



VDOT Traffic Signal Standards & Specifications

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Signal Construction Industry Forum | November 1, 2016 | Fairfax, VA

Agenda

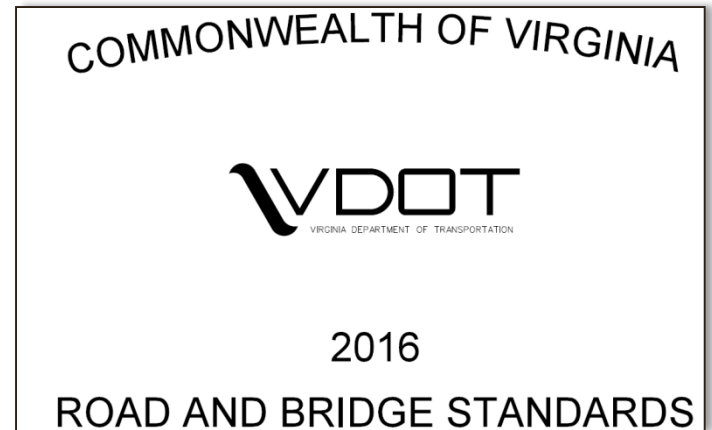
- ➔ 2016 Standards & Specifications
 - Signal Poles
 - Signal Pole Diameters
 - Other Issues
 - Where to Find Standards & Specs Online
 - Questions & Answers

2016 Standards & Specs | Stakeholders

- Our Customers!
- Other VDOT Divisions
- FHWA
- Construction Industry
 - Contractors
 - Vendors
 - Suppliers
- Districts/Regions
 - Designers
 - Inspectors
 - Regional Maintenance
- Consultants
- Developers
- Localities
- Design-Build Teams

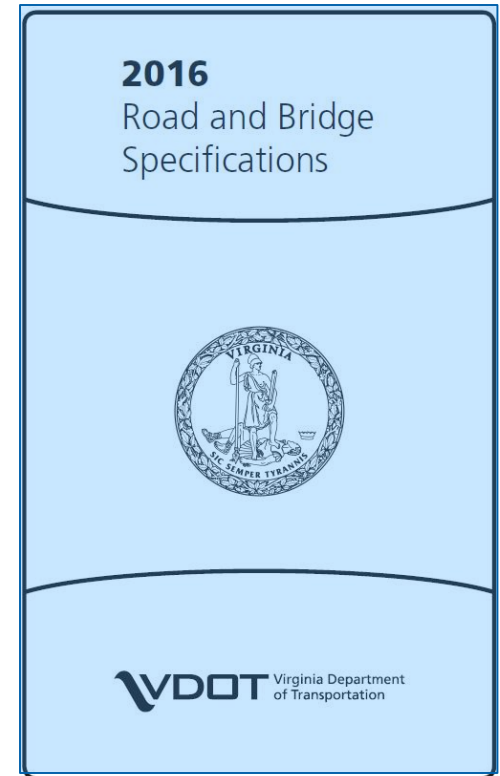
2016 Standards & Specs | *Standards*

- 2016 *Road & Bridge Standards* were released in July 2016
- Are applicable for projects with advertisement starting Dec. 2016 ~ Feb. 2017 (or sooner)
- Web-only document - NO printed copies are available
- Insertables have (mostly) gone away – Contractor's responsibility to go to version of Standards applicable to his project online



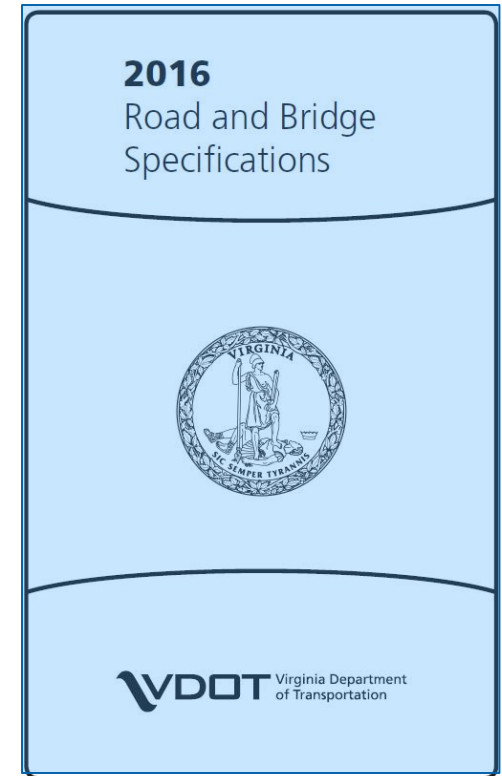
2016 Standards & Specs | *Spec Book*

- 2016 Spec Book (blue cover) was released in early 2016
- Applicable for all projects advertised on or after January 2017
- There is a “grace period” for projects advertised July-December 2016
- Still a printed book; SP’s and SPCN’s must be inserted into each individual Contract



