ALABAMA			
Name(s)			
Title(s)	Assistant State Maintenance Engineer - Bridge		
Agency	Alabama Department of Transportation		
State/Province	AL		
Email Address(es)			
Phone Number(s)			
INTE	RVIEW QUESTIONS		
Does your agency have post-tensioned	NO		
(PT) structures in its bridge inventory?	YES, please specify approximate		
	quantity: 50		
	Lack of familiarity with post-		
	tensioned structures		
	Concerns related to quality/durability		
Why not? Please check all that apply.	Expense		
	Time consuming design/construction		
	Other, Please describe:		
When were your PT Specifications last updated (approximately)?	Date		
What were the reference documents used for updating? Please specify/explain:			
for updating. Thease specify explain.	Open-Ended Response		
	ASBI/PTI M50		
What PT specifications are you using?	PTI M55		
Please check all that apply.	In-house/DOT created specifications		
	Other, please provide a link:		
Are your PT specifications very similar	NO		
to or derived from another state's?	YES, Please specify source:		

ALABAMA			
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental	Cast-in-place segmental	
	Precast segmental	Precast segmental	
	Cast-in-place, non-segmental		
	PT decks	PT decks	
	PT slab bridges		
	Box girders	Box girders	
	Pier caps		
	Spliced girder		
	Other	consists of precast channel units built in the 1970's	
Are your PT structures designed for a specific service life?	NO		
specific service me:	YES, What is the design service life (number of years)?		
Do you specify a protection level (PL-1a	NO		
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES		
	YES, What is the level specified?		
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:			
	Open-Ended Response		
Has your agency initiated repairs on any post-tensioned structures (either during	NO	NO	
construction or while the structure is in service)?	YES		

ALABAMA		
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges  Box girders  Pier caps  Spliced girder  Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO NO  YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO NO YES, Please provide a link:	
Who performs repairs? Please check all that apply.	In-house staff  Contractor  Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	

ALABAMA		
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	
Has your agency performed repair/replacement of decks on PT bridges?	NO NO YES, Please describe issue and performed repair:	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons  During construction  At a later stage when structure inservice  NDT-aided inspection of PT system  Invasive inspection of PT system  Repair of pour-back (anchor blockout)	
Does your agency have established inspection procedures specific to PT bridges?	NO NO YES, Please provide a link or location where procedure can be accessed:	

ALABAMA			
	Visual methods  Magnetic methods (i.e., magnetic flux leakage)	Visual methods	
	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)		
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)		
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray		
	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)		
	Other, or not sure how to classify. Please describe:		
Please select install certifications/qualifications required by			
your agency for PT installers. Please check all that apply.	ASBI grouting certification		
	PTI Level 1 installer		
	PTI Level 2 installer		
	Other, please describe:		

ALABAMA		
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
Does your agency have grout storage requirements?	Open-Ended Response  NO  YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that apply.	Contractor  In-house  Consultant inspection (CEI)  Other, please specify:	
Who conducts QC? Please check all that apply.	Contractor  In-house  Consultant inspection (CEI)  Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	

ALABAMA		
Have you encountered problematic PT construction details?	YES NO	
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents  Inspection ports  Duct placement	
	Duct splicing  Heat-shrink sleeves  Confinement reinforcement	
	Segment mating during erection  Match-cast joints  Precast quality	
	Deck drainage details  Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES NO	

ALABAMA		
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent vent cap placement	
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block- out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	
	Grout filler material	
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials Other, please specify:	
What specific problems with	\1EA.	
deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	

ALABAMA		
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO NO	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue	YES, Please describe how it was performed:	
type):	Open-Ended Response	

ATACIZA		
Name (a)	ALASKA	
Name(s)	Tashnisal Engineer II	
Title(s)	Technical Engineer II Alaska DOT&PF	
Agency State/Province	AK	
Email Address(es)	AK	
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	10
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
upuateu (approximatery).	Date	3/1/2017
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	ASBI, PTI, AASHTO, and other state DOT specifications (CA and FL)
	ASBI/PTI M50	,
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	

