

GRAVEL ROAD HOOK-ON FEES TOWN OF ESSEX

The Town of Essex currently has over 24 miles of unpaved gravel roads, excluding non-maintained class 4 roads. The class 3 gravel roads are generally rural roads with very low traffic volumes. In general, gravel roads evolved from farm roads, not designed and constructed with a structural base below the travel surface. With low volumes, they function reasonably well with periodic gravel additions, shaping, and attention to ditches. Such roads are particularly susceptible to problems during winter and spring, and as volumes increase, so do complaints.

The class 4 roads are neither maintained nor improved by the Town and development on these roads is discouraged. The Town's Highway policy (Chapter 9.02) specifies that before any development fronting on a class 4 road may occur, the property owner must request and obtain permission from the Selectboard to upgrade the portion of the road connecting the proposed development to a class 3 or better Town road. The class 4 road, or portion thereof, must be upgraded to specified Town standards (if no more than two dwellings are proposed, the class 4 road may be upgraded to driveway standards).

Some of the class 3 gravel roads (Brigham Hill Road, Osgood Hill Road, Indian Brook Road, and Lost Nation road) seem to serve as mini collectors leading to a major attractor (Indian Brook Pond) or connecting paved collectors. Traffic volumes on these roads ranges from about 400 vehicles per day (vpd) to over 900 vpd. Available traffic data suggest that traffic volumes on these mini collectors is not increasing significantly.

Since the class 3 gravel roads do not have an adequate structural base or drainage, and since the gravel surface is intended to shed water rather than let water filter through as is needed under paved surfaces, the notion of simply laying a lift of asphalt on top of the gravel is not an effective fix. The asphalt would break up within a very short time. To effectively convert a gravel road to a paved road, it is necessary to completely excavate the existing road to a depth sufficient to install a proper sub-base and base, install adequate drainage, and then apply the paved surface. It is a very expensive effort and is difficult to justify unless a gravel road is expected to become a major traffic carrier. The Town of Essex has determined that it cannot justify the expense of converting any of its gravel roads to paved roads at this time.

According to the Town's Public Works Director, most of the Town's class 3 gravel roads do not currently meet acceptable gravel road standards in terms of width, depth of gravel layer, shape, horizontal and vertical curves, and ditches. A 2008 study reported in the Town's 2009 Highway Transportation Management Plan (HTMP) determined that it would cost, on average \$15.30 per linear foot to bring the Town's class 3 gravel roads to an improved (not paved) condition. This yields a total cost of almost \$2 million to upgrade the Town's class 3 gravel roads. That study concluded that the deficit for adequately maintaining the Town's gravel roads is approximately \$100,000 per year. The HTMP suggests future road budgets that include \$30,000 for gravel roads in FYE 2011, increasing to \$33,300 in FYE 2014. It is reasonable to expect that much of these funds will be directed towards the higher volume roads that serve as mini collectors.

The frequency of maintenance visits to a class 3 gravel road is driven in part by the overall quality to which the road is maintained, and in part by the traffic volume on that road. If new development generates an increase in traffic volume on the road, the wear on the road will increase and there will be more users who might complain about pot holes, excessive dust, soft spots, etc. This will be mitigated, to some extent, if the road is maintained to the improved standard before the development takes place. It is reasonable to expect any new development to pay for the cost of bringing the road up to the improved standard before it places additional traffic demands on the road.

An analysis of the Town's class 3 gravel roads was undertaken using GIS technology and tax parcel data. All parcels fronting on the class 3 gravel roads were identified, and evaluated to determine if they were presently developed, undeveloped, or developed with additional development potential. Each parcel was examined in the context of slope, wetlands, and current zoning to develop estimates of future development potential. Of the 25 class 3 gravel roads in the Town, eight were identified as having the potential for ten or more new dwellings. All others had estimated potential for five or fewer new dwellings, too few to generate significant increases in traffic volumes. The eight roads with significant development potential included two of the four class 3 gravel roads serving as mini collectors. The other mini collectors are Indian Pond Road which has little development potential but serves a major recreation facility, and Osgood Hill Road. All together, a total of ten class 3 gravel roads were identified for further analysis: six local roads with significant development potential, two mini collectors with significant development potential, and two mini collectors with limited development potential. These are shown in Table 1. Of the 15 class 3 gravel roads that were not included in the detailed analysis, only five currently serve 19 or more dwellings (Bixby Hill Road, Catella Road, Lamore Road, Sawmill Road, and Sleepy Hollow Road).

