



urbantech

February 10, 2020

Urbantech File No. 06-233ph2

Tony Dulisse, CET

Transportation and Development Technologist
Infrastructure Services

Town of Orangeville

87 Broadway
Orangeville, ON, L9W 1K1

**Re: Response to 3rd Engineering Submission Comments
(in support of Draft Plan approval)
Orangeville Highlands Phase 2
Town File No.: 51/10 & OPZ 5/10**

We have reviewed the comments provided by Transportation and Development, dated January 27, 2020, on the 3rd submission of the Functional Servicing & Stormwater Management Report

- When Urbantech prepared the FSR and GSAI prepared the Draft Plan of Subdivision, there were some notable issues with the road alignment. Specifically, the “kink” in the road on the northern leg of Street C. We asked that the applicant revisit the configuration to remove the horizontal sag. In our opinion removing the horizontal sag improves driver safety. The next submission should address the issue and the plan(s) revised accordingly;

Please refer to the revised Draft Plan (**Attachment 1**) illustrating a revised alignment for the “kink” in Street C. The revised alignment can be achieved without impacting the number of lots and is in conformance with the engineering design criteria provided by T&D following their 1st submission review (minimum centerline radius = 120m). We request that T&D defer further review to the detailed design stage when more detail can be provided.

- Crescent corners were requested on 3 corners of Street C. The applicant has not provided the required crescent corners. Revise the plan to reflect that requirement. The radii on the corners can be the same as those used in the first phase of this development and the subdivision to the south.

Please refer to **Attachment 2** for a sample from Phase 1. In this case, the crescent corner was achieved within a 15m wide right-of-way without impacting the draft plan. Accordingly, the requested crescent corners will also be able to be achieved on Street ‘C’ which is an 18.5m wide right-of-way. As this does not impact the draft plan, we request that T&D defer further review to the detailed design stage when more detail can be provided for context, including detailed grading plans.

- Street B connects with Hansen opposite Amelia Street. The current draft plan shows that there will be work outside of the proposed plan. When the abutting subdivision was approved in the late 1980's the property was conveyed to the Town. The purpose of the conveyance to the Municipality was for the extension of the existing road and transportation network. The applicant is proposing to construct the road and connect in accordance with the Official Plan. Given the topography, the requirement for a 1.8m wide sidewalk on both sides of the road, proposed lane configurations and geometry to match existing, the applicant will need to demonstrate that the proposed 23m wide right-of-way is adequate to safely accommodate the design and ultimate construction. Provide scaled cross-sections in support of the proposal.

The right-of-way width is 23.5m as indicated on the Draft Plan and preliminary engineering drawings. Refer to **Attachment 3** for a typical ROW cross section, as requested. Note that we have illustrated the worst case scenario which occurs right at Hansen Boulevard - due to space constraints with the existing property and the requirement to align the pavement centerline with existing Amelia Street to the south, the 23.5m ROW is asymmetrical with a western boulevard width of 4.7m and an eastern boulevard of 10.8m.

- Both intersections into the development will be signalized in accordance with the traffic impact study. The calculations for site line requirements have not been provided. Please provide the required calculations indicating that proper site distance and visibility triangle has been provided for stop controlled intersections. Refer to the TAC Manual Section 2.3.3.5, copy attached.

Please refer to **Attachment 4** for a detailed sight-line analysis prepared by Paradigm.

- In addition to Bullet 3 above, the applicant is proposing to construct a retaining wall to overcome the physical constraints and changing elevations on the west side of the intersection abutting the existing properties. Include the retaining wall and a brief summary of how that structure will be constructed against the existing residences relative to the right-of-way. We appreciate that these are construction details that will be addressed during the design review stage of the development. However, there are some concerns as it relates to the constructability of all required features in the amount of ROW being proposed. All other retaining walls being proposed are to be located on private property.

As the height of the wall varies to nearly 3m, drawings prepared by a licensed structural engineer will be required for approval and construction. However, to facilitate draft plan approval we have provided a conceptual design illustrating how the proposed wall could potentially fit within the 23.5m wide right-of-way plus adjacent 1.5m wide block adjacent to the existing property and be constructed without encroachment onto the adjacent properties. Refer to **Attachments 3 and 5** for details. Depending on the length of the geogrid (i.e. tiebacks) required, the face of the wall may need to be adjacent to the sidewalk (currently 0.2m of separation is shown which still allows a separation of 1.2m from the face of the sidewalk to the back-of-curb).

We generally agree that retaining walls, where required to support private development (i.e. medium density blocks) should be located on private property and confirm that further details will be provided at detailed design. However, we disagree that the retaining wall required to facilitate the norther trail connection Brucedale Boulevard should be on the private lot since the wall is only required due to the walkway's grading constraints, not the private lot's grading. Accordingly, the wall should be owned and maintained by the Town as part of their walkway block/trail system.

- The outlet from the SWMP is designed to flow northward and outlet to the north branch of the Middle Monora Creek. The access road along that area is to be designed and constructed wide enough to allow service vehicles and equipment to access the area for regular inspections and maintenance. Ensure that the access is a minimum of 4 metres wide and a turn around feature added for safety. Update the plans accordingly and confirm that this design feature can be accommodated within the proposed blocks designated for stormwater management.

The outlet being referred to is known as Drainage Feature 'B'; while this feature is the proposed discharge location for the SWM facility, it does not contain any structures, spillways etc. that would require maintenance. The feature is also intended to provide a habitat for amphibians (refer to EIS) so any disturbance should be avoided.

A 2m shelf has been provided to allow the Town to access Drainage Feature 'B' by foot or with small construction equipment. There is also a 10m buffer along the western side of the feature – if, for whatever reason, large construction equipment is required to access the area in the future, this buffer would provide adequate space. However, a 4m wide access and turnaround cannot be provided in the available space without significantly impacting the existing conditions. We further note that most existing features (i.e. Monora Creek) would not be provided with maintenance access or turnarounds as part of a subdivision design.

- The FSR indicates that road grades will range between 0.5% and 5%. Town of Orangeville standards require that road grades range from a minimum of 0.75% (1% around crescent corners and cul-de-sacs) to 6% with 5% the preferred maximum. Update the FSR accordingly.

Although the FSR text states 0.5%, all road centerline grades shown on Figure 2, "Preliminary Grading Plan and Overland Flow Route," are 1.0% or greater. Therefore, we can confirm that the Town's requested minimum grade of 1.0% can be achieved throughout the site. Regardless, this comment does not impact the draft plan and should be deferred to the detailed design stage.

