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BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s

In the Matter of the Authorization of Norfolk Southern Railway To Install Active Warning Devices at a Grade Crossing in Fulton County.	: : : : : : : :	Case No. 16-1413-RR-FED **<u>REQUEST FOR VARIANCE, AND TO EXTEND PROJECT DEADLINE</u>** D. Casey Talbott (0046767) (Counsel of Record) EASTMAN & SMITH LTD. One SeaGate, 24th Floor P.O. Box 10032 Toledo, Ohio 43699-0032 Telephone: (419) 241-6000 Fax: (419) 247-1777 Email: dctalbott@eastmansmith.com Attorneys for Norfolk Southern Railway Company

s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s-s

Due to what appear to be unresolvable utility conflicts, Norfolk Southern Railway Company ("NSRC") respectfully requests a variance from the Commission's Finding and Order of July 6, 2016; due to the complexity of the project, NSRC also requests that the project deadline be extended an additional 120 days, through September 3, 2017.

A memorandum in support is attached.

Respectfully submitted,

EASTMAN & SMITH LTD.

/s/ D. Casey Talbott
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Attorneys for Norfolk Southern
Railway Company

MEMORANDUM IN SUPPORT

By Finding and Order of July 6, 2016, the Commission authorized NSRC to construct flashing lights, side lights, and one set of cantilever lights at the West Barre Street grade crossing (509-522J) in Archbold, Fulton County.

This was a complex project, from its inception, which required construction in three of the four quadrants of the crossing. Construction in two of the three quadrants is largely completed. Concerns have risen, however, with respect to the cantilever which was to have been placed in the third involved quadrant, the northeast, with its lights to direct the westbound left turn lane of West Barre Street. Specifically, additional utility conflicts have arisen, since the project's authorization, which appear unresolvable. These conflicts appear to preclude the intended placement of the cantilever foundation; accordingly, NSRC respectfully requests the Commission's authority to vary from its original Finding and Order – specifically, in lieu of the cantilever installation, NSRC seeks authority to install flashing lights in the southeast quadrant, thereby directing the same westbound left turn lane. (See proposed re-design, attached.) Due to the

involved engineering and utility concerns, use of flashing lights in this instance does not appear precluded by the MUTCD. See, *e.g.*, the attached references to the MUTCD and AREMA.

By way of greater information (re the project's complexity, most notably re the involved utility conflicts), see the ORDC's "Review of Utility Constrictions," attached.

For the foregoing reasons, NSRC respectfully requests the Commission's authority to vary from the original Finding and Order of July 6, 2016, and to extend the project completion deadline an additional 120 days, through September 3, 2017. (The original Finding and Order noted PUCO Staff's acknowledgment that due to the complexity of the project – most notably, re the utility conflicts, the project may necessitate additional time.)

Respectfully submitted,

EASTMAN & SMITH LTD.