ALASKA		
Are your PT specifications very similar to or derived from another state's?	NO	
	YES, Please specify source:	CA and FL
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	
	Cast-in-place, non-segmental	
	PT decks	
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	
	Spliced girder	had aid any Arminord any Adamsia and
	Other	hybrid pre-tensioned, post-tensioned girders
Are your PT structures designed for a	NO	NO
specific service life?	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		Include as special provision: "Use pre-packaged thixotropic grout formulated specifically for bonded post-tensioned concrete structures in
Has your agency initiated repairs on any	Open-Ended Response	aggressive exposures."
post-tensioned structures (either during construction or while the structure is in service)?	NO YES	NO

ALASKA		
On what types of PT structures have you performed repairs? Please check all that apply.	ALASKA  Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges  Box girders  Pier caps  Spliced girder	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	Other  NO  YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff  Contractor  Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO

	ALASKA	
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons	
	During construction  At a later stage when structure inservice	
	NDT-aided inspection of PT system  Invasive inspection of PT system	NDT-aided inspection of PT system
	Repair of pour-back (anchor block- out)	
	FRP wrapping  Injection of corrosion inhibitor	
	Crack injection  Repair or replacement of deck on a PT superstructure	,
	Internal/bonded tendon replacement External/unbonded tendon replacement	
Does your agency have established	Other. Please specify:	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	

	ALASKA	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	Visual inclines
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	PTI Level 1 installer	
	PTI Level 2 installer	
	Other, please describe:	minimum of 5 years experience
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill		Refer to Section 502 of the Alaska
grout quality checks, certification of (e.g.		Department of Transportation and
ASBI-certified) PT inspectors, mud		Public Facilities Standard
balance, or flow meter? Please provide a		Specifications for Highway
link, if possible.		Construction.
		http://www.dot.state.ak.us/stwddes/d
	Open-Ended Response	csspecs/index.shtml
	NO	
		502-3.05.4. Grout Storage. Store all
Does your agency have grout storage		grout materials in a dry enclosure or
requirements?		building that is convenient to the
1		work site. Limit on site storage of
	YES, Please specify guiding	grout to a maximum period of one
	document, provide link, or describe:	month.

	ALASKA	
Who conducts QA? Please check all that apply.	Contractor	
	In-house	In-house
	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
Possinie	Open-Ended Response	
Have you encountered problematic PT construction details?	YES	
construction details:	NO	NO

ALASKA		
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	
1	NO NO	
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent vent cap placement	
Please identify construction methods that are problematic. Please check all that apply.	Permanent grout cap placement	
	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block- out pour	
	Other. Please specify.	

ALASKA		
Have you found encountered issues with any of the materials used in PT construction?	YES	
	NO	NO
	Grout filler material	
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	We have very few CIP PT bridges in our inventory
How have you rectified these issues?	Open-Ended Response	NA
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO	NO
	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):		
	Open-Ended Response	NA

ARIZONA		
Name(s)		
Title(s)	Bridge Design Manager	
Agency	Arizona DOT	
State/Province	AZ	
Email Address(es)		
Phone Number(s)		
	DVIEW OUESTION	NC
	RVIEW QUESTION	15
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	500
	Lack of familiarity with post-	
	tensioned structures	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last		
updated (approximately)?	Date	01/01/2008
What were the reference documents used		
for updating? Please specify/explain:		
The second secon	Open-Ended Response	Minor updates no reference
	ASBI/PTI M50	
What PT specifications are you using?	PTI M55	
Please check all that apply.		
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Other, prease provide a mik.		
Are your PT specifications very similar	NO	
to or derived from another state's?		
	YES, Please specify source:	Caltrans

ARIZONA		
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	
	Cast-in-place, non-segmental	
What type of PT structures are in your	PT decks	
inventory? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life	
	(number of years)?	75
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		
	Open-Ended Response	cement/water
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO	
	YES	YES

ARIZONA		
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental	
	Precast segmental  Cast-in-place, non-segmental	
	PT decks	
	PT slab bridges  Box girders	Box girders
	Pier caps	
	Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO	NO
procedures of details for 1 1 repairs.	YES, Please provide a link:  In-house staff	
Who performs repairs? Please check all that apply.	Contractor	Contractor
W	Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	of CIP concrete in webs around ducts. Failure of concrete at PT
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and	NO
	performed repair:	

