2 - 48x + 372 = 0$
 $x^2 - 39x - 9x + 372 = 0$
 $x(x - 39) - 9(x - 24) = 0$
 $(x - 39)(x - 24) = 0$
 $x - 39 = 0$ or $x - 24 = 0$
 $x = 39$ or $x = 24$

Q.42 Find the roots of the equation $x^2 - 49x + 381 = 0$ by factorization.

Sol. $x^2 - 49x + 381 = 0$
 $x^2 - 40x - 9x + 381 = 0$
 $x(x - 40) - 9(x - 24) = 0$
 $(x - 40)(x - 24) = 0$
 $x - 40 = 0$ or $x - 24 = 0$
 $x = 40$ or $x = 24$

Q.43 Find the roots of the equation $x^2 - 50x + 390 = 0$ by factorization.

Sol. $x^2 - 50x + 390 = 0$
 $x^2 - 41x - 9x + 390 = 0$
 $x(x - 41) - 9(x - 24) = 0$
 $(x - 41)(x - 24) = 0$
 $x - 41 = 0$ or $x - 24 = 0$
 $x = 41$ or $x = 24$

Q.44 Find the roots of the equation $x^2 - 51x + 399 = 0$ by factorization.

Sol. $x^2 - 51x + 399 = 0$
 $x^2 - 42x - 9x + 399 = 0$
 $x(x - 42) - 9(x - 24) = 0$
 $(x - 42)(x - 24) = 0$
 $x - 42 = 0$ or $x - 24 = 0$
 $x = 42$ or $x = 24$

Q.45 Find the roots of the equation $x^2 - 52x + 408 = 0$ by factorization.

Sol. $x^2 - 52x + 408 = 0$
 $x^2 - 43x - 9x + 408 = 0$
 $x(x - 43) - 9(x - 24) = 0$
 $(x - 43)(x - 24) = 0$
 $x - 43 = 0$ or $x - 24 = 0$
 $x = 43$ or $x = 24$

Q.46 Find the roots of the equation $x^2 - 53x + 417 = 0$ by factorization.

Sol. $x^2 - 53x + 417 = 0$
 $x^2 - 44x - 9x + 417 = 0$
 $x(x - 44) - 9(x - 24) = 0$
 $(x - 44)(x - 24) = 0$
 $x - 44 = 0$ or $x - 24 = 0$
 $x = 44$ or $x = 24$

Q.47 Find the roots of the equation $x^2 - 54x + 426 = 0$ by factorization.

Sol. $x^2 - 54x + 426 = 0$
 $x^2 - 45x - 9x + 426 = 0$
 $x(x - 45) - 9(x - 24) = 0$
 $(x - 45)(x - 24) = 0$
 $x - 45 = 0$ or $x - 24 = 0$
 $x = 45$ or $x = 24$

Q.48 Find the roots of the equation $x^2 - 55x + 435 = 0$ by factorization.

Sol. $x^2 - 55x + 435 = 0$
 $x^2 - 46x - 9x + 435 = 0$
 $x(x - 46) - 9(x - 24) = 0$
 $(x - 46)(x - 24) = 0$
 $x - 46 = 0$ or $x - 24 = 0$
 $x = 46$ or $x = 24$

Q.49 Find the roots of the equation $x^2 - 56x + 444 = 0$ by factorization.

Sol. $x^2 - 56x + 444 = 0$
 $x^2 - 47x - 9x + 444 = 0$
 $x(x - 47) - 9(x - 24) = 0$
 $(x - 47)(x - 24) = 0$
 $x - 47 = 0$ or $x - 24 = 0$
 $x = 47$ or $x = 24$

Q.50 Find the roots of the equation $x^2 - 57x + 453 = 0$ by factorization.

Sol. $x^2 - 57x + 453 = 0$
 $x^2 - 48x - 9x + 453 = 0$
 $x(x - 48) - 9(x - 24) = 0$
 $(x - 48)(x - 24) = 0$
 $x - 48 = 0$ or $x - 24 = 0$
 $x = 48$ or $x = 24$

Q.51 Find the roots of the equation $x^2 - 58x + 462 = 0$ by factorization.

Sol. $x^2 - 58x + 462 = 0$
 $x^2 - 49x - 9x + 462 = 0$
 $x(x - 49) - 9(x - 24) = 0$
 $(x - 49)(x - 24) = 0$
 $x - 49 = 0$ or $x - 24 = 0$
 $x = 49$ or $x = 24$

Q.52 Find the roots of the equation $x^2 - 59x + 471 = 0$ by factorization.

