

ENVIRONMENTAL IMPACT CASE STUDY
ROUTE 220 — FINCASTLE TO EAGLE ROCK
PROJECT 0220-002-106

by

The Environmental Team
composed of

Scott Schafer and L. Ellis Walton, Jr.
Highway Research Analysts
and
Michael Dixon
Student Assistant

Virginia Highway Research Council
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BACKGROUND

At the request of the Environmental Quality Division, the Environmental and Economics Section of the Virginia Highway Research Council conducted a study to determine the probable socioeconomic and environmental impact of the proposed dual-laning of Route 220 between Fincastle and Eagle Rock. This evaluation was a part of the Highway Department's effort to ensure in the proposal stage that projects will complement the environment they traverse.

METHODOLOGY

The methodology employed evolved from an eighteen-month study conducted by the Research Council, as modified by experiences in practical field application. The Council approach utilizes an interdisciplinary team (representing the fields of sociology, economics and ecology) to study the area first hand. In order to measure local values, team members interviewed selected inhabitants of the area to be affected. In Botetourt County, the team members conversed with local farmers, forest managers, businessmen, a Baptist clergyman, and personnel of the adjoining Highway Maintenance Headquarters. In addition, the team examined the Botetourt County property tax records to determine the probable impact of the proposed taking on the tax base of the county. A windshield survey supplemented by a walking tour of the project area familiarized the team with its distinctive features.

ENVIRONMENTAL IMPACT

The potential socioeconomic and environmental effects of the proposed improvement were evaluated in accordance with the Federal Highway Administration guidelines set forth in PPM 20=8. The environmental impact is considered to be as follows:

Fast, Safe, and Efficient Transportation

The improvement to this stretch of Route 220 should alleviate the accordion-like movement of traffic now occurring in each lane as faster traffic backs up behind slower moving vehicles. Safety can only be enhanced by the changes to intersections of the truck route and its feeders. Visibility up and down Route 220 is poor at best, making entrance onto the highway from existing secondary roads and driveways extremely dangerous. This problem is compounded in the summer when honeysuckle thickets subtract from the minimal visibility designed into the old road. Through traffic will enjoy faster passage of the area, but the upgrading may be a mixed blessing for the local users who speak of the added safety of the proposed road and not of the increased speed of travel on it. The forced slowdown of traffic on the existing route (due to its design) will be lost in the proposed upgrade. This loss may actually inconvenience the local residents, who have become accustomed to feeding into a slow moving stream of traffic, unless the sight distances are substantially increased. Safety would be increased if the existing bridges were widened to the new standards.

National Defense

The improvement will facilitate faster and safer movement of defense traffic by reducing potential delays. Since this route parallels Interstate 81, it represents an alternate route for defense related traffic, and would make interdiction more difficult.

Economic Activity

Three service stations and one restaurant abut the existing route. They will be connected to the southbound lanes by crossovers and will be clearly visible. It is doubtful that the proposed construction will result in a loss of business to these operations.

Some prime farmland will be taken out of cultivation. Most of the farms abutting the project are producing agricultural businesses, as opposed to idle or partially-utilized acreage. The modern farm is a classic example of land-use planning — highway planning can be made compatible with it. Farms in a constant state of productive tillage depend on a cycling of crop types in each field, usually over a three-year period, to give the soil a chance to replenish those minerals the crops take in their growing cycle. If this cycle is disrupted without sufficient advance warning, the farmer may have to go to the open market for the feed grains that he would ordinarily grow for himself.

The loading pen at Booze's barn near Station 825 can be shifted 90° to the west without reducing the efficiency of stock feeding and loading. The entrance near Station 850 on the Devon Rogers property should be placed along the Rogers' border with the Owens-Illinois tract, which will be logged heavily from 1975 to 1995. If this is not possible, the Owens-Illinois forest manager (Mr. R. Hundley at Eagle Rock) should be contacted in an attempt to provide a safe and economically feasible entrance onto the highway.

The sawmill on the Hickok property serves the neighborhood, but could be easily moved to another location on the same tract.

Employment

No adverse impact on employment in the area is expected. The road is a link between the Roanoke and Covington industrial areas; commuting will be easier and safer.

Recreation and Parks

There is a turnout and picnic table near Station 585 that offers a clear view of the Alleghenies to the west and the Blue Ridge to the east. This should be widened, and complemented by a similar turnout between Stations 580 and 595, on the west side of the road, with parking areas wide enough to ensure safe exit and entry from a family automobile. This particular area offers a panoramic view of the entrance to the Shenandoah Valley. The scenery along the route is sufficiently rural and uncluttered that no other special areas need be blocked off as green space for the traveler.