	ARIZONA	
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	Repairs limited to deck patching and overlay of decks on PT bridges.
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons	
	During construction  At a later stage when structure inservice	During construction
	NDT-aided inspection of PT system  Invasive inspection of PT system  Repair of pour-back (anchor block-	
	out) FRP wrapping Injection of corrosion inhibitor	
	Crack injection  Repair or replacement of deck on a PT superstructure	
	Internal/bonded tendon replacement External/unbonded tendon replacement	
Does your agency have established inspection procedures specific to PT	Other. Please specify:	NO
bridges?	YES, Please provide a link or location where procedure can be accessed:	

ARIZONA	
isual methods	Visual methods
agnetic methods (i.e., magnetic flux	
1 1 0	
, , ,	
ectromagnetic wave propagation	
irect measurement of tendon force	
ffraction, radiography)	
<u> </u>	
ell potential)	
ease describe:	
SBI grouting certification	
ΓI Level 1 installer	
ΓΙ Level 2 installer	
ther, please describe:	
	~
	Construction Manual has
F 1 1D	procedures. Chapter 6 - Strutuctes
pen-Ended Kesponse	Link is https://azdot.gov/node/10355
	No
0	NO
ES, Please specify guiding	
a e e d in e e e e e d in e e e e d in e e e e e e e e e e e e e e e e e e	sual methods agnetic methods (i.e., magnetic flux kage) chanical wave propagation and bration methods (i.e., acoustic dission, impact echo, ultrasonic) cetromagnetic wave propagation c., infrared thermography, impulse lar, ground penetrating radar) rect measurement of tendon force c. gages on strands) diation methods (i.e., x-ray fraction, radiography) cetrochemical techniques (i.e., half- l potential) her, or not sure how to classify. case describe:  BBI grouting certification  I Level 1 installer  I Level 2 installer  Ther, please describe:

	ARIZONA	
	Contractor	
	In-house	In-house
apply.	Consultant inspection (CEI)	
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
-	Open-Ended Response	
construction details?	YES	YES
	NO	

ARIZONA		
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	Deck drainage details
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	
construction teeninques, methods	NO	NO
	Air (pressure) test	
	Vacuum test	
Please identify construction methods that are problematic. Please check all that apply.	Deck-level vent removal/permanent vent cap placement	
	Permanent grout cap placement Grouting/filler procedures	
	Vacuum grouting Preparing anchorage area for block-	
	out pour Other. Please specify.	

ARIZONA		
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material	
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned		
bridges have you encountered?	Open-Ended Response	None
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):		
	Open-Ended Response	NA

	CALIFORNIA	
Name(s)		
Title(s)	Senior Bridge Engineer	
Agency	Caltrans, Transportation	
State/Province	CA	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	2900
	Lack of familiarity with post- tensioned structures	2700
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	08/19/2019
What were the reference documents used		
for updating? Please specify/explain:	Open-Ended Response	
	ASBI/PTI M50	
What PT specifications are you using?	PTI M55	
Please check all that apply.	In-house/DOT created specifications	A A CLITO I DED Duideo Decien
	Other, please provide a link:	AASHTO LRFD Bridge Design Specifications, Eighth Edition with California Amendments (AASHTO- CA BDS-8)
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	

CALIFORNIA		
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	PT slab bridges
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	
	Other	
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life (number of years)?	75
	NO	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
ASDIT IT WISO, for your 11 structures.	YES, What is the level specified?	
What type of PT grout do you specify for		
initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please		
describe:	Open-Ended Response	cement/water or packaged complying with ASTM C1107
Has your agency initiated repairs on any post-tensioned structures (either during	NO	
construction or while the structure is in service)?	YES	YES
	TEO	I Eo

	CALIFORNIA	
	Cast-in-place segmental	
	Precast segmental  Cast-in-place, non-segmental	Cast-in-place, non-segmental
On what types of PT structures have you performed repairs? Please check all that	PT decks	
apply.	PT slab bridges  Box girders	Box girders
	Pier caps	
	Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon	NO	NO
replacement specifically?	YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff	
	Contractor	Contractor
Has your agency encountered issues	Other. Please describe:  NO	
requiring repair during construction?	YES, Please describe issue and performed repair:	PT duct popping of girder stem
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	Placed corrosion inhibiters in duct