- Although minor, indicate that the minimum grades on the lots within the swales shall be 2% and the maximum 5%. The lots are also required to have a "flat table area" of 5 metres with a maximum grade of 5% in elevation change. Review the design and confirm that this design feature can be accommodated.

This comment does not impact the draft plan and should be deferred to detailed design. However, we confirm that all swales, as indicated on Figure 2, "Preliminary Grading Plan and

Overland Flow Route," shall be graded between 2% and 5% slope and that a minimum of 5m "flat" space shall be provided at the rear of all units.

- A sediment removal drying area has been added to the SWMP block. The applicant has provided an area 20m x 10m. Please indicate how this area was arrived at and what parameters were used to determine the appropriate area.

Further detail will be provided in the SWM Report and Operations & Maintenance Manual submitted at the detailed design stage. However, for the purposes of draft plan approval, we provide the following information to support the sizing of the pond block.

Table 6.3: Annual Sediment Loadings (MOE SWM Planning & Design Manual, 2003)

Catchment Imperviousness	Annual Loading (kg/ha)	Wet Density (kg/m ³)	Annual Loading (m ³ /ha)
35%	770	1,230	0.6
55%	2,300	1,230	1.9
70%	3,495	1,230	2.8
85%	4,680	1,230	3.8

Site Imperviousness = 70%, therefore annual loading = 2.8m³/ha/year
 Drainage to SWM Pond = 10.28ha, therefore annual loading = **28.8m³/year**

Provided sediment drying area = 20m x 10m = **200m²**

If the pond will be cleaned by mechanical dredging, the provided drying area would allow a significant amount of material to be temporarily stored (the height of the pile could vary based on soil characteristics). However, the 20x10m area would also provide adequate space for a vacuum operation setup, which is becoming an increasingly common method for pond cleaning. Several ponds we have recently designed in Brampton have been cleaned using this approach with smaller sediment drying areas than what is proposed for the subject site.

We trust the enclosed information is satisfactory for your review and clearance for draft plan approval. We request that any further details required for approval be deferred to detailed design. Please contact our office directly with any questions or if you require additional information.

Regards,

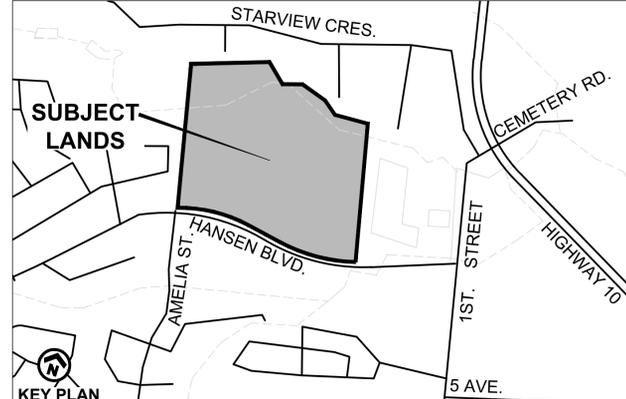
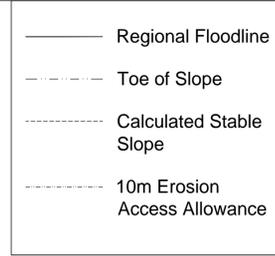
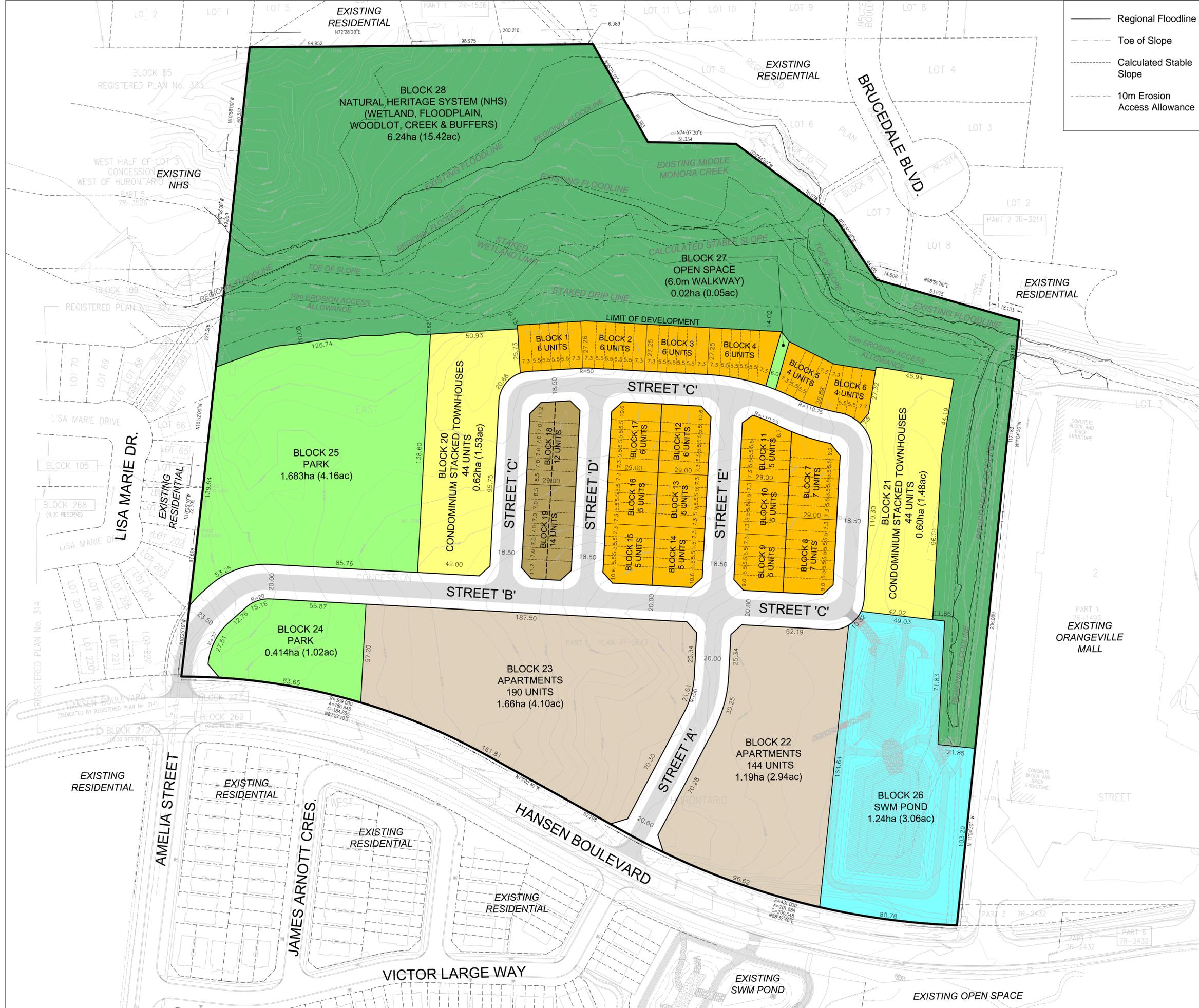