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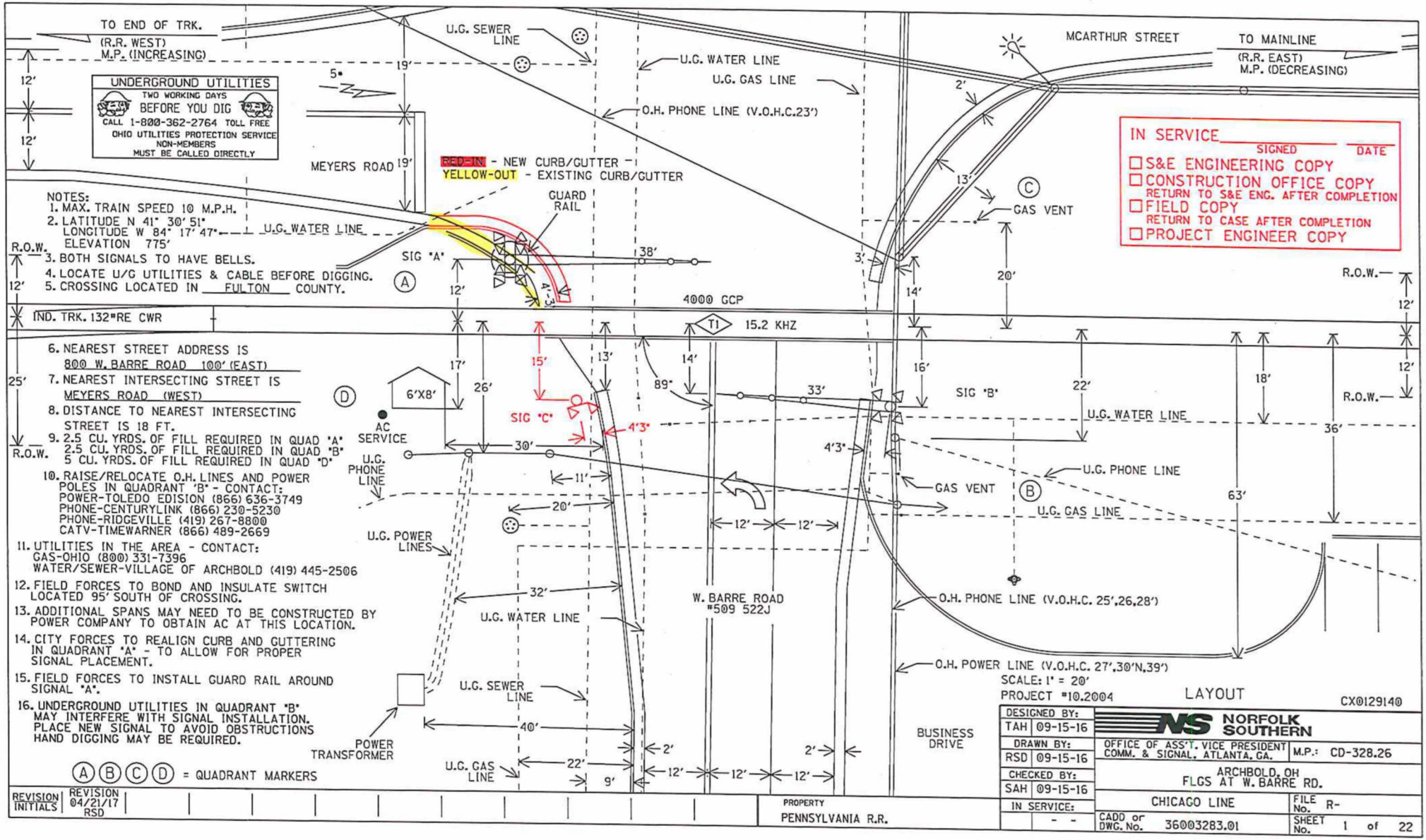
Attorneys for Norfolk Southern
Railway Company

PROOF OF SERVICE

A copy of the foregoing **Request for Variance, and Extended Project Deadline** was filed electronically with the Commission this 24th day of April, 2017. Notice of this filing will be sent by operation of the Court's electronic filing system to all parties indicated on the electronic filing receipt. Parties may access this filing through the Court's system.

/s/ D. Casey Talbott
Attorney for Norfolk Southern
Railway Company



NOTES:
1. MAX. TRAIN SPEED 10 M.P.H.
2. LATITUDE N 41° 30' 51"
   LONGITUDE W 84° 17' 47"
   ELEVATION 775'
3. BOTH SIGNALS TO HAVE BELLS.
4. LOCATE U/G UTILITIES & CABLE BEFORE DIGGING.
5. CROSSING LOCATED IN FULTON COUNTY.
6. NEAREST STREET ADDRESS IS
   800 W. BARRE ROAD 100' (EAST)
7. NEAREST INTERSECTING STREET IS
   MEYERS ROAD (WEST)
8. DISTANCE TO NEAREST INTERSECTING STREET IS 18 FT.
9. 2.5 CU. YRDS. OF FILL REQUIRED IN QUAD "A"
   2.5 CU. YRDS. OF FILL REQUIRED IN QUAD "B"
   5 CU. YRDS. OF FILL REQUIRED IN QUAD "D"
10. RAISE/RELOCATE O.H. LINES AND POWER POLES IN QUADRANT "B" - CONTACT:
    POWER-TOLEDO EDISION (866) 636-3749
    PHONE-CENTURYLINK (866) 230-5230
    PHONE-RIDGEVILLE (419) 267-8800
    CATV-TIMEWARNER (866) 489-2669
11. UTILITIES IN THE AREA - CONTACT:
    GAS-OHIO (800) 331-7396
    WATER/SEWER-VILLAGE OF ARCHBOLD (419) 445-2506
12. FIELD FORCES TO BOND AND INSULATE SWITCH LOCATED 95' SOUTH OF CROSSING.
13. ADDITIONAL SPANS MAY NEED TO BE CONSTRUCTED BY POWER COMPANY TO OBTAIN AC AT THIS LOCATION.
14. CITY FORCES TO REALIGN CURB AND GUTTERING IN QUADRANT "A" - TO ALLOW FOR PROPER SIGNAL PLACEMENT.
15. FIELD FORCES TO INSTALL GUARD RAIL AROUND SIGNAL "A".
16. UNDERGROUND UTILITIES IN QUADRANT "B" MAY INTERFERE WITH SIGNAL INSTALLATION. PLACE NEW SIGNAL TO AVOID OBSTRUCTIONS HAND DIGGING MAY BE REQUIRED.