CALIFORNIA		
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons  During construction  At a later stage when structure inservice	
	NDT-aided inspection of PT system  Invasive inspection of PT system  Repair of pour-back (anchor blockout)  FRP wrapping	
	Injection of corrosion inhibitor  Crack injection  Repair or replacement of deck on a PT superstructure	Injection of corrosion inhibitor
	Internal/bonded tendon replacement External/unbonded tendon replacement Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	NO

	CALIFORNIA	
	Visual methods	
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if used in a research effort.	radar, ground penetrating radar)  Direct measurement of tendon force	
used in a research effort.	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ASBI grouting certification	
Please select install		
certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please		
check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		
link, if possible.		Yes QC/QA Section 50 Standard
	Open-Ended Response	Specificaitons
	•	
Does your agency have grout storage	NO	
requirements?	VEG DI 'C ''	
•	YES, Please specify guiding	stone amout in a day and a sure
	document, provide link, or describe:	store grout in a dry environment

	CALIFORNIA	
	Contractor	
	In-house	In-house
apply.	Consultant inspection (CEI)	
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
•	Open-Ended Response	
Have you encountered problematic PT	YES	
construction details?	NO	NO

	CALIFORNIA
	Anchorage pour-back details
	Mid-tendon vents
	Inspection ports
	Duct placement
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Duct splicing
the best of your knowledge.	Heat-shrink sleeves  Confinement reinforcement
	Segment mating during erection
	Match-cast joints
	Precast quality  Deck drainage details  Other. Please describe:
Have you encountered problematic construction techniques/methods?	YES
	NO NO
	Air (pressure) test  Vacuum test
	Deck-level vent removal/permanent vent cap placement
Please identify construction methods that are problematic. Please check all that apply.	Permanent grout cap placement
	Grouting/filler procedures
	Vacuum grouting Preparing anchorage area for block-
	out pour
	Other. Please specify.

CALIFORNIA		
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material	
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Excessive prestress shrinkage causing joint and elastomeric bearing failure
How have you rectified these issues?	Open-Ended Response	Reconstruct joints openings and replace bearings
Have you replaced a deck on CIP post-	NO	NO
tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

COLORADO		
Name(s)		
Title(s)	Professional Engineer II	
Agency	Colorado Department of Transportatio	n
State/Province	СО	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate quantity:	173
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	12/13/2018
What were the reference documents used for updating? Please specify/explain:		PTI M50, PTI M, PTI Bonded Training course materials, ASBI training course materials.
	ASBI/PTI M50	ASBI/PTI M50
What PT specifications are you using? Please check all that apply.	PTI M55	PTI M55
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	

COLORADO		
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
What type of PT structures are in your	PT decks	PT decks
inventory? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a specific service life?	NO	NO
specific service me:	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a	NO	
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	II I V DY 1D 1 v 1
	YES, What is the level specified?	called out as PL-1B, but the specifications require all the
What type of PT grout do you specify for initial construction (i.e., "pre-bagged,		
proprietary", "cement/water")? Please describe:	Open-Ended Response	We require PTI M55 Classification: Class C Pre-packaged
Has your agency initiated repairs on any post-tensioned structures (either during	NO	
construction or while the structure is in service)?	WEC	VES
	YES	YES