The analysis of gravel road hook-on fees was based on the premise that all parcels on the road would benefit if the road were brought up to an improved gravel road standard. Thus, the estimated upgrade cost for each road (length times \$15.30 per linear foot) was divided by the total number of dwellings expected (existing plus potential) on that road. This is shown at the far right hand column of Table 1. For the ten roads examined, the estimated hook-on fees range from approximately \$900 per unit to just under \$3,600 per unit. The estimated hook-on fees are substantially higher for the two mini-collectors that have very limited development potential. On average, hook-on fees estimated for these ten roads would be \$2,963 per dwelling

On the mini collectors, some of the benefits of the upgrade will accrue to through-travelers. New residential development should not be asked to pay for benefits received by through-travelers.

To account for the through traffic on these four mini collectors, current local traffic was estimated using a trip rate of 10 trip ends per dwelling unit per day. These estimates were then compared to recent traffic counts to determine the portion of total traffic derived from dwellings along the road.

**TABLE 1
SIGNIFICANT CLASS 3 GRAVEL ROADS**

GRAVEL ROAD NAME	LENGTH		Number Of parcels	# parcels w/ dwlgs	#undeveloped parcels	upgrade cost	Potent. new units	Total units	Cost per unit
	(in feet)	Function							
INDIAN BROOK ROAD	7,776.12	Col	27	22	5	\$118,975	0	22	\$5,408
OSGOOD HILL ROAD	12,717.23	Col	51	46	5	\$194,574	1	47	\$4,140
BRIGHAM HILL ROAD	11,607.46	Col	56	51	5	\$177,594	10	61	\$2,911
LOST NATION ROAD	16,167.64	Col	72	59	13	\$247,365	10	69	\$3,585
BRIGHAM HILL LANE	4,824.25	Loc	15	8	7	\$73,811	25	33	\$2,237
CHAPIN ROAD	12,539.84	Loc	51	42	9	\$191,860	25	67	\$2,864
COL PAGE ROAD	3,942.07	Loc	15	10	5	\$60,314	17	27	\$2,234
DISCOVERY ROAD	2,664.22	Loc	16	10	6	\$40,763	35	45	\$906
OLD PUMP ROAD	5,366.90	Loc	18	16	2	\$82,114	10	26	\$3,158
WEST SLEEPY HOLLOW ROAD	5,280.00	Loc	19	16	3	\$80,784	15	31	\$2,606
TOTALS	82,885.73		340	280	60	\$1,268,152	148	428	\$2,963

**TABLE 2
ADJUSTED UPGRADE COSTS AND UNIT COST ANALYSIS
SIGNIFICANT CLASS 3 GRAVEL ROADS**

GRAVEL ROAD NAME	LENGTH		# parcels w/ dwlgs	# parcels w/ dwlgs	#undeveloped parcels	% undeveloped parcels	upgrade cost	% local Trips	adj./ upgrd costs	Potent. new units	Total units	% Increase	Cost per unit (adj)
	(in feet)	Function											
INDIAN BROOK ROAD	7776.12	Col	27	22	5	18.52%	\$118,975	34%	\$40,451	0	22	0.00%	\$1,839
OSGOOD HILL ROAD	12717.23	Col	51	46	5	9.80%	\$194,574	71%	\$138,147	1	47	2.13%	\$2,939
BRIGHAM HILL ROAD	11607.46	Col	56	51	5	8.93%	\$177,594	58%	\$103,005	10	61	16.39%	\$1,689
LOST NATION ROAD	16167.64	Col	72	59	13	18.06%	\$247,365	65%	\$160,787	10	69	14.49%	\$2,330
BRIGHAM HILL LANE	4824.25	Loc	15	8	7	46.67%	\$73,811	Na	na	25	33	75.76%	\$2,237
CHAPIN ROAD	12539.84	Loc	51	42	9	17.65%	\$191,860	Na	na	25	67	37.31%	\$2,864
COL PAGE ROAD	3942.07	Loc	15	10	5	33.33%	\$60,314	Na	na	17	27	62.96%	\$2,234
DISCOVERY ROAD	2664.22	Loc	16	10	6	37.50%	\$40,763	Na	na	35	45	77.78%	\$906
OLD PUMP ROAD	5366.90	Loc	18	16	2	11.11%	\$82,114	Na	na	10	26	38.46%	\$3,158
WEST SLEEPY HOLLOW ROAD	5280.00	Loc	19	16	3	15.79%	\$80,784	Na	na	15	31	48.39%	\$2,606
TOTALS	82885.73	lf	340.00	280.00	60.00	17.65%	\$1,268,152		\$972,035	148.00	428	34.58%	\$2,271

