Literature Search: MnDOT Haul/Detour routes- impacts on local roads
April 22, 2020
Title: Best Practices of Road User Maintenance Agreements Amongst Local Government Agencies in Ohio
Source and date: Ohio DOT and FHWA (2017)
Abstract: Recent innovations in the oil and gas industry have increased horizontal drilling and hydraulic fracturing activity in Ohio. As of July 2015, 1559 wells were planned or drilled in Ohio and 935 were producing. During its lifetime, each well site can generate up to 3000 additional truck loads. There is also increased truck activity to haul waste water away to injection well sites and to construct compressor stations and pipelines. These activities have resulted in a significant increase to the normal truck traffic volume experienced on the local road and bridge system. Ohio Senate Bill 315 requires oil or gas well operators enter into a Road User Maintenance Agreement (RUMA), or demonstrate a good-faith effort to do so prior to obtaining a drilling permit. By entering into a RUMA the company assumes a contractual obligation for maintaining or improving roads and bridges to mitigate the damage due to the excessive loads. A RUMA template was cooperatively developed by the Ohio Department of Transportation (ODOT), Ohio Department of Natural Resources (ODNR), oil and gas industry representatives, the County Engineer’s Association of Ohio (CEAO), and other local transportation officials. As a home rule state, local agencies may modify the template for specific situations, resulting in many variations of the RUMA. Local agencies have also executed RUMAs with other industries such as coal, timber, wind energy, etc. In some instances, RUMAs may have been used in situations where their use is not necessarily appropriate, which has caused confusion among the local agencies and the industry. Although there has been a significant amount of study of the topic, this information is neither widely disseminated nor easily accessible to local officials. This information was collected from agencies in Ohio and elsewhere to find current and proposed practices via a literature search, a survey of counties and townships in Ohio, and interviews of select county engineers and township trustees. These practices are compared and the best presented in a matrix of best practices as well as guidelines and recommendations for local officials in Ohio.
Note: See Table 20 Matrix of Best Practices from Literature Review, on pp. 35-38.
Full text: https://rosap.ntl.bts.gov/view/dot/31867

Title: Recommendations and Strategies for IRP Truck Licensing Impacts for Ohio Counties
Source and date: Ohio DOT and FHWA (2017)
Abstract: Ohio local officials are concerned about International Registration Plan (IRP) revenue shortfalls. County governments and taxing districts do not receive enough IRP revenue to fix pavement damage caused by commercial vehicles on local roads. Researchers determined this situation stems from a combination of Ohio’s IRP distribution process and the growing phenomenon of jurisdiction shopping, which occurs when companies register trucks in an IRP jurisdiction that is not the vehicle’s primary domicile location. In Phase II of this research, the research team evaluated six strategies to mitigate the impacts of jurisdiction shopping: (1) voluntary registration repatriation, (2) a domiciled vehicle voucher system, (3) redistribution of the IRP annual excess, (4) increased motor vehicle permissive tax, (5) increase IRP registration fees, and (6) a dedicated revenue stream. The implementation plan developed by the research team shows that the dedicated revenue stream has the fewest challenges and the most upside. Marketing and web design strategies should complement the state’s efforts to reform the IRP distribution process, as these can enhance Ohio’s IRP registration process.
Full text: https://rosap.ntl.bts.gov/view/dot/31886

Title: Assessing the Impacts of Shale Oil and Gas Developments on Rural Texas Highway Infrastructure
Source and date: ASCE / Shale Energy Engineering Conference 2014
Abstract: While shale oil and gas developments have been a boom for the Texas economy, these developments have taken a toll on low-volume roads. Impacts of truck traffic on roads in the Eagle Ford and Barnett Shale plays and the Permian Basin are obvious in the cracks, potholes, and other major distresses. Many of Texas’ Farm-to-Market, Ranch-to-Market, and local county roadway systems are not designed to withstand the heavy loads and higher traffic volumes arising from energy development. Rapid development of energy resources will continue to strain agencies until measures are taken to implement infrastructure impact plans, road-user agreements, or other measures to rehabilitate affected roadways. This paper uses case studies to explore four approaches for partnerships between energy companies, county officials, and other organizations. The proactive, performance-based approach strengthens pavements prior to energy development. The reactive, performance-based approach assesses impact fees associated with road maintenance after the damage. The third approach assesses impact fees that are not attached to actual roadway deterioration. The fourth approach uses policy changes to the Texas Transportation Code which allows counties to promote transportation infrastructure projects affected by oil and gas production activities. Funding for this approach arises from grants. The authors discuss what is currently being done in Texas and suggest recommendations for future work. With future exploration expected throughout, execution of agreements and creative reimbursement procedures will be critical to maintaining adequate levels of service and preserving working relationships between the energy industry and county governments charged with preserving roadway assets.
Full text available within MnDOT’s firewall: http://dx.doi.org/10.1061/9780784413654.065
Included this study in case its use of deflection testing is helpful:
Title: Development of Spring Load Restrictions on County Roads: Rio Blanco County Experience
Source and date: TRB 88th Annual Meeting (2009)
Abstract: Rio Blanco County is located in the rural northwestern corner of Colorado. There has been a significant increase in the truck traffic on the county roads, due to increased oil and gas exploration activities. The presence of such heavy trucks has raised concerns about the impact of additional truckloads on the pavement conditions of the county roads, particularly due to the seasonal variation in the subgrade soil conditions as a result of temperature variation. A study was initiated to develop short term Spring Load Restrictions (SLR) guidelines for Rio Blanco County for spring 2007. This study was based on deflection testing and was successfully completed by late spring 2007. The results from this study were further validated using data collected from sub-surface instrumentation used as part of the on-going Phase 2 of the study to develop long term SLR guidelines for the County. In spring 2007, the start of the SLR was estimated using a combination of deflection testing and Thawing Index (TI) model. In this approach, the TI model from Minnesota DOT was adopted to define the expected time frame of the start of the spring thawing. Deflection testing was then performed during this time to examine the actual decrease in strength of the pavement structure and thus define the appropriate start of the SLR on the County roads. The end of the SLR was estimated again based on deflection testing to monitor the pavement condition. The deflection data collected during this project showed that the subgrade soils in the study are susceptible to a reduction in structural strength during the spring thaw season. Additional deflection testing cycles were completed to determine when the pavement regained its strength. Validation data from the sub-surface instrumentation showed that the TI model might be acceptable to define the start of the SLR based on the forecasted weather conditions, while monitoring moisture content exclusively might not be adequate for determining when SLR can be lifted unless more historical data exists for comparison. In this paper, the development of the short term SLR policies for spring 2007 for Rio Blanco County is presented, together with the validation of the results of this study using data collected during spring 2008. Full text available upon request.