Scott Riemer, P.Eng.
Senior Project Manager

cc: Brandon Ward, Town of Orangeville
Carmen Jandu, Ventawood Management
Roberta Harvey, Country Green Homes

Attachments:

Attachment 1 – Revised Draft Plan by GSAI
Attachment 2 – Crescent Corner Sample
Attachment 3 – Proposed 23.5m ROW Cross Section
Attachment 4 – Sight Line Analysis by Paradigm
Attachment 5 – Typical Retaining Wall Detail



**DRAFT PLAN OF SUBDIVISION
ORANGEVILLE HIGHLANDS LIMITED &
BRUCEDALE INVESTMENTS INC.**

FILES: OPZ 5/10 & S 1/10

PART OF LOT 3,
CONCESSION 2 W.H.S.,
TOWN OF ORANGEVILLE
DUFFERIN COUNTY

OWNERS CERTIFICATE
I HEREBY AUTHORIZE GLEN SCHNARR & ASSOCIATES INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF ORANGEVILLE FOR APPROVAL.

BRUCEDALE INVESTMENTS INC.
SIGNED: JOHN G. NESBITT, PRESIDENT; GILBERT L. BOLAND, DIRECTOR
DATE OCT. 17, 2017

ORANGEVILLE HIGHLANDS LIMITED
SIGNED: GILBERT L. BOLAND, PRESIDENT; JOHN G. NESBITT, SECRETARY
DATE OCT. 17, 2017

SURVEYORS CERTIFICATE
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE CORRECTLY AND ACCURATELY SHOWN.

SIGNED: THOMAS SALB, O.L.S.; JD BARNES LIMITED
401 WHEELABRATOR WAY, SUITE A
MILTON, ONTARIO L9T 3C1
DATE SEPT. 28, 2017

ADDITIONAL INFORMATION
(UNDER SECTION 51(17) OF THE PLANNING ACT) INFORMATION REQUIRED BY CLAUSES A,B,C,D,E,F,G,J & L ARE SHOWN ON THE DRAFT AND KEY PLANS.

- H) MUNICIPAL AND PIPED WATER TO BE PROVIDED
- I) SANDY LOAM AND CLAY LOAM
- K) SANITARY AND STORM SEWERS TO BE PROVIDED

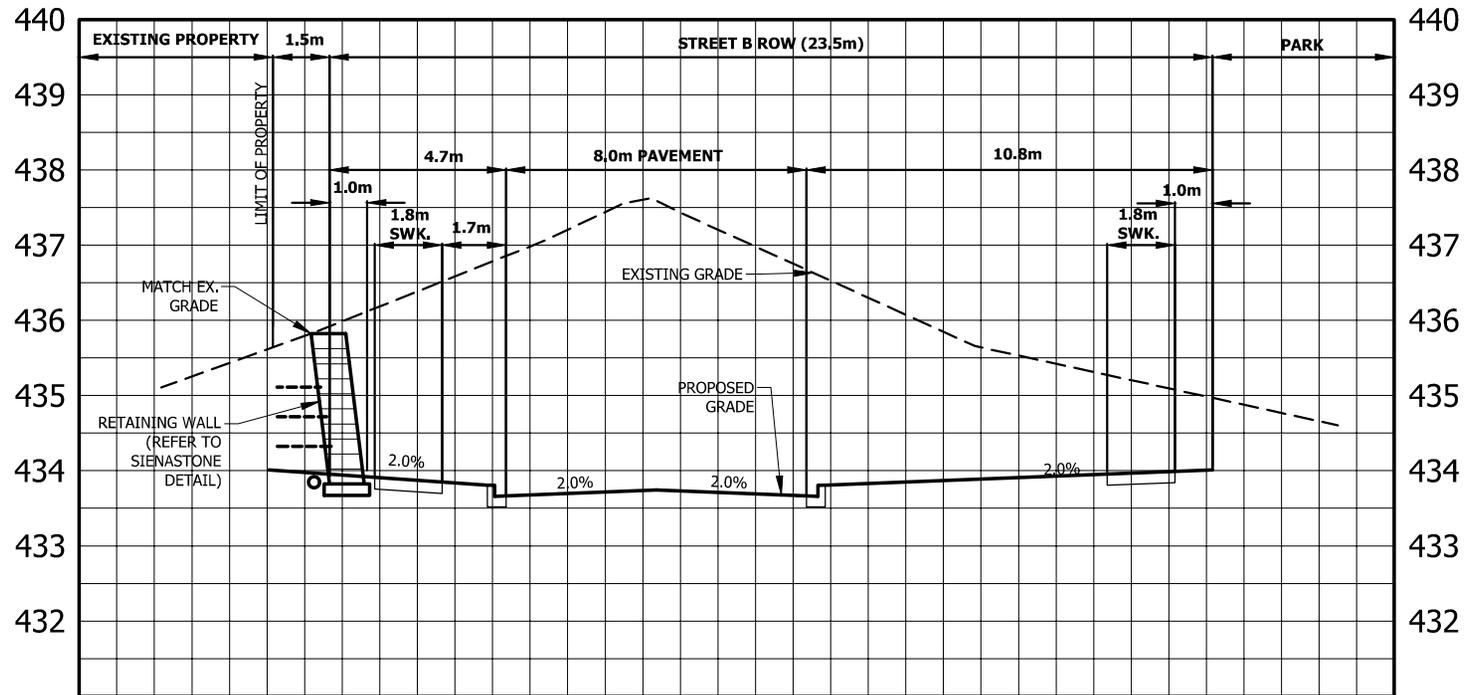
LAND USE SCHEDULE

LAND USE	BLOCKS	AREA (ha)	AREA (ac)	UNITS
TOWNHOUSE (STREET) - 5.5m (18')	1-17	1.71	4.23	93
TOWNHOUSE (BACK TO BACK) - 7.0m (23')	18,19	0.29	0.72	26
TOWNHOUSE (CONDOMINIUM STACKED)	20,21	1.22	3.01	88
APARTMENTS	22,23	2.85	7.04	334
PARK	24,25	2.10	5.19	
SWM POND	26	1.24	3.06	
OPEN SPACE (WALKWAY)	27	0.02	0.05	
NATURAL HERITAGE SYSTEM & BUFFER (NHS)	28	6.24	15.42	
18.5m ROW (615m)		1.15	2.84	
20.0m - 23.5m ROW (561m)		1.13	2.79	
TOTAL	28	17.95	44.36	541

