

Behind the Subdivision

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Nova Scotia Course Instructor

- On-site Septic Installers
- Qualified Persons Level 2



Agenda

A behind the scenes look focusing on the MODL

- ▶ Information review, Stopping Sight Distance, Soil Test
- ▶ Review soils and lot sizing chart
- ▶ The Qualified Person Report (QP Report)

Agenda

- ▶ Deed preparation (Alteration vs. New Lot)
- ▶ Comparison of Urban vs. Rural Subdivisions

Follow up questions / answers.....

So you want to subdivide your land?

▶ Ask the client, what is the desired outcome?

▶ Is this a Boundary Line Alteration

- add a parcel addition to an existing lot

or

▶ New lot

- create a future building lot

So you want to subdivide your land?

- ▶ Gather as much information from the client
 - PID, Deed Reference, Civic Address
- ▶ View Property Online details
 - Are there any existing land surveys of the subject lands or adjacent lands ? Is the land Migrated or not ? What are the approximate land areas of the land parcels involved ?
- ▶ Is it possible, based on available information, to subdivide

So you want to subdivide your land?

- ▶ Other things that must be considered...
 - Does the land being subdivided have a Mortgage?
 - Mortgage Company must co-sign Application (maybe not in all Municipalities).
 - Can be very expensive, some requiring \$500 payment.
 - If there is an existing dwelling.....where is the septic bed ?.....Is the existing system malfunctioning ?

Site Inspection

- ▶ Based on our information review.....and we believe it may be possible to subdivide the land parcel to achieve the clients outcome, we need to visit the site.
- ▶ A site inspection will aid the NSLS / QP
 - ▶ Property lines visible ? Wetlands/watercourses at site ?
 - ▶ Existing sewage disposal system? Undersized remainder / new lot?
- ▶ Driveway access for the new lot is imperative! New or Existing entrance?
 - ▶ A Stopping Sight Distance check must take place

Stopping Sight Distance Check

- ▶ At site exercise to identify slope and site distance visibility for a proposed driveway entrance....or existing
- ▶ Simple tools used to conduct the Stopping Sight Distance Check
- ▶ Land Surveyors in Lunenburg County were trained in the early 1990's how to perform this test by D.o.T staff.
- ▶ Having a NSLS perform this exercise speeds up the Approval process (comments required from Transportation)
When in doubt, the NSLS may contact Transportation for a site inspection and confirmation of observations.

Stopping Sight Distance Check

- ▶ tools: 150mm / 600mm cone, measuring wheel, instrument for slope, Vehicle eye-height staff (1.05m).