Sol. $x^2 - 59x + 471 = 0$
 $x^2 - 50x - 9x + 471 = 0$
 $x(x - 50) - 9(x - 24) = 0$
 $(x - 50)(x - 24) = 0$
 $x - 50 = 0$ or $x - 24 = 0$
 $x = 50$ or $x = 24$

Q.53 Find the roots of the equation $x^2 - 60x + 480 = 0$ by factorization.

Sol. $x^2 - 60x + 480 = 0$
 $x^2 - 51x - 9x + 480 = 0$
 $x(x - 51) - 9(x - 24) = 0$
 $(x - 51)(x - 24) = 0$
 $x - 51 = 0$ or $x - 24 = 0$
 $x = 51$ or $x = 24$

Q.54 Find the roots of the equation $x^2 - 61x + 489 = 0$ by factorization.

Sol. $x^2 - 61x + 489 = 0$
 $x^2 - 52x - 9x + 489 = 0$
 $x(x - 52) - 9(x - 24) = 0$
 $(x - 52)(x - 24) = 0$
 $x - 52 = 0$ or $x - 24 = 0$
 $x = 52$ or $x = 24$

Q.55 Find the roots of the equation $x^2 - 62x + 498 = 0$ by factorization.

Sol. $x^2 - 62x + 498 = 0$
 $x^2 - 53x - 9x + 498 = 0$
 $x(x - 53) - 9(x - 24) = 0$
 $(x - 53)(x - 24) = 0$
 $x - 53 = 0$ or $x - 24 = 0$
 $x = 53$ or $x = 24$

Q.56 Find the roots of the equation $x^2 - 63x + 507 = 0$ by factorization.

Sol. $x^2 - 63x + 507 = 0$
 $x^2 - 54x - 9x + 507 = 0$
 $x(x - 54) - 9(x - 24) = 0$
 $(x - 54)(x - 24) = 0$
 $x - 54 = 0$ or $x - 24 = 0$
 $x = 54$ or $x = 24$

Q.57 Find the roots of the equation $x^2 - 64x + 516 = 0$ by factorization.

Sol. $x^2 - 64x + 516 = 0$
 $x^2 - 55x - 9x + 516 = 0$
 $x(x - 55) - 9(x - 24) = 0$
 $(x - 55)(x - 24) = 0$
 $x - 55 = 0$ or $x - 24 = 0$
 $x = 55$ or $x = 24$

Q.58 Find the roots of the equation $x^2 - 65x + 525 = 0$ by factorization.

Sol. $x^2 - 65x + 525 = 0$
 $x^2 - 56x - 9x + 525 = 0$
 $x(x - 56) - 9(x - 24) = 0$
 $(x - 56)(x - 24) = 0$
 $x - 56 = 0$ or $x - 24 = 0$
 $x = 56$ or $x = 24$

Q.59 Find the roots of the equation $x^2 - 66x + 534 = 0$ by factorization.

Sol. $x^2 - 66x + 534 = 0$
 $x^2 - 57x - 9x + 534 = 0$
 $x(x - 57) - 9(x - 24) = 0$
 $(x - 57)(x - 24) = 0$
 $x - 57 = 0$ or $x - 24 = 0$
 $x = 57$ or $x = 24$

Q.60 Find the roots of the equation $x^2 - 67x + 543 = 0$ by factorization.

Sol. $x^2 - 67x + 543 = 0$
 $x^2 - 58x - 9x + 543 = 0$
 $x(x - 58) - 9(x - 24) = 0$
 $(x - 58)(x - 24) = 0$
 $x - 58 = 0$ or $x - 24 = 0$
 $x = 58$ or $x = 24$

Q.61 Find the roots of the equation $x^2 - 68x + 552 = 0$ by factorization.

Sol. $x^2 - 68x + 552 = 0$
 $x^2 - 59x - 9x + 552 = 0$
 $x(x - 59) - 9(x - 24) = 0$
 $(x - 59)(x - 24) = 0$
 $x - 59 = 0$ or $x - 24 = 0$
 $x = 59$ or $x = 24$

Q.62 Find the roots of the equation $x^2 - 69x + 561 = 0$ by factorization.

Sol. $x^2 - 69x + 561 = 0$
 $x^2 - 60x - 9x + 561 = 0$
 $x(x - 60) - 9(x - 24) = 0$
 $(x - 60)(x - 24) = 0$
 $x - 60 = 0$ or $x - 24 = 0$
 $x = 60$ or $x = 24$

Q.63 Find the roots of the equation $x^2 - 70x + 570 = 0$ by factorization.

Sol. $x^2 - 70x + 570 = 0$
 $x^2 - 61x - 9x + 570 = 0$
 $x(x - 61) - 9(x - 24) = 0$
 $(x - 61)(x - 24) =$







OBRIGADA!!