(A) (B) (C) (D) = QUADRANT MARKERS

SCALE: 1" = 20'
PROJECT #10.2004

LAYOUT

CX0129140

REVISION INITIALS	REVISION
	04/21/17 RSD

PROPERTY
PENNSYLVANIA R.R.

DESIGNED BY: TAH	09-15-16
DRAWN BY: RSD	09-15-16
CHECKED BY: SAH	09-15-16
IN SERVICE:	- -

NORFOLK SOUTHERN

OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.

M.P.: CD-328.26

ARCHBOLD, OH
FLGS AT W. BARRE RD.

CHICAGO LINE

FILE No. R-

CADD or DWG. No. 36003283.01

SHEET No. 1 of 22

Standard:

02 **If used, the flashing-light signal assembly (shown in Figure 8C-1) on the side of the highway shall include a standard Crossbuck (R15-1) sign, and where there is more than one track, a supplemental Number of Tracks (R15-2P) plaque, all of which indicate to motorists, bicyclists, and pedestrians the location of a grade crossing.**

Option:

03 At highway-rail grade crossings, bells or other audible warning devices may be included in the assembly and may be operated in conjunction with the flashing lights to provide additional warning for pedestrians, bicyclists, and/or other non-motorized road users.

Standard:

04 **When indicating the approach or presence of rail traffic, the flashing-light signal shall display toward approaching highway traffic two red lights mounted in a horizontal line flashing alternately.**

05 **If used, flashing-light signals shall be placed to the right of approaching highway traffic on all highway approaches to a grade crossing. They shall be located laterally with respect to the highway in compliance with Figure 8C-1 except where such location would adversely affect signal visibility.**

06 **If used at a grade crossing with highway traffic in both directions, back-to-back pairs of lights shall be placed on each side of the tracks. On multi-lane one-way streets and divided highways, flashing-light signals shall be placed on the approach side of the grade crossing on both sides of the roadway or shall be placed above the highway.**

07 **Each red signal unit in the flashing-light signal shall flash alternately. The number of flashes per minute for each lamp shall be 35 minimum and 65 maximum. Each lamp shall be illuminated approximately the same length of time. Total time of illumination of each pair of lamps shall be the entire operating time. Flashing-light units shall use either 8-inch or 12-inch nominal diameter lenses.**

Guidance:

08 *In choosing between the 8-inch or 12-inch nominal diameter lenses for use in grade crossing flashing-light signals, consideration should be given to the principles stated in Section 4D.07.*

Standard:

09 **Grade crossing flashing-light signals shall operate at a low voltage using storage batteries either as a primary or stand-by source of electrical energy. Provision shall be made to provide a source of energy for charging batteries.**

Option:

10 Additional pairs of flashing-light units may be mounted on the same supporting post and directed toward vehicular traffic approaching the grade crossing from other than the principal highway route, such as where there are approaching routes on highways closely adjacent to and parallel to the track(s).

Standard:

11 **References to lenses in this Section shall not be used to limit flashing-light signal optical units to incandescent lamps within optical assemblies that include lenses.**

Support:

12 Research has resulted in flashing-light signal optical units that are not lenses, such as, but not limited to, light emitting diode (LED) flashing-light signal modules.

Option:

13 Flashing-light signals may be installed on overhead structures or cantilevered supports as shown in Figure 8C-1 where needed for additional emphasis, or for better visibility to approaching traffic, particularly on multi-lane approaches or highways with profile restrictions.

14 If it is determined by an engineering study that one set of flashing lights on the cantilever arm is not sufficiently visible to road users, one or more additional sets of flashing lights may be mounted on the supporting post and/or on the cantilever arm.

Standard:

15 **Breakaway or frangible bases shall not be used for overhead structures or cantilevered supports.**

16 **Except as otherwise provided in Paragraphs 13 through 15, flashing-light signals mounted overhead shall comply with the applicable provisions of this Section.**

Section 8C.03 Flashing-Light Signals at Highway-LRT Grade Crossings

Support:

01 Section 8C.02 contains additional provisions regarding the design and operation of flashing-light signals, including those installed at highway-LRT grade crossings.