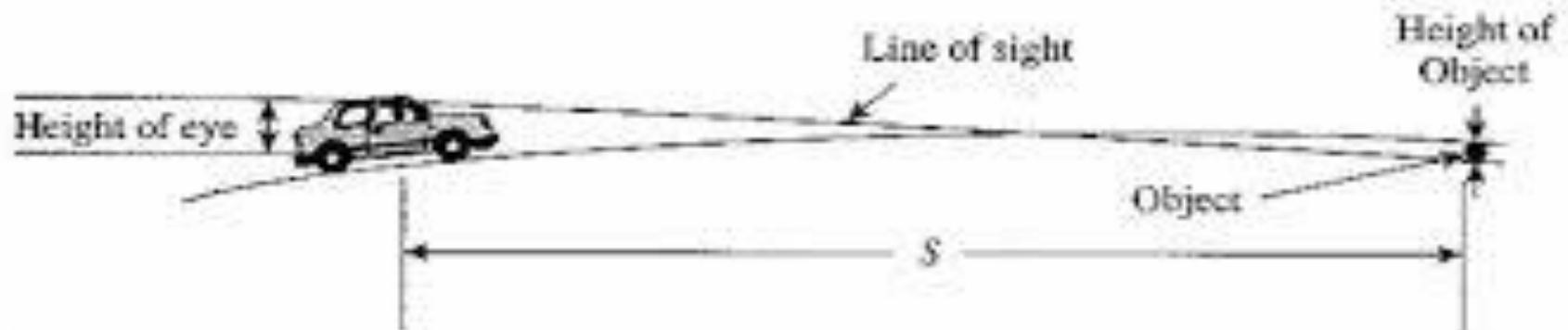
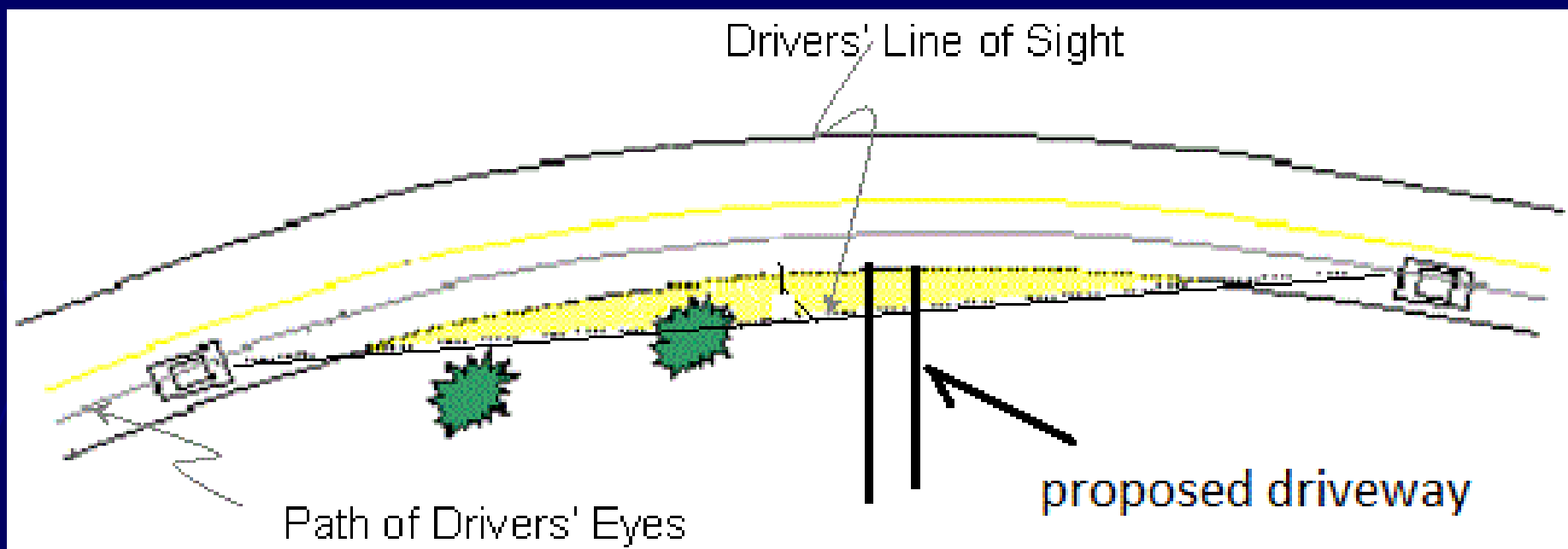


FIGURE 4.8

Stopping sight distance diagram for crest vertical curve.

Positive Slope (up hill approach)

STOPPING SIGHT DISTANCES - IN METRES

TABLE I

POSITIVE GRADES

APPROACH SPEED km/h	0%	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%
30	30	30	30	29	29	29	29	29	29	28	28
35	37	37	36	36	36	36	35	35	35	35	34
40	44	44	44	43	43	42	42	42	41	41	41
45	53	52	52	51	51	50	50	49	49	49	48
50	62	61	61	60	59	59	58	58	57	57	56
55	72	71	70	70	69	68	67	67	66	65	65
60	83	82	81	80	79	78	77	76	75	75	74
65	96	94	93	91	90	89	88	87	86	85	84
70	109	107	105	104	102	101	99	98	97	96	95
75	122	120	118	116	115	113	111	110	108	107	105
80	137	137	132	130	128	126	124	122	120	119	117
85	152	149	147	144	142	139	137	135	133	131	129
90	169	165	162	159	156	154	151	149	146	144	142
95	184	181	177	174	171	168	165	162	160	157	155
100	194	190	186	183	179	176	173	170	168	165	163
105	205	200	196	192	189	185	182	179	176	173	171
110	216	211	206	202	198	194	191	188	184	182	179
115	225	220	215	211	207	203	199	195	192	189	186
120	235	230	225	220	215	211	207	203	200	296	193
125	246	240	234	229	224	220	215	211	208	204	200
130	257	250	244	239	234	229	224	220	216	212	208

EYE HEIGHT = 1.05m

OBJECT HEIGHT = 150mm - FOR INTERSECTIONS, COMMERCIAL & INSTITUTIONAL LOTS
 = 600mm - RESIDENTIAL PROPERTIES

Negative Slope (down hill approach)