NOTES
 .Streets A / B & Hansen Blvd. intersection daylight triangles = 7.5m x 7.5m
 .All other daylight triangles are 6m x 6m
 .Pavement Illustration is diagrammatic only
 .Natural Heritage System constraint information provided by Urbantech April, 2019



TYPICAL CRESCENT CORNER



TYPICAL 23.5m ROW SECTION
H 1:200, V 1:100



5A-150 Pinebush Road
Cambridge ON N1R 8J8
p: 519.896.3163
905.381.2229
416.479.9684

www.ptsl.com

06 February 2020
Project: 190549

Carmen N. Jandu, RPP
Orangeville Highlands Ltd.
c/o Ventawood Management Inc.
2458 Dundas Street West, Unit 9
Mississauga L5K 1R8

Dear Carmen N. Jandu:

RE: ORANGEVILLE HIGHLANDS – TOWN COMMENT RESPONSE LETTER

In April 2019, Paradigm Transportation Solutions Limited (Paradigm) prepared a letter to address peer review comments on the Transportation Impact Study (TIS) prepared in May 2018.

Since submission of the Study and Peer Review response memo, the Town of Orangeville has provided additional transportation comments. The following letter outlines our responses/clarification to the Town's comments contained in the email dated 27 January 2020.

Comment #4:

“Both intersections into the development will be signalized in accordance with the traffic impact study. The calculations for site line requirements have not been provided. Please provide the required calculations indicating that proper site distance and visibility triangle has been provided for stop controlled intersections. Refer to the TAC Manual Section 2.3.3.5, copy attached.”

Comment #4 Response:

The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads referred to by the Town is the September 1999 version. The TAC Geometric Design Guide for Canadian Roads June 2017 manual is the current version and follows best practices. Based on the TAC 2017 manual¹, the following sight distance requirements apply for a design speed of 10 km/h over the posted speed limit (60 km/h):

¹ Transportation Association of Canada, Geometric Design Guide for Canadian Roads, 2017.

- ▶ Crossing Distance: 110 metres²;
- ▶ Left-Turn from Stop: 130 metres³
- ▶ Right-Turn from Stop: 110 metres⁴

Both Street A and Street B intersections with Hansen Boulevard are existing intersections. Street A aligns with Victor Large Way and Street B aligns with Amelia Street. Traffic control signals are in operation at the Amelia Street intersection.

Attachment A contains the sight triangles for Street A and Street B based on TAC Geometric Design Guide for Canadian Roads June 2017.

The sight triangles for Street A and Street B are contained within the existing Hansen Boulevard right-of-way. The proposed daylight triangles to the Street A and Street B approaches are satisfactory. No changes to the block layout are recommended.

We trust that this information is responsive to the comments that were raised by the Town of Orangeville. If you should have any questions or would like to discuss our response in more detail, please feel free to contact us.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Scott Catton, C.E.T.
Senior Project Manager



Stew Elkins, B.E.S.
Vice President

² Ibid. Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver

³ Ibid. Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn from Stop

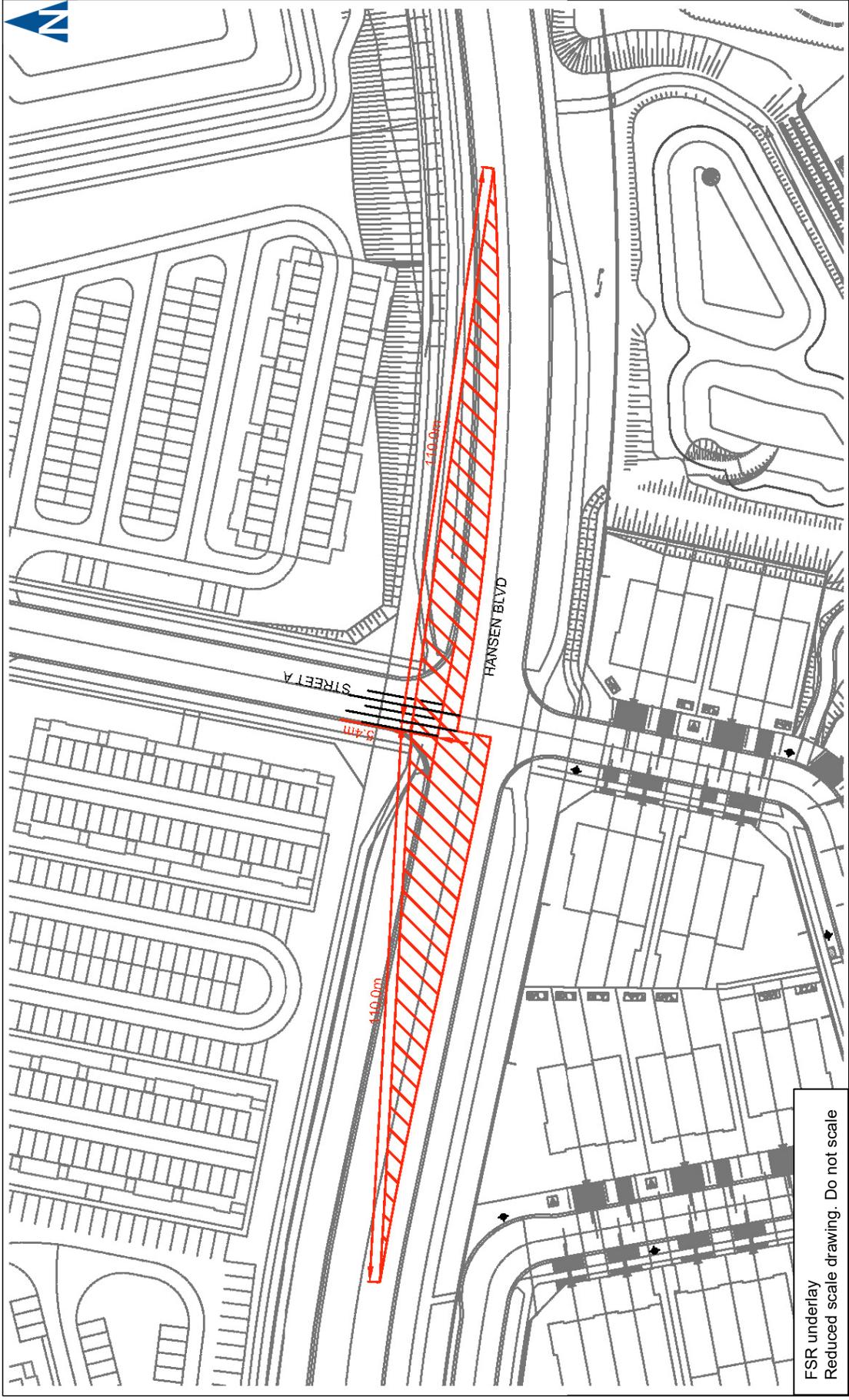
⁴ Ibid. Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver



Attachment A

Sight Triangles

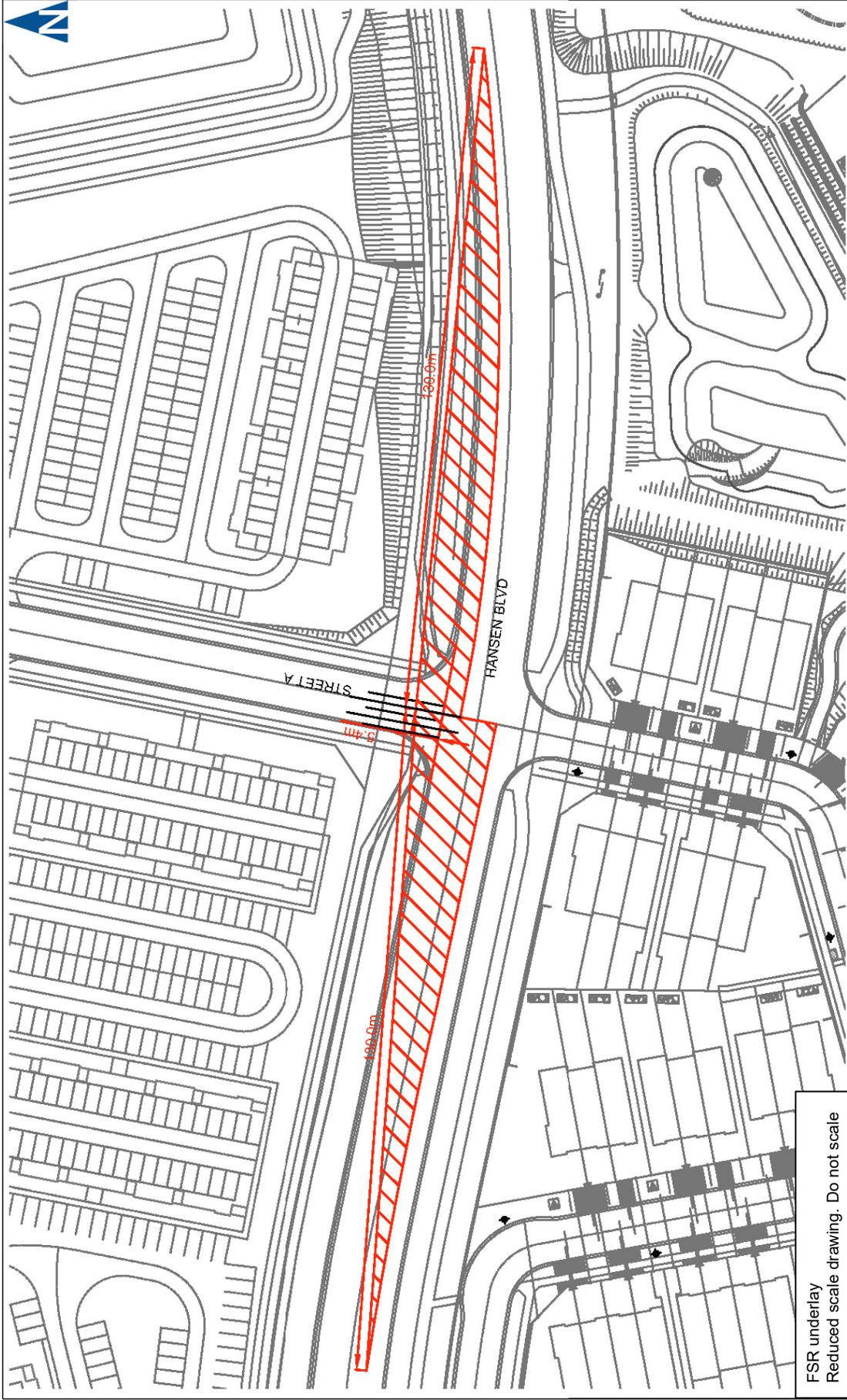




TAC 2017 Sight Distance Hansen Boulevard & Street A Crossing Maneuver

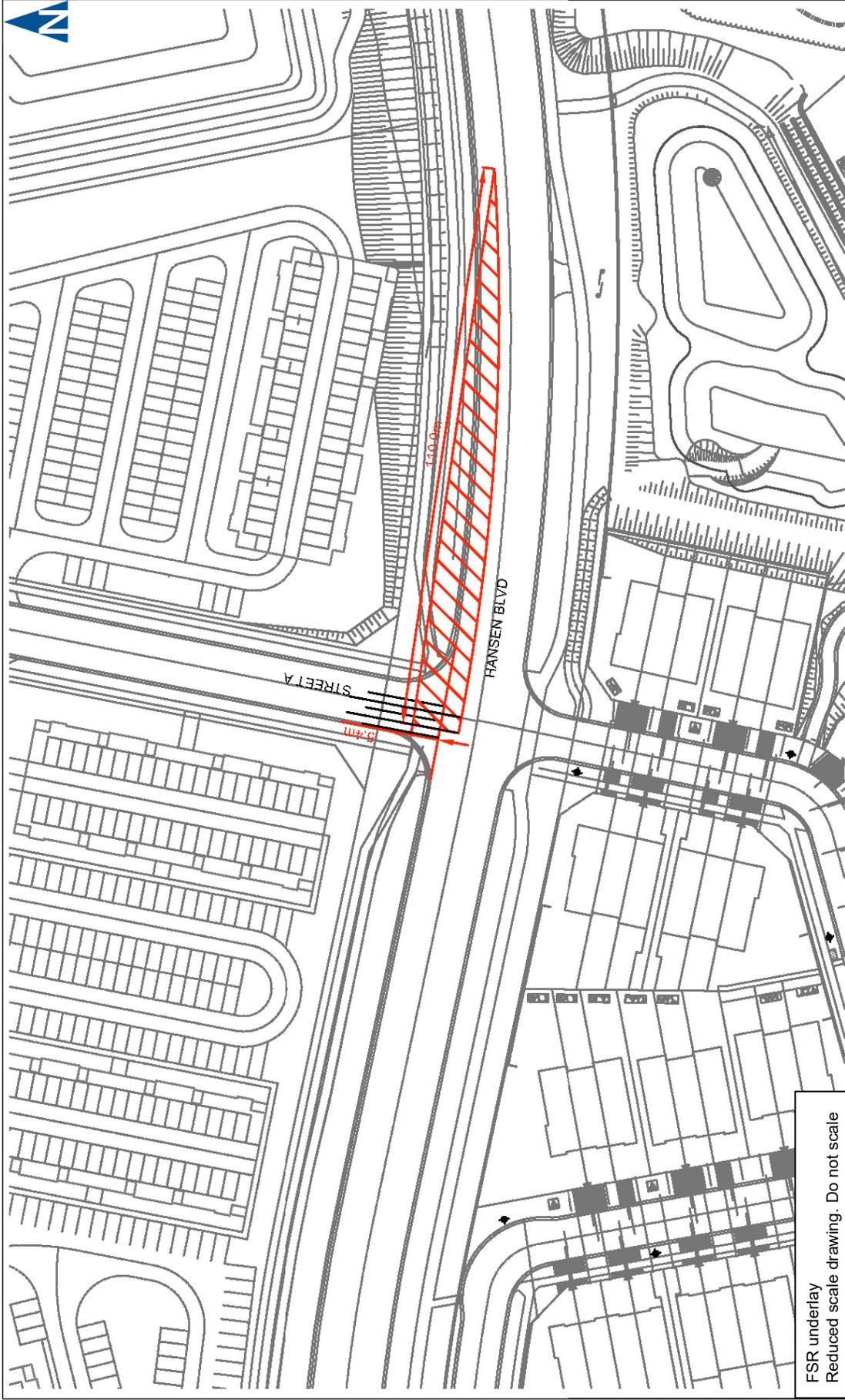


Figure 1