	COLORADO	
	Cast-in-place segmental	
	Precast segmental	
	Cast-in-place, non-segmental	
On what types of PT structures have you	PT decks	PT decks
performed repairs? Please check all that	PT slab bridges	
apply.	Box girders	Box girders
	Pier caps	8
	Spliced girder	
	Other	
Does your agency have standard or		
commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon	110	110
replacement specifically?		
The state of the s	YES, Please provide a link:	
Does your agency have standard or		
commonly-used plans, specifications,	NO	NO
procedures or details for PT repairs?		
	YES, Please provide a link:	
	In-house staff	
Who performs repairs? Please check all that apply.		
	Contractor	Contractor
arpey.		Constactor
	Other. Please describe:	
	Other. I lease describe.	
	NO	
Has your agency encountered issues	NO	
requiring repair during construction?	YES, Please describe issue and	
	performed repair:	Not sealed conduit, i.e. leaking.
	NO	
Was your a gamey an asymtomed issues		
		Corroded strands discovered in
Has your agency encountered issues requiring repair related to corrosion?		external PT added after construction
		to control cracking. No repair
		performed, as no strength loss has
	YES, Please describe issue and	occurred. PT strands are for
	performed repair:	serviceability on the structure
L	<u>,                                    </u>	·

COLORADO		
	NO	
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	YES, Please describe issue and performed repair:	We have not done many repairs on P/T bridges except for the P/T slabs in Glenwood canyon during rockfall with FRP rebar strips. The asphalt was cracked and thought that the deck was also. After uncovering the overlay out the slab is fine. There was another instance in 2016 for repairing the same type of P/T slabs.
Has your agency performed	NO	NO
repair/replacement of decks on PT	YES, Please describe issue and	
bridges?	performed repair:	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure Internal/bonded tendon replacement External/unbonded tendon	
	replacement Other. Please specify: NO	NO
Does your agency have established inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	

	COLORADO	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands)	
	Radiation methods (i.e., x-ray diffraction, radiography)	
	Electrochemical techniques (i.e., half-cell potential)	
	Other, or not sure how to classify. Please describe:	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	See CDOT Standard Specification section 618.
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	
Does your agency have grout storage requirements?	•	NO
	YES, Please specify guiding document, provide link, or describe:	NO

	COLORADO	
	Contractor	Contractor
	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
	Open-Ended Response	N/A
Have you encountered problematic PT construction details?	YES	YES
	NO	

COLORADO		
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents Inspection ports	Inspection ports
	Duct placement  Duct splicing	Duct placement Duct splicing
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves  Confinement reinforcement  Segment mating during erection	Confinement reinforcement Segment mating during erection
the best of your knowledge.	Match-cast joints	Match-cast joints
	Precast quality	
	Deck drainage details	Deck drainage details
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	YES
4	NO	
	Air (pressure) test	Air (pressure) test
	Vacuum test  Deck-level vent removal/permanent	
	vent cap placement	
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting Preparing anchorage area for block-	Preparing anchorage area for block-
	out pour	out pour
Have you found encountered issues with	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT construction?	YES	YES
construction.	NO	

	COLORADO	
	Grout filler material	Grout filler material
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	Pour-back materials
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	N/A
How have you rectified these issues?	Open-Ended Response	N/A
Have you replaced a deck on CIP post-	NO	NO
tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	N/A

	CONNECTICUT	
Name(s)		
Title(s)	Trans. Principal Engineer	
Agency	CTDOT	
State/Province	CT	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
· ·	quantity:	120
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
	Date	
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar to or derived from another state's?	NO	NO
	YES, Please specify source:	

	CONNECTICUT	
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
WIL A Acres of DT Acres Acres in the second	PT decks	PT decks
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	
	Other	
Are your PT structures designed for a specific service life?	NO	NO
specific service me:	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO	NO
	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		
	Open-Ended Response	pre-bagged
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO	NO
	YES	
	120	

	CONNECTICUT	
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental  Precast segmental	
	Cast-in-place, non-segmental PT decks	
	PT slab bridges Box girders	
	Pier caps Spliced girder	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	Other	
	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff  Contractor	
Has your agency encountered issues requiring repair during construction?	Other. Please describe:  NO YES, Please describe issue and performed repair:	No repairs yet completed  NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO

	CONNECTICUT	
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons  During construction  At a later stage when structure inservice  NDT-aided inspection of PT system  Invasive inspection of PT system  Repair of pour-back (anchor blockout)  FRP wrapping  Injection of corrosion inhibitor	FRP wrapping
	Crack injection  Repair or replacement of deck on a PT superstructure  Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:	Crack injection
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	YES