STOPPING SIGHT DISTANCES - IN METRES

TABLE II

NEGATIVE GRADES

APPROACH SPEED km/h	0%	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%
30	30	30	30	31	31	32	32	32	33	33	34
35	37	37	38	38	39	39	39	40	40	41	42
40	44	45	45	46	46	47	47	48	49	50	50
45	53	53	54	55	55	56	57	58	59	60	61
50	62	63	64	65	66	67	68	69	70	71	73
55	72	73	74	75	77	78	79	81	82	84	86
60	83	85	86	87	89	91	92	94	96	98	101
65	96	97	99	101	103	105	107	109	112	114	117
70	109	111	113	115	118	120	123	126	129	133	136
75	122	125	127	130	133	136	139	143	146	151	155
80	137	140	142	146	149	153	156	161	165	170	176
85	152	155	159	163	166	171	175	180	185	191	198
90	169	173	176	181	185	190	195	201	208	214	222
95	184	189	193	198	203	208	214	221	228	235	244
100	194	198	203	208	214	219	226	233	240	248	257
105	205	209	214	220	226	232	239	247	255	264	274
110	216	221	226	232	239	246	253	261	270	280	291
115	225	231	237	243	250	258	266	275	285	296	308
120	235	241	248	255	262	270	279	289	300	312	325
125	246	252	259	267	275	284	293	304	316	329	343
130	257	264	271	279	288	298	308	320	332	347	362

EYE HEIGHT = 1.05m

OBJECT HEIGHT = 150mm - FOR INTERSECTIONS, COMMERCIAL & INSTITUTIONAL LOTS
 = 600mm - RESIDENTIAL PROPERTIES

Soil Test

Test Pits are required for 2 reasons

- Help determine potential septic system
- Determine minimum lot size for new lots

- ▶ Soil depth, type of soil and clearance distances will help the QP determine a “proposed” future On-site Sewage Disposal System for this land.
- ▶ The depth of permeable soil will determine the minimum lot area and lot width at the disposal system





TABLE 2.2

TEXTURAL PROPERTIES OF MINERAL SOILS FEELING AND APPEARANCE

Soil Class	Dry Soil	Moist Soil
Rock, Clean gravel	Granular material with few fines. Low percentage of particles less than 2.0 mm	Granular material with few fines. Does not ribbon or form a cast. Low percentage of particles less than 2.0 mm
Medium to Coarse Sand	Sand size (0.2 to 2.0 mm) particles dominate. Aggregates easily crushed when rubbed, feels gritty.	Sand size particles (0.2 to 2 mm) dominate. Squeezed in hand the medium sand will form a weak cast, the coarse sand will not form a cast. Does not form a ribbon.
Fine Sandy Gravel	Loose stones and single grains which feel gritty. Squeezed in the hand, the soil mass falls apart when the pressure is released.	Squeezed in the hand, it forms a cast which crumbles when touched. Does not form a ribbon between thumb and forefinger.
Silty Sand	Aggregates easily crushed; very faint velvety feeling initially but with continued rubbing the gritty feeling of sand soon dominates.	Forms a cast which bears careful handling without breaking. Does not form a ribbon between the thumb and forefinger.
Sandy Silt	Aggregates are crushed under moderate pressure; clods can be quite firm. When pulverized, soil has velvety feel with continued rubbing. Casts bear careful handling.	Cast can be handled quite freely without breaking. Very slight tendency to ribbon between the thumb and forefinger. Rubbed surfaces is rough.
Clayey Silt	Aggregates are firm but may be crushed under moderate pressure. Clods are firm to hard. Smooth, flour-like feel dominates when soil is pulverized.	Cast can be freely handled without breaking. Slight tendency to ribbon between thumb and forefinger. Rubbed surface has a broken or rippled appearance.
Silty Clay	Very firm aggregates and hard clods that strongly resist crushing by hand. When pulverized, the soil takes on a somewhat gritty feeling due to the harshness of the very small aggregates which persists.	Cast can bear much handling without breaking. Pinched between the thumb and forefinger, it forms a ribbon whose surface tends to feel slightly gritty when dampened and rubbed. Soil is plastic, sticky and puddles easily.
Clay	Aggregates are hard; clods are extremely hard and strongly resist crushing by hand. When pulverized, it has a grit-like texture due to the harshness of numerous very small aggregates which persist.	Casts can bear considerable handling without breaking. Forms a flexible ribbon between thumb and forefinger and retains its plasticity when elongated. Rubbed surface has a very smooth, satin feeling. Sticky when wet and easily puddled.



soils with unacceptable permeability



soils with acceptable permeability

The Qualified Person Report

- ▶ The QP observes the soil layers and identifies each within the soil test pit.
- ▶ The depth of permeable soil and type of soil will be compared to the Lot Sizing Table.
- ▶ Lot width meets minimum at the disposal system location.
- ▶ The soil test pit is located where a proposed septic field will be placed and meet all regulatory clearance distances.