Standard:

02 **Highway-LRT grade crossings in semi-exclusive alignments shall be equipped with flashing-light signals where LRT speeds exceed 35 mph. Flashing-light signals shall be clearly visible to motorists, pedestrians, and bicyclists.**

03 **If flashing-light signals are in operation at a highway-LRT crossing that is used by pedestrians, bicyclists, and/or other non-motorized road users, an audible device such as a bell shall also be provided and shall be operated in conjunction with the flashing-light signals.**

Guidance:

04 *Where the crossing is at a location other than an intersection and LRT speeds exceed 25 mph, flashing-light signals should be installed.*

Option:

05 Traffic control signals may be used instead of flashing-light signals at highway-LRT grade crossings within highway-highway intersections where LRT speeds do not exceed 35 mph. Traffic control signals or flashing-light signals may be used where the crossing is at a location other than an intersection, where LRT speeds do not exceed 25 mph, and when the roadway is a low-volume street where prevailing speeds do not exceed 25 mph.

Section 8C.04 Automatic Gates

Support:

01 An automatic gate is a traffic control device used in conjunction with flashing-light signals.

Standard:

02 **The automatic gate (see Figure 8C-1) shall consist of a drive mechanism and a fully retroreflectorized red- and white-striped gate arm with lights. When in the down position, the gate arm shall extend across the approaching lanes of highway traffic.**

03 **In the normal sequence of operation, unless constant warning time detection or other advanced system requires otherwise, the flashing-light signals and the lights on the gate arm (in its normal upright position) shall be activated immediately upon detection of approaching rail traffic. The gate arm shall start its downward motion not less than 3 seconds after the flashing-light signals start to operate, shall reach its horizontal position at least 5 seconds before the arrival of the rail traffic, and shall remain in the down position as long as the rail traffic occupies the grade crossing.**

04 **When the rail traffic clears the grade crossing, and if no other rail traffic is detected, the gate arm shall ascend to its upright position, following which the flashing-light signals and the lights on the gate arm shall cease operation.**

05 **Gate arms shall be fully retroreflectorized on both sides and shall have vertical stripes alternately red and white at 16-inch intervals measured horizontally.**

Support:

06 It is acceptable to replace a damaged gate with a gate having vertical stripes even if the other existing gates at the same grade crossing have diagonal stripes; however, it is also acceptable to replace a damaged gate with a gate having diagonal stripes if the other existing gates at the same grade crossing have diagonal stripes in order to maintain consistency per the provisions of Paragraph 24 of the Introduction.

Standard:

07 **Gate arms shall have at least three red lights as provided in Figure 8C-1.**

08 **When activated, the gate arm light nearest the tip shall be illuminated continuously and the other lights shall flash alternately in unison with the flashing-light signals.**

09 **The entrance gate arm mechanism shall be designed to fail safe in the down position.**

Guidance:

10 *The gate arm should ascend to its upright position in 12 seconds or less.*

11 *In its normal upright position, when no rail traffic is approaching or occupying the grade crossing, the gate arm should be either vertical or nearly so (see Figure 8C-1).*

12 *In the design of individual installations, consideration should be given to timing the operation of the gate arm to accommodate large and/or slow-moving highway vehicles.*

13 *The gates should cover the approaching highway to block all highway vehicles from being driven around the gate without crossing the center line.*

Option:

14 The effectiveness of gates may be enhanced by the use of channelizing devices or raised median islands to discourage driving around lowered automatic gates.

15 Where gates are located in the median, additional median width may be required to provide the minimum clearance for the counterweight supports.

16 Automatic gates may be supplemented by cantilevered flashing-light signals (see Figure 8C-1) where there is a need for additional emphasis or better visibility.

Section 8C.05 Use of Automatic Gates at LRT Grade Crossings

Guidance:

01 *Highway-LRT grade crossings in semi-exclusive alignments should be equipped with automatic gates and flashing-light signals (see Sections 8C.02 and 8C.03) where LRT speeds exceed 35 mph.*

Option:

02 Where a highway-LRT grade crossing is at a location other than an intersection, where LRT speeds exceed 25 mph, automatic gates and flashing-light signals may be installed.

03 Traffic control signals may be used instead of automatic gates at highway-LRT grade crossings within highway-highway intersections where LRT speeds do not exceed 35 mph. Traffic control signals or flashing-light signals without automatic gates may be used where the crossing is at a location other than an intersection and where LRT speeds do not exceed 25 mph and the roadway is a low-volume street where prevailing speeds do not exceed 25 mph.

Section 8C.06 Four-Quadrant Gate Systems

Option:

01 Four-Quadrant Gate systems may be installed to improve safety at grade crossings based on an engineering study when less restrictive measures, such as automatic gates and median islands, are not effective.