Standards & Specs Overview | *Supp Specs*

- 2016 Spec Book is already out of date!
- Various SSs, SPCNs, and SSPs have already been issued
- SSs/SSPs already issued:
 - Signal pole design
 - Clarified handhole requirements
- Upcoming Supp Specs:
 - High Visibility Backplates (HVSBs)



2016 Standards & Specs | *Pay Items*

- TrnsPort pay items have been updated
- Mast arms and poles are two separate pay items
- Mast Arm Poles: Types A, B1, B2, C, D, E1, E2, or F
- Mast Arms: 30', 40', 49', 60', 65', 75', or 75'
- Luminaire Arms are separate pay items
- Electrical Service Work Pad

2016 Standards & Specs | *Pay Items*

- New UPS pay items (“battery pack” includes all batteries)
- Other common signal items (video detectors, EVP, UPS, wireless detectors, etc.)
- ITS is now in 2016 Spec Book but NOT yet standard pay items in TrnsPort

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- 2016 Standards & Specifications
- ➔ ■ **Signal Poles**
- Signal Pole Diameters
- Other Issues
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Signal Poles | 2016 Standards/Specs

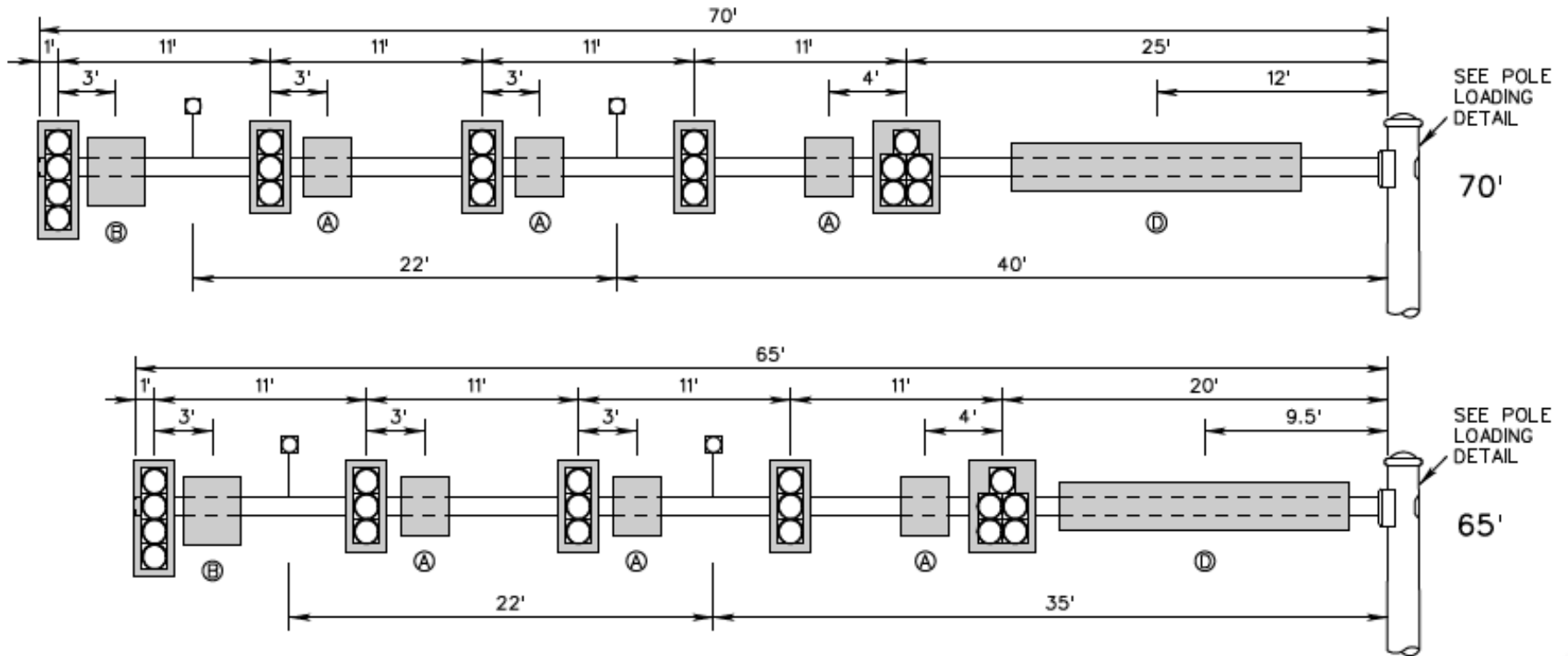
- Sets design loadings based on length of arm
- Pole length is set in the specs
- Dual arms are at 90° to each other
- Thru-bolt connection required for arm/pole attachment
 - Doesn't specify # or spacing of thru-bolts
- Luminaire arm is separate pay item when a combination pole is installed