TAC 2017 Sight Distance
Hansen Boulevard & Street A
Left-Turn From Stop

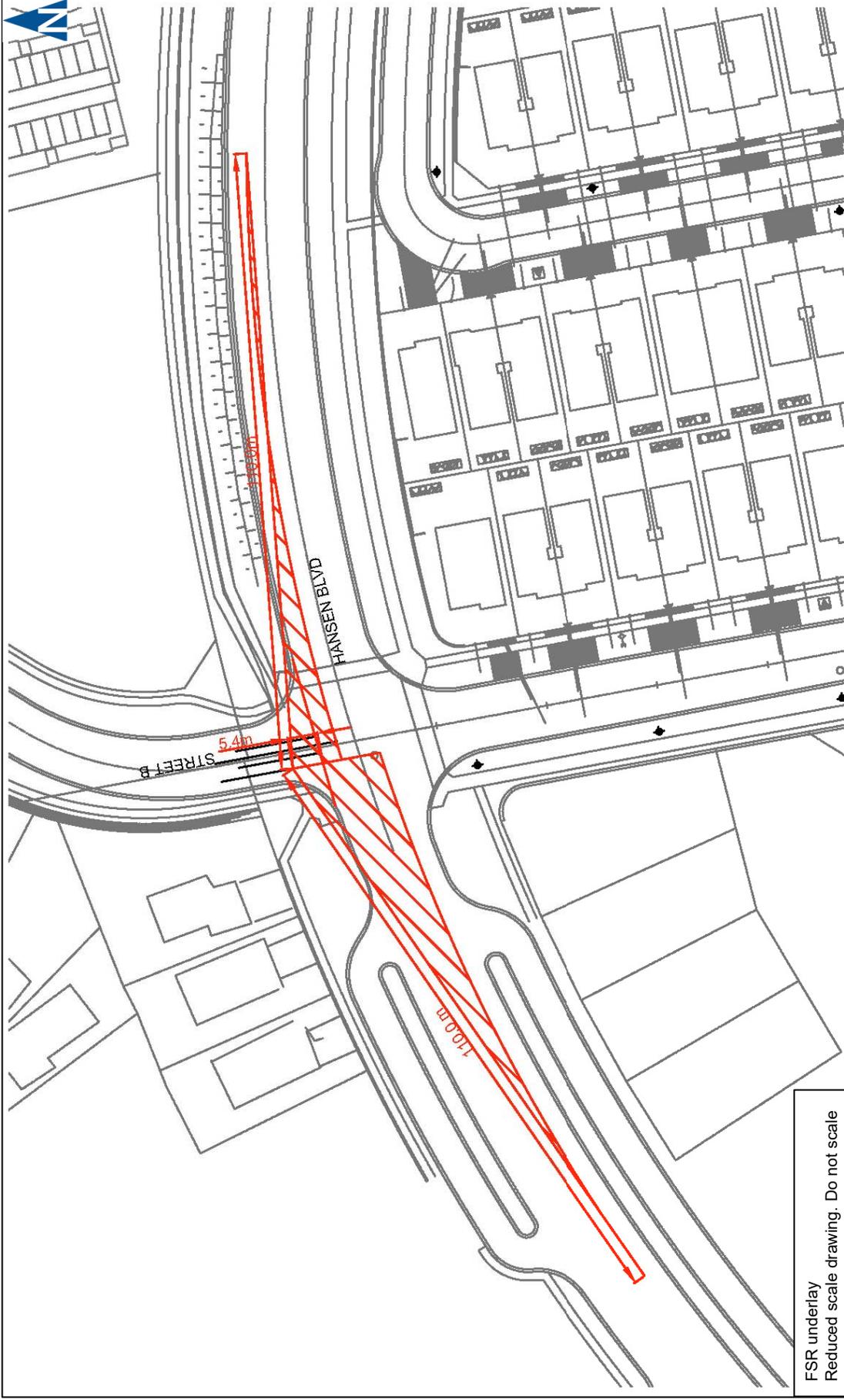
Figure 2



TAC 2017 Sight Distance Hansen Boulevard & Street A Right-Turn From Stop

Figure 3