Standard:

02 **A Four-Quadrant Gate system shall consist of entrance and exit gates that control and block road users on all lanes entering and exiting the grade crossing.**

03 **The Four-Quadrant Gate system shall use a series of drive mechanisms and fully retroreflectorized red- and white-striped gate arms with lights, and when in the down position the gate arms extend individually across the entrance and exit lanes of the roadway as shown in Figure 8C-2. Standards contained in Sections 8C.01 through 8C.03 for flashing-light signals shall be followed for signal specifications, location, and clearance distances.**

04 **In the normal sequence of operation, unless constant warning time detection or other advanced system requires otherwise, the flashing-light signals and the lights on the gate arms (in their normal upright positions) shall be activated immediately upon the detection of approaching rail traffic. The gate arms for the entrance lanes of traffic shall start their downward motion not less than 3 seconds after the flashing-light signals start to operate and shall reach their horizontal position at least 5 seconds before the arrival of the rail traffic. Exit gate arm activation and downward motion shall be based on detection or timing requirements established by an engineering study of the individual site. The gate arms shall remain in the down position as long as the rail traffic occupies the grade crossing.**

05 **When the rail traffic clears the grade crossing, and if no other rail traffic is detected, the gate arms shall ascend to their upright positions, following which the flashing-light signals and the lights on the gate arms shall cease operation.**

06 **Gate arm design, colors, and lighting requirements shall be in accordance with the Standards contained in Section 8C.04.**

07 **Except as provided in Paragraph 19, the exit gate arm mechanism shall be designed to fail-safe in the up position.**

08 **At locations where gate arms are offset a sufficient distance for highway vehicles to drive between the entrance and exit gate arms, median islands (see Figure 8C-2) shall be installed in accordance with the needs established by an engineering study.**

Guidance:

09 *The gate arm should ascend to its upright position in 12 seconds or less.*

6. The number of tracks sign, when used, should conform to Manual Part 3.2.75 (Recommended Design Criteria for Number of Tracks Sign, Aluminum, Retroreflective Sheet Type, Detail & Assembly), or Manual Part 3.2.76 (Recommended Design Criteria for Number of Tracks Sign for Use in Canada, Aluminum Sheet, Retroreflective Sheet Type, Detail & Assembly).

7. Bridge and cantilever structural supports for the crossarm(s) and associated suspended electric light units shall conform to America Association of State Highway and Transportation Officials (AASHTO) 1994 Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals.

C. General

1. When it is required for better visibility to approaching traffic, particularly multi-lane roadway approaches, cantilevered or bridge mounted flashing-light signal units may be used.

2. Overhead mounted flashing-light signal units are also suitable for two-lane roadways where additional emphasis is required. These locations may include high speed rural highways and high volume two-lane roads or specific locations where distractions or obstructions indicate mast mounted flashing-light signal units are not readily visible to motorists.

3. Overhead mounted flashing-light signal units should be used at locations on two-lane roadways with surfaced shoulders which require the flashing-light signal units to be located greater than 10 ft. from the edge of the traveled way.

4. Overhead structures and supporting masts should have relatively clear and simple lines. Attention should be given to avoid the visual obstruction of other active traffic control devices in the vicinity of the highway-rail grade crossing.

5. A minimum of one 90 deg. highway-rail grade crossing (crossbuck) sign shall be provided on each bridge and cantilever structure. Where only one is provided, it shall be located on the main support mast at the standard height above the roadway. Additional crossbuck signs may be provided on the bridge or cantilever overhead structure if so desired. Where an engineering study finds restricted sight distance or unfavorable geometry, crossbuck signs should be placed back to back or otherwise located so that two faces are displayed to that approach.

D. Diagnostic Team General Considerations

1. These guidelines represent best practice solutions for the majority of grade crossing applications. Alternative and/or additional site-specific solutions may be developed upon recommendation of the diagnostic team.

2. These guidelines have been provided to assist the Diagnostic Team in their review, determination, selection and design of the appropriate traffic control system.

   a. Warning Devices

      i. Flashing-light type signals may be used with or without gates.

         a. If flashing light signals are used, at least one signal should be placed on each side of the track, except that on one-way roadways, flashing light signal(s) should be placed on the side of approaching traffic.

      ii. When a gate is used with a flashing light signal, it may be mounted on a separate post or mast.

      iii. Pedestrian bells or other audible warning devices may be included to provide additional warning for pedestrians, bicyclists, and/or other non-motorized road users. When used, the pedestrian bell may be mounted on the signal mast.

      iv. A flashing light signal should be placed to the right of approaching traffic. Where site-specific conditions require, flashing light signals may be placed to the left of approaching traffic.

      v. Additional pairs of flashing lights may be used as deemed necessary.

      vi. At least one pair of flashing lights should be visible from each approaching traffic lane under all traffic conditions.

      vii. Cantilevers, when used, should be oriented perpendicular to the roadway unless site-specific conditions dictate alternate orientation.