Signal Poles | 2016 Standards/Specs











Pole Type	# of arms	Maximum Allowable Loading as per Standard MP-3	Lumin- aire arm?	Length of Pole (tip to bottom of base plate)	anchor bolts (min.)	Bolt circle dia. (min.)
A	1	49 ft Loading Standard	No	19 ft	(6) 2"	--
B1	1	75 ft Case 1 Loading Standard	No	19 ft	(8) 2"	24" min.
B2	1	75 ft Case 2 Loading Standard	No	19 ft	(8) 2"	24" min.
C	2 **	70 ft Loading Standard & 60 ft Loading Standard	No	19 ft	(8) 2"	24" min.
D	1	49 ft Loading Standard	Yes	25 ft	(6) 2"	--
E1	1	75 ft Case 1 Loading Standard	Yes	25 ft	(8) 2"	24" min.
E2	1	75 ft Case 2 Loading Standard	Yes	25 ft	(8) 2"	24" min.
F	2 **	70 ft Loading Standard & 60 ft Loading Standard	Yes	25 ft	(8) 2"	24" min.

** mounted at 90° to each other

Signal Poles | *Design Loadings*



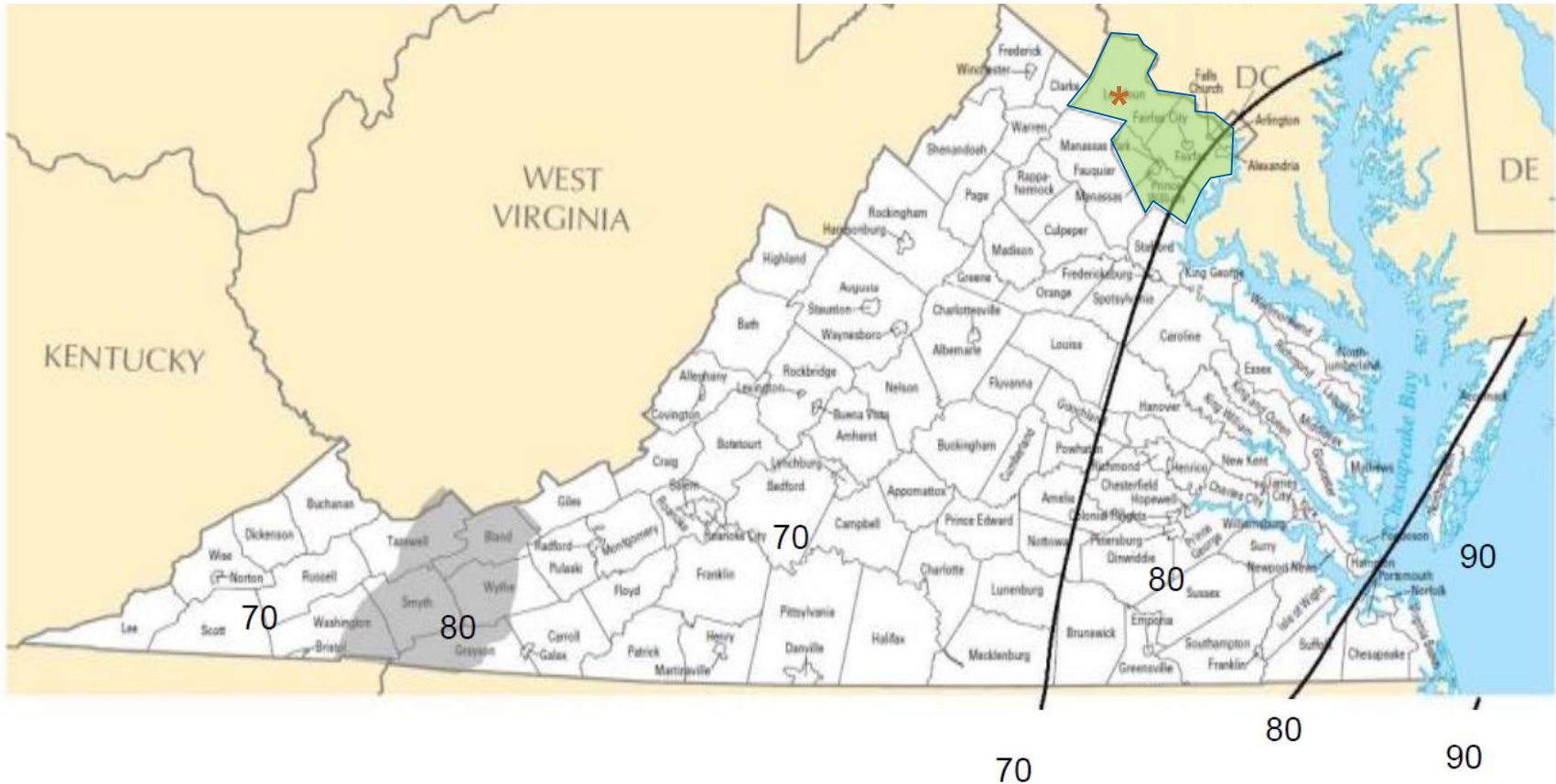
Signal Poles | *Design Loadings*