These ratios were used to adjust the upgrade costs to reflect only the portions allocated to local residential traffic¹, as shown in Table 2. By making these adjustments, the unit costs for the mini collectors become more consistent with the unit costs for the other roads. On average, the adjusted estimated hook on fees for the ten roads examined was \$2,271 per dwelling, almost 25 percent lower than the unadjusted estimates.

It is assumed that this analysis is applicable to the remaining class 3 gravel roads, and that the average hook-on fee can be applied to all 25 class 3 gravel roads in the Town.

It should be noted that most, but not all, of the potential development will occur on large lots that must go through subdivision approval. On the ten significant gravel roads, only a small portion (11 percent) of the potential development can occur on existing undeveloped building lots.

Even if such hook-on fees are collected as part of the development process, they will not generate revenues sufficient to pay for all of the necessary gravel road upgrading. It would, however, supplement the Town's annual allocation to gravel road maintenance. This is particularly true for the mini collectors, which either have very limited development potential or even when there is potential for ten or more dwellings, the development potential represents a relatively small portion of the total dwellings served by the road. If such hook-on fees were collected, it would be appropriate for the Town to execute improvements on the roads serving the developments that paid the fees. This could be done by placing these roads on a first priority list for improvements, and, if possible, completing the upgrades prior to most of the expected build-out.

As an alternative, a developer might agree to actually upgrade the road to the Town's satisfaction, in which case the hook-on fees would be waived. This, however, would only make sense for fairly large developments.

Another concern related to class 3 gravel roads is the impact of construction and construction vehicles. Construction, by definition, involves the coming and going of heavy trucks to bring in heavy equipment, bring in or remove soil or gravel, bring in construction material, remove waste, etc. The Town has found it necessary to replace the gravel in front of a lot after construction, and charges for the cost of gravel. For a typical 200 foot wide lot, this amounts to approximately \$750. This charge could be built into any gravel road hook-on fees the Town chooses to establish.

There are other possible approaches to calculating class 3 gravel road hook-on fees. One approach is to assume that these gravel roads would not require upgrading if there were no additional development on them, and so the developers of the new dwellings should be required to cover the entire upgrading costs. This, of course, results in significantly higher fees, ranging from just over \$1,150 per unit to over \$8,000 per unit on the local gravel roads and from about \$17,750 to over \$194,500 per unit on the mini collectors (one mini collector has no future

¹ The traffic count data suggest that local traffic accounts of 34% of traffic on Indian Brook Road, 71% on Osgood Hill Road, and 58% on Brigham Hill Road. The data suggest that the local traffic generated on Lost Nation Road is greater than the counted traffic. This is seen as a statistical anomaly, and it will be assumed that local traffic accounts for 65% of the traffic on this road.

development potential so this calculation is not applicable). Since all parcels on the roads would enjoy the benefits of the upgrading, it would be difficult to logically justify such fees only on new development. The rational nexus for a fee of this type is somewhat weak.