6. Other signs such as Number of Tracks should be located in conjunction with the crossbuck sign to conform to Manual Part 3.2.2.

7. The highway motorists' view of flashing-light signal units shall not be obstructed by signs or structural members.

8. Vertical clearances above the roadway crown shall not be less than 17 ft. 0 in. under full load conditions.

9. If one pair of cantilever flashing-light signal units would be visible to drivers in all approaching lanes, except the right lane which affords a view of the mast mounted flashing-light signal units, other flashing-light signal units are not required on the cantilever arm. Overhead flashing-light signal units for each approaching lane are not required, however, their need should be determined by a traffic engineering study. In addition to the flashing-light signal units cantilevered over the roadways, flashing-light signal units should usually be placed on the supporting mast.

10. Back mounted flashing-light signal units should be provided on overhead structures near the center of the roadway for the opposite approaching traffic. Additional back mounted flashing-light signal units are optional on the overhead structure. Consideration should be given to providing back mounted flashing-light signal units on the support mast for visual indication to pedestrians, as required.

11. Electro-mechanical bells, when used, should be mounted on the supporting mast of the overhead structure with the face of the gong parallel to the roadway. Electronic bells, when used, should be mounted on the supporting mast of the overhead structure so that the sound is directed parallel to the roadway.

12. Service Ladders

    a. Walkout Type Cantilever and Bridge Structures Service ladder should be either permanently attached to the supporting mast or provisions made to securely attach a detachable type ladder to the mast to gain access to the maintenance walkway.

    b. Rotatable and Non-Rotatable Cantilevers Detachable service ladder should be provided and provisions made to securely attach it to the mast. Ladder should be equipped with hooks or other suitable safety devices at the top to securely attach it to the overhead structure to permit direct servicing of sign(s), flashing-light signal units and bell. Ladder should be equipped with hinged type feet designed to prevent sinking and subsequent tipping under

Review of Utility Constrictions
Railroad Crossing Warning Device Upgrade Project
W. Barre Road., DOT# 509522J
Fulton County, Archbold, Ohio
Ohio Rail Development Commission, Ohio PID# 94551
Norfolk Southern S&E Project # 10.2004

The following provides a brief summary of the utility conflicts at the above referenced grade crossing warning device upgrade project located at W. Barre Rd. in Archbold, Ohio.

Diagnostic Review Team Survey Scheduled by PUCO: The Diagnostic Review Team Survey was held on 9/18/2012 and was attended by representatives from ORDC, PUCO, Village of Archbold, and Norfolk Southern. The crossing was recommended for upgrade to lights and gates including a set of sidelights in the southwest quadrant for Meyers Rd. and a cantilever in the northwest quadrant to provide flashing lights over the W. Barre Rd. west-bound left-turn lane.

Letter Agreement and PE Authorization: Norfolk Southern signed the PUCO letter agreement on 1/9/2013. On 1/25/2013 Norfolk Southern was authorized by ORDC to proceed with the site plans and cost estimates for the crossing upgrade.

Original Plan for Signal Display Layout: The original site layout for the proposed signal display was submitted to ORDC on 4-11-2013. The plan makes the following notes related to utility impacts:

- Quadrant A (Southwest) Requires Reconfiguration
  - City forces to realign curb and guttering to allow for proper signal placement
  - Field forces to install guard rail around Signal A.
- Quadrant B (Northeast)
  - Raise/relocate O.H. lines and power poles in Quadrant B
  - Underground utilities in Quadrant B may interfere with signal installation. Place new signal to avoid obstructions had digging may be required
- Additional spans may need to be constructed by power company to obtain AC at this location

Quadrant A: The signal display layout proposed for the southwest, quadrant A, created challenges related to: the Village of Archbold's truck turning radius requirement, the construction of new curbs and a guardrail, the use of a 38'gate, the location of the power drop and the location of the stop sign for Myers Rd. These design issues have been resolved and construction of the gate mechanism along with the guardrail, power drop, and stop sign have been completed.

Quadrant B: The proposed layout for quadrant B, the northeast quadrant, created potential conflicts with multiple overhead and underground utilities. The overhead utilities in quadrant B did not meet the clearance requirements and needed to be raised. These included: Toledo Edison/First Energy; Century Link; Time Warner; and R-Tech Cable.

The underground utilities in the quadrant B also created conflicts and these included: Ohio Gas (6 inch gas main) including a gas vent for the casing under the NS tracks; Century Link; Village of Archbold (20" PVC water main); and a storm water drain.