Fire Protection

The upgrading of the road will provide faster and safer passage for heavy fire-fighting equipment. Mountain rescue operations will be facilitated by faster and safer transportation of the emergency and survival equipment.

Aesthetics

With the added lanes so nearly paralleling the old, the blending of the road into the topography and floral growth of the area will be simple to accomplish. Replacement of the stone pillars bordering the Peck driveway south of the Route 679 intersection would preserve an aesthetically pleasing farm entrance. The most noticeable landscaping loss along the proposed route will be the trees taken from the entrance to the Frantz property at Station 575.

Public Utilities

The power poles of the Appalachian Power Company and the telephone poles of the Roanoke and Botetourt Telephone Company are the only utilities affected. The Roanoke Gas Company pipeline is well removed from the proposed construction, as is the Atlantic Seaboard Company's line. As the proposed route moves north, these lines will be affected.

Public Health and Safety

The proposed four-laning of Route 220 will eliminate oncoming traffic at dangerous curves and grades by creating a "one-way traffic" situation. The additional lanes will definitely ease the driving strain on out-of-state tourists who are not familiar with the road. How long it will take the local residents to adapt their driving habits to the faster moving traffic is another question. Some construction of housing is noticeable along existing Route 220 north of this project. If this segment becomes northbound only, either a frontage road will have to be provided for local traffic to go south, or residents will have to wend their way north to link up with the southbound lanes. Some advance warning of the Department's intentions, in the form of a published long-range plan, could forestall housing starts along this and other such routes.

Residential and Neighborhoods Character and Location

The proposed construction takes twelve houses, though it does not break up any "neighborhoods" in the sociological sense of the word. Those houses not taken which border the present Route 220 are accustomed to a view of the road. It is only the closer proximity to the new road that could cause annoyance. The public meeting places, such as general stores, restaurants, and churches, are unaffected. Though even more of the decreasing supply of open space is converted to a trafficway, it is not enough to alter the rural character of the area.

Religious Institutions and Practices

Of the numerous churches that are indirectly served by Route 220, only Faith Baptist Church and Pierce Chapel overlook the route. Since the four-lane facility is not a limited access one, there is no danger of cutting off the community from its religious gathering places. Entry to and exit from them should be improved by the construction of the additional lanes. Faith Baptist will soon vote on the opening of a Christian Day School initially comprising one hundred preschoolers. The improved road would substantially reduce the danger of transporting these students to and from the churchschool. A storage lane or crossover serving the church would add to the safety of busing operations if the school were to be put in operation.

Conduct and Financing of Government

The tax base data secured at the temporary Botetourt County Courthouse show an estimated (the records are less than complete due to a recent fire in the century old structure) tax loss of \$642.31 (see attachment). Experience has shown that when highways are improved, the added usability of the road allows more intensive development of the abutting land. This has historically caused an increase in the revenues from property taxes.

Conservation

The proposed channel change of Town Branch can be defended as a safety and an economic benefit, but not as a boon to the conservation of natural waterways. The rechanneling of the stream also requires the taking of more of the fertile bottom land between Town Branch and Catawba Creek, in the form of a permanent easement. The channel change should remain as designed, subject to elimination at the first public disturbance concerning this conservation loss. The pond at Station 587 is partially within the right-of-way, but should be saved if its imposition on the right-of-way does not create an engineering problem.

There is an undisturbed marsh at Station 852 which will be destroyed by the construction. Marshes are an integral part of the ecological balance of rural areas; the elimination of this one will affect the food supply of the birds and mammals in the adjoining wooded area. The proximity of Catawba Creek, and the absence of human activity along this stretch, should provide an alternate feeding place for them. There is no substantial taking of marketable timber on this project.

Natural and Historic Landmarks

No man-made landmarks will be disturbed. No natural landmarks manifested themselves in the field study. This area is replete with historical remembrances from Civil War and pre-Revolutionary War days, but none are disturbed by this project.

Noise, Air, and Water Pollution

The environmental team used the computer program developed by the National Cooperative Highway Research Program to simulate the noise that will result from the proposed improvement. Actual readings taken at five locations were as follows:

Station 551	=	69 dbA
Station 575	=	80 dbA
Station 677	=	63 dbA
Station 716	=	60 dbA
Station 748	=	79 dbA

(The distance of the observer from the source varied in these readings.) Based on a comparison of the computer estimates with these readings, it is believed that the noise from the proposed improvement will be no greater than that at present; the existing domiciles to the west will experience slightly higher levels, those on the east slightly lower.