DEVICE		SURFACE AREA (SEE NOTES 5 & 6)	DEAD LOAD (SEE NOTE 6)
	3-SECTION SIGNAL HEAD W/ BACKPLATE	8.7 SF	65 LBS
	4-SECTION SIGNAL HEAD W/ BACKPLATE	11.0 SF	80 LBS
	5-SECTION SIGNAL HEAD W/ BACKPLATE (IN-LINE)	13.4 SF	95 LBS
	5-SECTION SIGNAL HEAD W/ BACKPLATE (DOGHOUSE/CLUSTER)	13.75 SF	105 LBS
	SP-9 PEDESTRIAN SIGNAL HEAD	2.4 SF	30 LBS
Ⓐ 	30" x 36" SIGN	7.5 SF	22.5 LBS
Ⓑ 	36" x 42" SIGN	10.5 SF	26.7 LBS
Ⓒ 	12' x 2.5' STREET NAME SIGN	30 SF	66 LBS
Ⓓ 	15' x 2.5' STREET NAME SIGN	37.5 SF	88.5 LBS
	VIDEO CAMERA	1.00 SF	22 LBS

Signal Poles | Winds

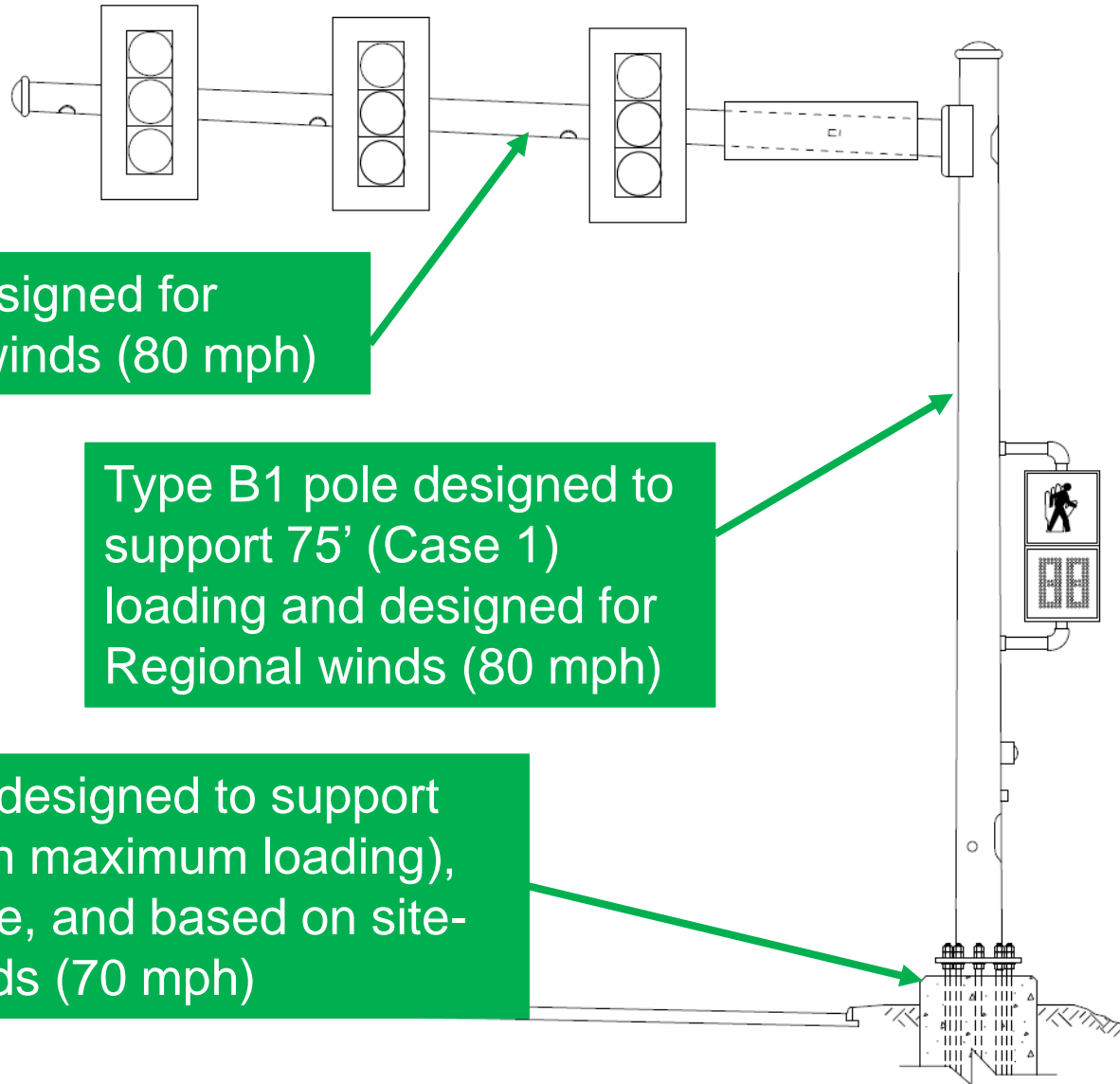
VDOT Traffic Operations Region	VDOT Districts Within That Region	Design Wind Speed
Southwest	Bristol, Salem, and Lynchburg	70 mph
Northwest	Staunton and Culpeper	70 mph
Northern	Northern Virginia	80 mph
Central	Richmond and Fredericksburg	80 mph
Eastern	Hampton Roads	90 mph