Alternative signal display layouts for the gate and cantilever were explored for the northeast quadrant.

Spring and Summer 2013: Realigned Curb Option in Quadrant B: The site layout for the signal display had been redesigned multiple times to incorporate roadway revisions requested by the Village Engineer in both quadrant A and quadrant B. In early spring 2013, one of the options explored for quadrant B included the realignment of the curb and gutter. The realigned curb would be moved about 4 feet closer to the edge of the travel lane and this resulted in placing the signal further to south, closer to the edge of the travel way, and thereby reducing the overhead utility conflicts. This option created an impact more directly on top of the underground gas main, and was therefore not advanced.

Discussions with the various utilities continued through summer and fall 2013.

Winter 2014: NS suggested the following alternatives for review:

1. Leaving existing design per attached layout, provides no assurance of either overhead or underground interference in quad "B". Underground utilities would need to be exposed and overhead power lines will not be within guidelines.
2. Left hand cantilever would work in quad "D", but still leaves the overhead power line conflict in affect in quad "B".
3. Just a cantilever in quad "A" and a left handed cantilever in quad "D" with just a flashing light and bell in quad "A". No gates..... This avoids overhead conflicts and would use a shorter metal foundation for "flashers only" to avoid the potential gas/water lines.
4. Reconfigure the west bound traffic lanes (Quad "B") and turn lane down to 10' in width to allow for cantilever and gate placement in quad "B" This should clear the overhead and underground obstructions.

The above four options were addressed and appeared to offer no clear or easy engineering solution. Under Option #1 the project may advance, however, the utility conflicts in quadrant B would need to be addressed. Option #2 and Option #3 created other overhead utility conflicts in the southeast quadrant D between the left-hand cantilever and the adjacent high-power transformers. The impacted power poles stand just over the NS property line and are within ten feet from the approximate location where the left-hand cantilever would be placed. Option #4 was not advanced as the Village of Archbold was not supportive of this option.

Traffic Signal Option: A fifth option was also reviewed and discussed in late 2013. This involved the installation of an interconnected traffic light to control traffic and function as the warning device for the railroad crossing. The W. Barre Rd. NS railroad crossing is located immediately adjacent to an intersection with Meyers Rd. Meyers Rd. runs parallel to the NS industrial spur track and Meyers Rd. traffic is required to stop at the W. Barre Rd. intersection.

W. Barre Rd. does not have a stop sign at this intersection and traffic flows uninterrupted through this intersection, except when a train is in the crossing.

The traffic signal option was not advanced primarily because the Village said that traffic volumes at the intersection did not warrant the installation of a traffic signal.

The Relocation of the Overhead Utilities Initiated in Quadrant B: In the winter of 2014, the development of the project was advanced with the understanding that the overhead and underground utility conflicts would eventually need to be addressed. In the spring of 2014, the relocation of the overhead utilities in Quadrant B, managed by an NS consultant, was initiated. Five 60-foot poles were needed to obtain the required overhead clearances in quadrant B. The overhead utility relocation work was completed in late 2015.

Underground Exploratory Excavation of Ohio Gas Line: In the fall of 2015, arrangements were made to conduct exploratory excavations to determine the precise location of the underground 8" Ohio Gas main. Ohio Gas offered the use of their vacuum truck to conduct the excavation. The excavation occurred after the ground thawed in the spring of 2015. The horizontal and vertical location of the gas line was determined and was found to lie directly below the curb in the northeast quadrant B.

New Underground Century Link Fiber Lines Discovered: Additionally, as a result of the earlier effort to relocate the overhead Century Link fiber lines, evidence of recently relocated underground fiber was apparent on the surface and was in the vicinity of the proposed gate and cantilever foundations. During the gas line exploratory excavation, a Century Link representative arrived on site to investigate the exposed fiber lines.

Within a few days, following the gas line exploration, Century Link constructed additional changes and relocated the exposed underground lines.

Resulting Available Footprint for Northeast Quadrant Cantilever Foundation: Following the exploratory excavation and review of all three utilities in the vicinity of the proposed cantilever foundation, the remaining available footprint space for the foundation was estimated at approximately six or seven feet square. This six or seven foot square is constrained by the Ohio Gas line to the south, the Century Link fiber lines to the north and east, and the Village of Archbold's 20 inch PVC water main to the west.

Two Options Identified for Gate and Cantilever in Quadrant B: As a result of the exploratory excavation and the review the underground utilities two options for advancing the construction in quadrant B were identified. Both options involved leaving the curb in place and to avoid impacts to the gas line. It was believed the cantilever may be able to be shoe-horned into the seven-foot square between the gas line, the water line and the fiber lines.