Another approach is to argue that a new development should be responsible for upgrading only the section of the class 3 gravel road that actually links that development to a paved road. Development on parcels at the far end of a gravel road would be charged more than development close to the paved road end of the gravel road. Estimating fees for such an approach would require a parcel by parcel analysis which is beyond the scope of this study. In addition, some logical issues would have to be addressed, such as how to justify requiring new development to upgrade a stretch of road that also serves some number of existing dwellings (see previous paragraph) or that serves some currently undeveloped parcels, and how to deal with multiple subdivisions on the same gravel road.

Finally, it is possible to consider each class 3 gravel road as a miniature special assessment district and ask all property owners fronting the road to pay a proportionate share of the upgrade costs. Since these roads generally serve property on both sides, the unit cost to upgrade the road (\$15.30 per linear foot) would be divided in half, so that each parcel would be asked to pay \$7.65 per linear foot of frontage. For a typical 200 foot lot, this would amount to \$1,530. Lots with more frontage would pay proportionately more. This approach is probably applicable only if all affected property owners agree.

In conclusion, there appears to be a rational justification for the Town to assess gravel road hook-on fees for new dwellings units that are accessed from the Town's class 3 gravel. Such a fee should be set at a fixed amount equal to the average value calculated in this analysis (\$3,021 per unit).

Recommendations

1. First, it is recommended that the Town continue its policy regarding development on class 4 roads.
2. Second, it is recommended that the Town establish a hook-on fee for new development on its class 3 gravel roads. This fee should contain two basic components—one for the cost of bringing the roads up to the preferred gravel road standard, and a second for the cost of replacing gravel after construction. The first component should be based on the average cost (\$2,271 per dwelling) of upgrading the roads as shown in Table 2. The second component should be based on the cost of gravel assuming an average road frontage and road width. The Town has estimated this \$750 per dwelling.

Thus, the recommended class 3 gravel road hook-on fee is $\$2,271 + \$750 = \$3,021$ per dwelling unit.

Such class 3 gravel road hook-on fees could be implemented in accordance with the provisions for impact fees set forth in 24 V.S.A., Chapter 131. If this approach is used, the formulae for the fees would have to include provision for credits to reflect any

possible double payments for the road upgrades. In addition, if the monies collected were not used for the specified road upgrades within six years of the date they were collected, they may have to be refunded. This last provision suggests that the Town would be obligated to upgrade any gravel road serving a dwelling that paid the fee, within six years of the date that fee was paid. This could require a road to be upgraded after only one new dwelling was built.

An alternative is to explore the possibility of treating class 3 gravel road hook-on fees in a manner similar to water and sewer hook-up fees, payable upon issuance of a zoning permit. This might be much simpler, but the legal authority for establishing gravel road hook-on fees is not clear. The Town should consult its attorney if it wishes to pursue this approach.

Another possible approach is to treat class 3 gravel road hook-up fees as off-site mitigation requirements addressed under subdivision approval. Any subdivision on a class 3 gravel road would be required to pay a gravel road mitigation fee for each new dwelling or building lot in the subdivision, equal to the estimated gravel road hook-on fee. This could be treated as a condition of subdivision approval. The condition could be worded to require payment at such time as a zoning permit was issued for construction of each new unit. The primary disadvantage of this approach is that new dwellings on existing building lots not requiring subdivision would not be subject to the fee. This may not be critical since most (89 percent) of the development potential on the ten significant gravel roads appears to be on lots that would require at least minor subdivision approval.

3. The Town should establish a policy to address situations where large subdivisions are created on land accessed only by class 3 gravel roads. If a development on land accessed by a class 3 gravel road is large (per subdivision regulations or public road standards) enough to require that its internal roads be paved and turned over to the Town, then the following conditions must be included in the subdivision approval.
 - a. The developer must pave the internal roads in accordance with the Town's specifications,
 - b. The developer must pay the class 3 gravel road hook-on fee based on the number of dwelling units or building lots planned for the subdivision, and
 - c. The developer must pay a proportionate share of the cost of reconstructing and paving that portion of the class 3 gravel road that will connect the subdivision to the Town's paved road system. The cost of reconstruction shall be as estimated by the Town Public works Department. The proportionate share shall be determined as the ratio between the number of P.M. Peak Hour trip ends to be generated by the subdivision at build-out divided by the current P.M traffic volume on the road to be reconstructed.