Water pollution should not be a major problem in this area of fast-flowing streams, although the proposed channel changes will slow the flow in the deeply-etched natural channels. Siltation could be a problem if preventive measures are not taken during and immediately after construction. Numerous small streams flow out of Cedar Ridge, which the project parallels, so the small or insignificant siltation in each stream may well be compounded in its effect on Catawba Creek. The added square footage of road surface will require a greater snow removal effort. If sodium chloride is used for deicing, the streams should be periodically checked for residual content of this salt.

Property Values

The improved access should enhance the general property values in the area, particularly on the feeder routes. Some improvements may decline in desirability, but the land itself will likely rise in value. The disposition of the house listed as the Irvan property on the scroll (now the Wyrick property) is important to the value of the rest of the plat. This is the most critical juncture of highway and household along the proposed route. If engineering considerations allow and the owner is willing, the house should be left standing. It is not as replaceable as the other houses on the route, financially or architecturally.

Multiple Use of Space

The culvert at Station 750 is presently being used by the abutting landowner as a cattle crossunder. The culvert on the new roadway should be designed so as to allow the passage of dairy cattle under the road. This will require a fence bordering the stream between the north- and southbound lanes, unless the sides of the cut are steeply angled. Since heavy rains could block the required daily passage of the milk cows, an alternate solution would be the construction of a separate passageway for them. This would seem to be prohibitively expensive, and the owner has not requested it.

Replacement of Housing

Replacement home and trailer sites dot the western side of the proposed route. They are found along Route 679, and at the intersections of Routes 635 and 655 and Routes 635 and 681. Botetourt County is an area of family units where forced geographic separation of sub-units of the family is highly undesirable, however.

Education

Some of the resident children go north to schools in Eagle Rock and Buchanan, while others go south to schools in Fincastle and beyond. School bus operations along the route will be safer, and not so disruptive of traffic. (See Religious Institutions and Practices.)

Displacement of Families and Businesses

The route has been designed so as to displace the least possible number of family housing units, within engineering and economic parameters. No business will be displaced, with the exception of the intermittently operating Hickok sawmill. The agricultural businesses will be inconvenienced, but the resourcefulness of their operators should prevent inconvenience from becoming a displacement.

6442 FINANCING OF GOVERNMENT

PROJECT: 0220-002-106

Parcel Number	Acre		Value (\$)		Total Tax (\$)	Take		Tax Loss (\$)
	Total	Take	Land	Improvement		Land	Improvement	
1	45	2 $\frac{3}{4}$	2,920	0	128.48	17.10	0	17.10
2	202	2	5,720	1,540	319.20	2.48	0	2.48
3	29	5	1,660	3,800	240.24	25.20	0	25.20
4	2.1	$\frac{3}{4}$	440	3,500	173.36	6.81	0	6.81
5	10.3	1 $\frac{1}{2}$	800	2,300	136.40	5.12	0	5.12
6	1.5	$\frac{1}{2}$	60	820	38.72	.88	36.08	39.96
7	2.8	1	260	1,340	70.40	4.10	58.96	63.06
8	17	2 $\frac{1}{2}$	1,000	3,200	184.80	6.45	0	6.45
9	211	2 $\frac{1}{2}$	7,280	4,920	559.24	3.80	0	3.80
10	2.5	1 $\frac{1}{4}$	500	0	11.00	11.00	0	11.00
11	2	$\frac{3}{4}$	160	220	16.72	2.64	9.68	12.32
12	234	5 $\frac{1}{2}$	4,710	2,980	83.60	.88	74.80	75.68
13	148	1	2,680	2,090	191.14	.80	0	.80
14	77 $\frac{1}{2}$	1 $\frac{1}{2}$	1,320	0	58.50	1.11	0	1.11
15	5	$\frac{1}{2}$	200	1,080	56.32	.88	47.52	48.40
16	21	3	320	580	39.60	2.01	0	2.01
17	54	4 $\frac{1}{2}$	1,110	0	48.84	4.05	0	4.05
18	23.4	2	570	2,060	115.72	2.14	0	2.14
19	85	10 $\frac{1}{2}$	1,580	2,540	181.28	8.50	111.76	120.26
20	4.2	4.2	200	1,100	57.20	8.80	48.40	57.20
21	57.16	$\frac{1}{2}$	400	0	17.60	.15	0	.15
22	240	3	3,250	2,440	250.50	1.77	107.36	109.13
23	146	1 $\frac{3}{4}$	800	1,360	95.04	.42	0	.42
24	2	2	180	160	14.96	7.92	7.04	14.20
25	10.2	2	110	780	39.16	.94	0	.94
26	128	21	1,640	440	91.52	11.76	0	11.76
TOTAL		83.45						\$642.31