Signal Poles | Winds



Example: 60 ft mast arm signal pole being installed in Loudoun County (Northern Region Operations)

Signal Poles | Winds



60' arm designed for Regional winds (80 mph)

Type B1 pole designed to support 75' (Case 1) loading and designed for Regional winds (80 mph)

Foundation designed to support 60' arm (with maximum loading), Type B1 pole, and based on site-specific winds (70 mph)

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Signal Pole Diameters



Signal Pole Diameters

Config-uration	Arm Length	Design Loading	Max. column diameter at base of column	Max. arm diameter at base of arm
Dual arm	Length of one arm exceeds 70 feet or total length of both arms exceeds 130 feet **	Varies (Project specific loads will be provided by work order)	22 inches	20 inches
	All other dual-arm structures	Design loading does not exceed Standard Drawing MP-3	20 inches	18 inches
Single arm	> 75 feet **	Varies (Project specific loads will be provided by work order)	22 inches	20 inches
	≤ 75 feet	“Case 2” loading as per Standard Drawing MP-3	22 inches	20 inches
		“Case 1” loading as per Standard Drawing MP-3	20 inches	18 inches

**** Special design signal poles requiring Design Waiver (NS pay item; not covered by standards/specs)**

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 - Getting Notified of Changes
 - Questions & Answers

Other Issues

- New Signal & Electrical Standards issued in Feb. 2016
- Standard Special Provision for signal & sign brackets
- Standard Special Provision for LED Luminaires
- TED's Approved Products List has been updated to match 2016 Standards/Specs



Other Issues

- Anticipate new JB standards in 2017, including new 48" x 48" JB option for fiber optic runs.
- Simplified descriptions of pavement marking pay items
 - Word messages are paid for by letter

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Where to Find Stuff | *Standards*

- Standards are available online (only) at www.virginiadot.org/business/locdes/vdot_road_and_bridge_standards.asp
 - Historical 2008 & 2001 Standards also available online
- L&D anticipates that Standards will be updated biannually
- L&D notifies senior internal VDOT staff when Standards are updated
- Contract docs will indicate which edition of R&B Standards is effective
- Periodically check the website!

Where to Find Stuff | Specifications

- 2016 Spec Book is online at www.viriniadot.org/business/const/spec-default.asp
- Instructions for obtaining printed books are on that website
- Supplemental Specs/SSPs/SPCNs available at https://outsidevdot.cov.virginia.gov/P0JQP/2016_Standard_Specifications/Forms/AllItems.aspx
- Non-VDOT staff need to request OutsideVDOT access from Sandra King (Sandra.King@VDOT.Virginia.gov)
- Contractors: go by what's actually in the Contract Documents!



Thanks!

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