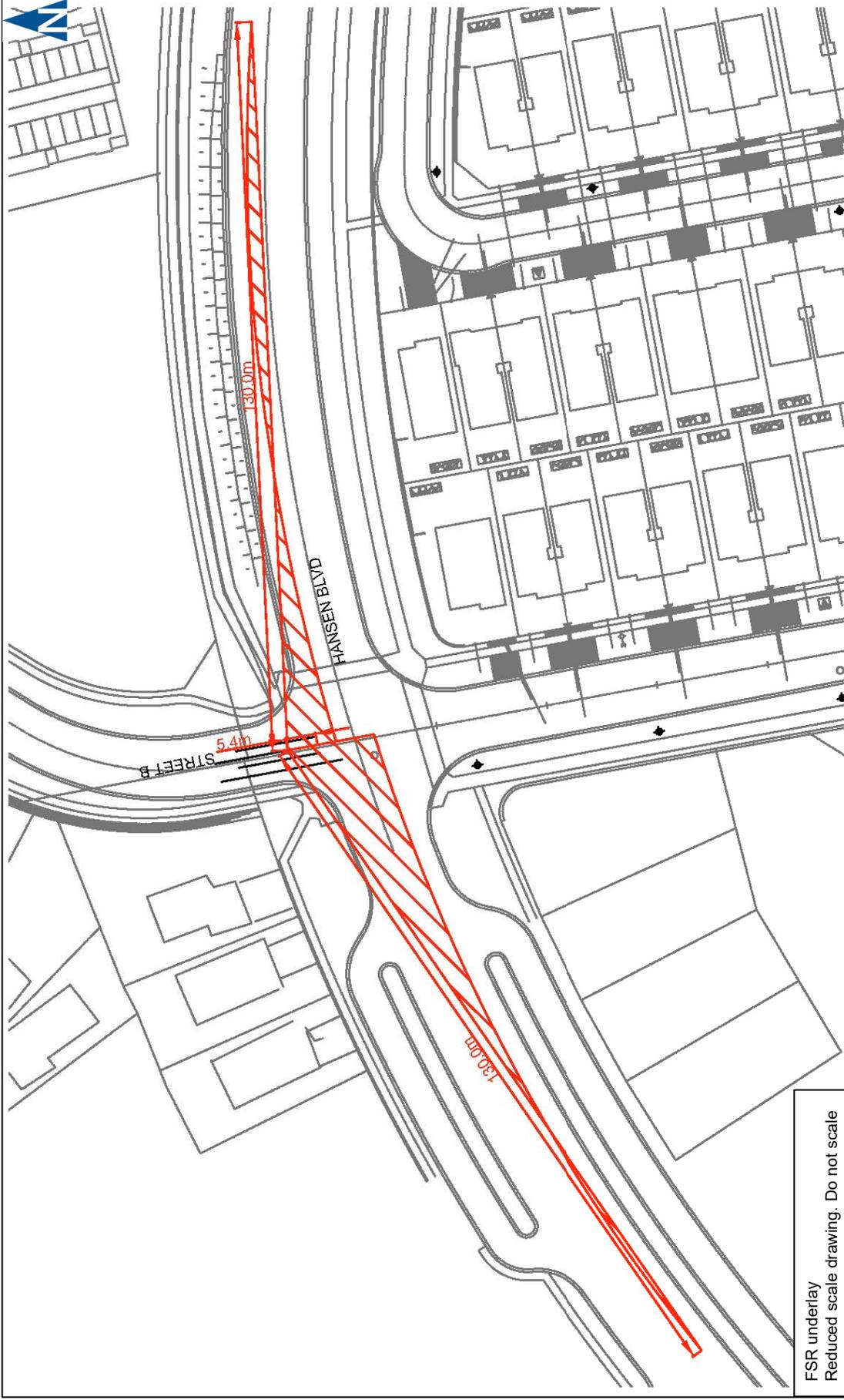




FSR underlay
Reduced scale drawing. Do not scale



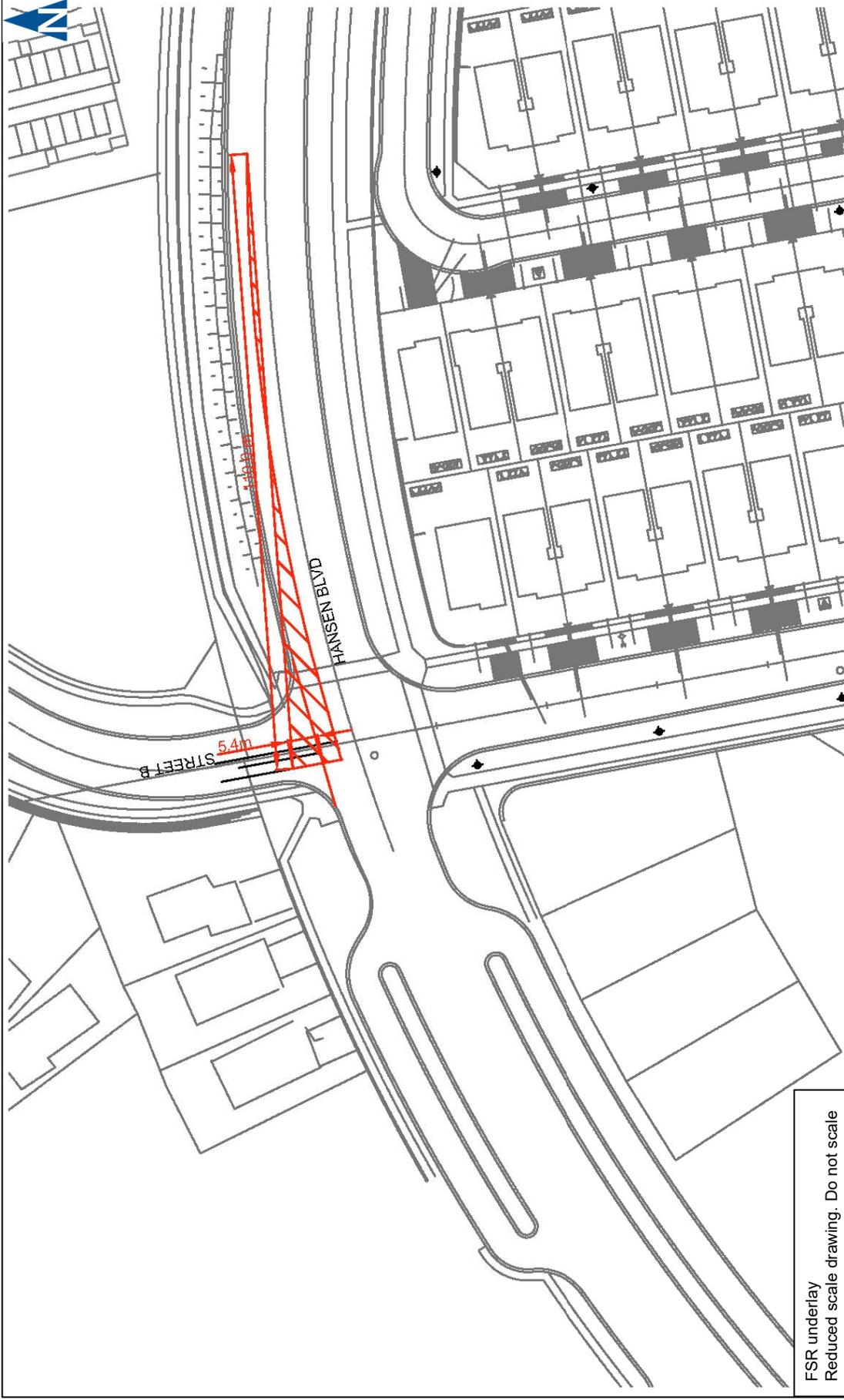
TAC 2017 Sight Distance Hansen Boulevard & Street B Crossing Maneuver