Option #1 assumed that the underground fiber would not be an issue and a combination-style setup with a gate and cantilever would be used. The foundation for the combo-unit would be offset 4'- 3" from the face of the curb and approximately 22' to 23' from the center of the track with a 27'-6" catwalk over the W. Barre Rd. west-bound left-hand turn lane.

Option #2 was developed to work around the underground fiber if it got in the way. This option placed a separate cantilever foundation at 8'or 9' offset from the face of curb and 22' to 23' feet from track center with a 32' to 33' catwalk. A separate gate mechanism would be place 4'- 3" from the face of curb and 16' to 17' feet from the track center. The smaller gate mechanism foundation would easily fit 4'- 3" from the face of curb between the offending underground utilities. However, the cantilever would need to be offset from the gate mechanism and lighting would not be on the upright mast as it would be blocked by the newly relocated Toledo Edison power pole.

Option # 2 was rejected because of the offset requirements between the gate mechanism and the cantilever. Option #1 was advanced for redesign.

Revised Plan and Estimate and Construction Authorization: The revised site layout plan and the revised project cost estimate was resubmitted by Norfolk Southern on May 23, 2016. The proposed revised plan advanced a combination unit for the northeast quadrant A and placed the foundation at 23' from track center and 4'-3" from the face of the existing curb.

Following three years of reviews, discussion, multiple site surveys, exploratory excavation and extensive overhead utility relocations, the proposed site plan for the signal display layout was approved and project construction was authorized by ORDC on June 14, 2016.

Project Construction Begins: The borings and underground conduit was installed on site by NS in early July, 2016. This was followed up by the construction of the new curb and gutter in the southwest quadrant by a Village contractor in early August 2016.

The NS signal gang mobilized and arrived on site in late August. During the meetings on site, the various components of the project were discussed with the NS foreman including the location of the bungalow, the power drop and stop sign location, the gate mechanism foundation in the southeast quadrant A, as well as the concerns relative to the potential underground utility conflicts in the northeast quadrant B.

Construction Complete Except for Combo-Unit Installation: Construction proceeded and the NS signal gang successfully installed all components of the W. Barre Rd. warning device improvements except for the gate and cantilever combination unit planned in the northeast quadrant B.

Installation of Combination-Unit Foundation Determined to be Ill-advised. It was determined that the workable space required for the successful installation of the 7'X 7' square precast foundation was not adequate. Additionally, it was suggested that advancing the construction and installation of the large precast slabs deep within this confined space, adjacent to significant underground utility infrastructure would create undue risk with the potential to damage the underground lines.

Request for Variance to Eliminate Cantilever: On September 6, 2016, the NS Supervisor and project foreman requested that the ORDC and PUCO consider a variance to eliminate the

cantilever from the plan and permit the installation of the gates and lights only. The required foundation for the standard gate mechanism would be shallower and considerably smaller and it is believed that it will easily fit within the available space. The ORDC management was notified and the request was discussed with the PUCO.

Additional Left-Hand Flashing Light Assembly: As part of the application for the variance, the proposed site layout would be revised to include a flashing light assembly to be installed on the left side, in the southeast quadrant D. This should add another set of lights for the west-bound moves in the left-turn lane on W. Barre Rd.

New Cantilever Option Explored: On September 23, 2016 another on-site review was conducted with the PUCO staff. At this time another option was identified for the location of the cantilever in the northeast quadrant A. This option would place the cantilever between the tracks and the underground 20" PVC water main. This plan was advanced to NS and they submitted a revised site layout which offset the cantilever 13' feet from face of curb and 14' from the track center. The 14' offset from the track is the minimum needed to meet the required track clearance envelop.

Following additional exploratory excavations it was determined that this location would impact the water line and require its relocation. The Village of Archbold considered various alternative methods to construction of casing around the water line to enable the construction of the cantilever above it, however, the Village rejected this option. The Village also considered various approaches to the relocation of the line. But, most importantly, the cantilever would fall over the property line by two feet and would need to be constructed on the adjacent property. This project activity involving right-of-way is ineligible, and therefore, this option is not considered feasible.

Conclusion: As a result of the extensive project development efforts and exploration of alternatives and options, the installation and construction of a cantilever in the northeast quadrant B at W. Barre Rd. in Archbold is not considered feasible. Norfolk Southern will advance a request for variance as it prepares to complete the construction of this important safety project.

Summary: Request Request for Variance, and to Extend Project Deadline electronically filed by Mr. D. Casey Talbott on behalf of Norfolk Southern Railway Company