The Qualified Person Report

Nova Scotia Environment

Application for Approval

DIVISION 6 - ON-SITE SEWAGE DISPOSAL

SUBMISSION STANDARD

All applications must comply with the Act, Regulations, Guidelines and any policies within the Department. A completed copy of this form must accompany each application.

APPLICANTS NAME: PETER BERRIGAN

APPLICATION #:

SUBDIVISION NAME: PROPOSED LOT 1, HIGHWAY 410

LOT NUMBER: PROPOSED LOT 1

SOIL EVALUATION TESTS

TEST PIT PROFILE (M)

Evaluation Date: MAY 21, 2015

TOTAL DEPTH:	1.60	m	SOIL STRATUM	SOIL TYPE	DEPTH OF SOIL (mm)	DENSITY	MOISTURE
BEDROCK AT:	-----	m	ORGANIC	organic mat	100	LOOSE	DRY
WATER TABLE:	-----	m	1 st layer	SANDY SILT	300	LOOSE	DRY
SLOPE:	12	%	2 nd layer	SANDY SILT	200	MED TIGHT	DRY
ROOTS TO:	0.50	m	3 rd layer	CLAY SILT	1000	VERY TIGHT	MOIST
MOTTLING AT:	-----	m	4 th layer				

Permeability of soil in-situ:

m - meter

1 meter = 1000 mm

Lot Sizes based on permeable soil

TABLE 2.4

MINIMUM LOT SIZE REQUIREMENTS FOR DEVELOPMENT UTILIZING
ON-SITE SEWAGE DISPOSAL SYSTEMS⁽¹⁾

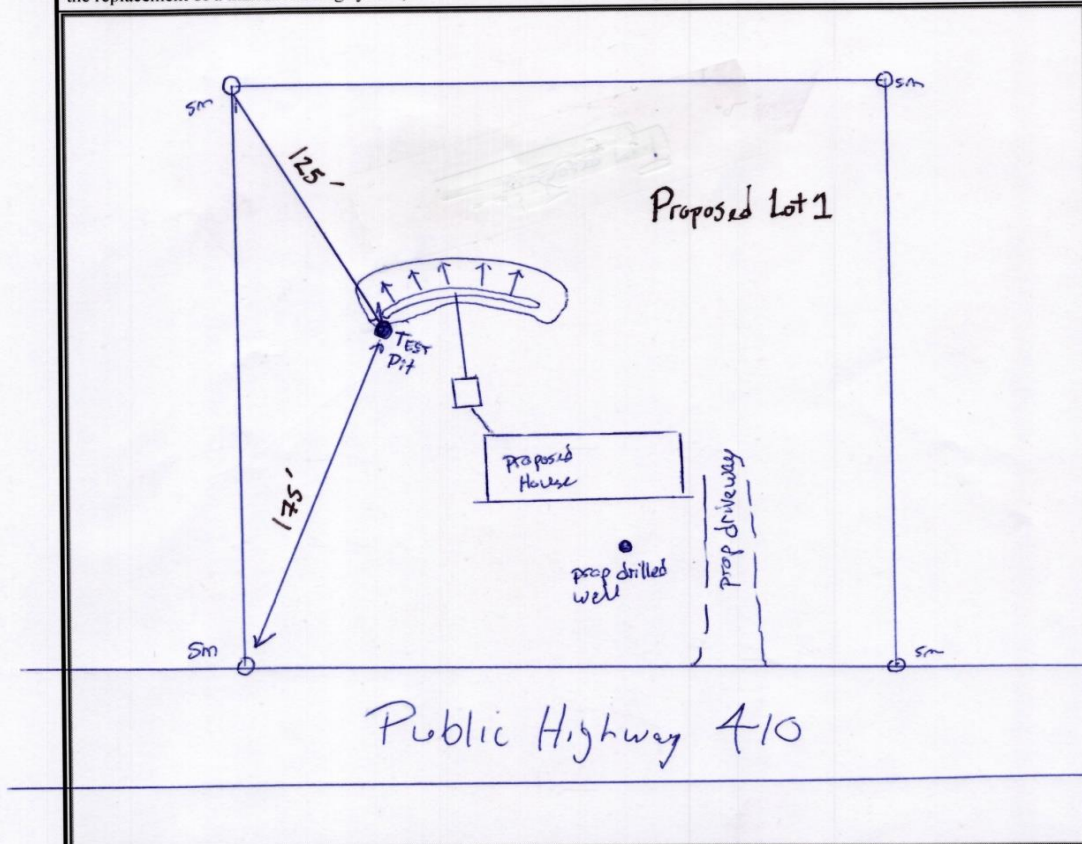
Depth of Permeable soil (mm)	Minimum Lot Area (m ²)		Minimum Lot Width (m)	
0 - 149	9000	2.2 acre	76	250 ft
150 - 299	6800	1.68 ac	60	196 ft
300 to 600	4500	1.12 ac	53	175 ft
Deeper than 600 on a waterfront lot ⁽²⁾	3716	0.92 ac	45	148 ft
601 - 899	3150	0.77 ac	37	122 ft
900 and deeper	2700	0.68 ac	37	122 ft