FSR underlay
Reduced scale drawing. Do not scale



TAC 2017 Sight Distance Hansen Boulevard & Street B Left-Turn From Stop

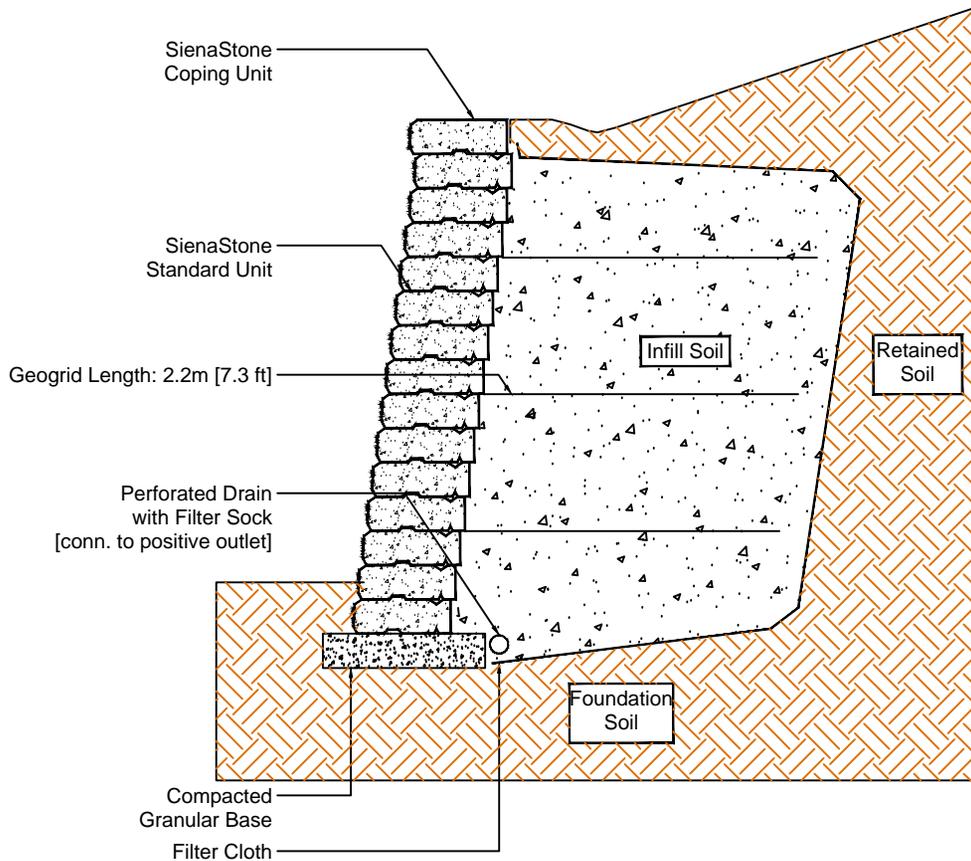


FSR underlay
Reduced scale drawing. Do not scale



TAC 2017 Sight Distance Hansen Boulevard & Street B Right-Turn From Stop

TYPICAL SECTION - NOT FOR CONSTRUCTION



Design Specific Geometric Information

Retaining Wall System	SienaStone w/ Geogrid	Geogrid Type and Manufacturer	See Notes
Maximum Height mm (in)	2780 (109)	Minimum Geogrid LTDS kN/m (lb/ft)	See Notes
Maximum Slope Above Wall	1V:3H	Maximum Slope Below Wall	None
Max. Surcharge Above Wall kPa (lb/sq.ft)	None	Depth of Embedment mm (in)	277 (11)
Batter of Wall	7.12 °	Compacted Base Dimension mm (in)	879 x 186 (35 x 7)

Design Specific Soil Information

	Soil Region				
	Infill	Retained	Foundation	Base	Drainage
Description (by USCS)	GW Well graded, free draining Granular	CL Inorganic Clays Low Plasticity	CL Inorganic Clays Low Plasticity	GW Well graded, free draining Granular	see infill
Effective Internal Friction Angle	35 °	28 °	28 °	39 °	NR
Moist Unit Weight kN/cu.m (lb/cu.ft)	22 (140)	20 (127)	20 (127)	22 (140)	NR
Effective Cohesion kPa (lb/sq.ft)	NR	NR	NR	NR	NR
Soil Notes	Placed in 150mm (6") lifts and compacted to 95% SPD.	Undisturbed dense soil or well compacted Eng. fill.	Allowable bearing cap. must exceed 100kPa (2100 psf)	Crushed Gravel (free draining) compacted to 98% SPD.	Gravel infill must be well graded, angular, free drain w/max. 8% fines

NR - Not Required

Notes:

1. This design meets or exceeds the minimum factors of safety required by Risi Stone Systems based on the design parameters listed above. The analysis was performed as outlined in the National Concrete Masonry Association Design Manual for Segmental Retaining Walls, Third Edition. This is a typical, non site-specific Design.
2. No analysis of global stability, total or differential settlement, or seismic effects has been performed.
3. This design is only provided to illustrate the general arrangement of the SRW structure for preliminary costing and feasibility purposes only. This drawing is not for construction. A qualified Engineer must be retained to provide the Final Design prior to construction.
4. Structures such as handrails, guardrails, fences, terraces, and site conditions such as water applications, drainage and soil conditions, additional live and dead loads, etc., have significant effects on the wall design and have not been taken into account in this typical section. When accounted for in the Final Design, other conditions and elements may result in additional design measures (geogrid, drainage, etc) and cost.
5. For geogrid reinforced structures, a minimum Long Term Allowable Design Strength of 14 kN/m was assumed. Contact your manufacturer or Risi Stone Systems for a list of approved geogrid reinforcements.



RisiStone
retaining wall systems

www.risistone.com
1-800-626-9255

SienaStone®

Retaining Wall
Geogrid Section

2780mm (9.11ft)

Site: 3H:1V Slope - Clays

Infill: Granular

SS2RBSAI278