SUBMISSION STANDARD

All applications must comply with the Act, Regulations, Guidelines and any policies within the Department. A completed copy of this form must accompany each application. (A separate sketch or drawing may be utilized provided it includes the requested information).

SITE EVALUATION OF LOT/ PROPOSED SYSTEM

Sketch of lot, showing location of soil evaluation test pits, direction of slope, watercourse and other features that may influence the selection or design of the system on the lot or within 60 meters of any part of the proposed system including a sketch of proposed On-site Sewage Disposal System Selection/Design*. The test pit location is shown in reference to two fixed points on the property and is within 6 meters of the disposal field location. The placement of the system must at all times meet the minimum clearance distances in the regulations unless a variance is specified in the terms and conditions of the Approval. If this application is for the replacement of a malfunctioning system; show the location of the existing system.



* Cross sectional diagrams of proposal to be attached to this form for submission.

DATE: May 15/2015

QUALIFIED PERSON:

CERTIFICATE OF QUALIFICATION/Engineers NS #: 1776

Pete Berrigan
(SIGNATURE)
Pete Berrigan
(PRINT NAME)

The Qualified Person Report

- ▶ The Land Surveyor / QP will include a full size copy of the subdivision plan with a sketch showing the proposed septic, dwelling, well and driveway.
- ▶ The plan proposal for the QP report should reflect a similar sketch to the Submission Standard hand drawn sketch.
- ▶ The QP is indicating that a dwelling / septic / well / driveway can go on the land. Typically lots are designed to handle up to 4 bedrooms in the home.
- ▶ A new created lot must be sized larger if the proposed dwelling will have more than 5 bedrooms (1.5 x larger)

The Qualified Person Report

- ▶ A cover letter from the Land Surveyor / QP will quickly identify what is proposed on the subdivision plan; specifically the soil characteristics and lot sizing information.
- “ Lot 1 soil test pit results indicated 500mm of permeable Sandy Silt soil and has been sized to be in excess of 1.12 acres (actual 1.40 acres) and be a minimum of 175 feet (actual 200 feet) wide at the future disposal system.”

Property Deeds (subdivision)

- ▶ In the case where a Boundary Line Alteration has taken place, a full written description is prepared that reflects the bearings / distances on the land parcel being exchanged
- ▶ Descriptions are typically prepared by the NSLS who did the survey and are delivered to the lawyer.
- ▶ The lawyer will take the survey plan, parcel description and Affidavit of Value for the land and deliver this to the Development Officer...plan approved, deed/plan filed.

Property Deeds (subdivision)

- ▶ In the creation of a new lot or multiple lot subdivision, a short form description is based upon the newly approved and filed plan. (Provided the lot is Migrated, if not, Long Form Description is required)
- ▶ Referred to as the Short Form Description
- “ Lot 1 as shown on Plan of Subdivision prepared by Peter Berrigan, NSLS dated May 15, 2015, filed at the LRO under number 123456.”

Urban vs. Rural Development

Town of Bridgewater

In Town, lots are typically smaller when access to central sewer and central water is available.

- street frontage as little as 55 feet (16.7m), depends on LUB
- land area of 7000 sq feet (unless By-law says otherwise)
- 10% variation may be permitted
- In cases where central sewer may not exist, lots must be sized as per On Site Sewage Disposal Systems (NS Environment)
- Approval time for a typical single lot subdivision (2- 3 weeks)

Urban vs. Rural Development

Municipality of Lunenburg

- Flag lots (20 feet / 6m access to 66 feet wide Designed Right of Way)
 - By-law may say otherwise
- Commercial entrance / Residential entrance (Stopping Sight Distance)
- Lots sized as per On Site Sewage Disposal (NS Environment)
- Approval time for a typical single lot subdivision (6- 8 weeks)

Questions ?

Surveyor



What my friends think I do.



What my boss thinks I do.



What my wife thinks I do.



What I think I do.



What society thinks I do.



What I actually do.