CONNECTICUT		
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
	emission, impact ceno, utrasome)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
used in a research crioit.	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	· · ·	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ASBI grouting certification	
Please select install		
certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please		
check all that apply.	PTI Level 2 installer	
	Other, please describe:	
	71	
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		
link, if possible.		
	Open-Ended Response	
	NO	NO
Does your agency have grout storage requirements?		
requirements.	YES, Please specify guiding	
	document, provide link, or describe:	

	CONNECTICUT	
	Contractor	
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if		
possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES	
	NO	

	CONNECTICUT
	Anchorage pour-back details
	Mid-tendon vents
	Inspection ports
	Duct placement
	Duct splicing
Please identify construction details that	Heat-shrink sleeves
are problematic. Check all that apply, to the best of your knowledge.	Confinement reinforcement
	Segment mating during erection
	Match-cast joints
	Precast quality
	Deck drainage details
	Other. Please describe:
Have you encountered problematic construction techniques/methods?	YES
construction techniques/methods:	NO NO
	Air (pressure) test
	Vacuum test
	Deck-level vent removal/permanent
	vent cap placement
are problematic. Please check all that apply.	Permanent grout cap placement
	Grouting/filler procedures
	Vacuum grouting
	Preparing anchorage area for block- out pour
	Other. Please specify.

	CONNECTICUT	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material	
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned		
bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):		
	Open-Ended Response	

DELAWARE		
Name(s)		
Title(s)	Chief of Bridges & Structures	
Agency	Delaware DOT	
State/Province	DE	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	3
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	12/31/2017
What were the reference documents used for updating? Please specify/explain:		
Tot up unong v rouse speerly, explains	Open-Ended Response	PTI
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	

DELAWARE		
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
NVI ADT	PT decks	
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life (number of years)?	75
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		
ueser ibe.	Open-Ended Response	cement/water
Has your agency initiated repairs on any post-tensioned structures (either during	NO	NO
construction or while the structure is in service)?	YES	

DELAWARE		
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges  Box girders  Pier caps  Spliced girder  Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	no Our cable stay bridge has an owner's manual
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff  Contractor  Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO

	DELAWARE	
Has your agency performed repairs to	NO	NO
PT structures due to damage by vessel/vehicle impact?	YES, Please describe issue and performed repair:	
Has your agency performed repair/replacement of decks on PT	NO	NO
bridges?	YES, Please describe issue and performed repair:	
	Member strengthening to address corrosion/impact damage	
	Re-grouting of tendons	
	During construction	
	At a later stage when structure inservice	
	NDT-aided inspection of PT system	
Have your agency performed (or	Invasive inspection of PT system	
initiated) the following types of maintenance, inspection or repairs	Repair of pour-back (anchor block- out)	
related to PT structures? Please check all that apply.	FRP wrapping	
	Injection of corrosion inhibitor	
	Crack injection	Crack injection
	Repair or replacement of deck on a PT superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon replacement	
	Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO	NO
	YES, Please provide a link or location where procedure can be accessed:	

DELAWARE		
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Visual methods Magnetic methods (i.e., magnetic flux leakage) Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.  Please describe:	
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification  PTI Level 1 installer  PTI Level 2 installer  Other, please describe:	ASBI grouting certification
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	PTI Recomendations
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	Special provision in contract docs

	DELAWARE	
	Contractor	
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	
	Other, please specify:	
	Contractor	
	In-house	
Who conducts QC? Please check all that		
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
		1 , ,
	Other, please specify:	
Please identify any preferred or "best		
practice" construction details. (Details		
which perform as intended and are		
worthy of note.) Please provide a link, if		
possible.		
	Open-Ended Response	none
Have you encountered problematic PT	YES	
construction details?		
	NO	NO

DELAWARE		
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents  Inspection ports  Duct placement  Duct splicing  Heat-shrink sleeves  Confinement reinforcement  Segment mating during erection  Match-cast joints  Precast quality  Deck drainage details  Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES NO NO	

DELAWARE		
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent vent cap placement	
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block- out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO NO	
	Grout filler material	
	Flexible filler material (non-cementitious, wax, grease, etc.)	
	Prestressing steel	
	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	

	DELAWARE	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	None
How have you rectified these issues?	Open-Ended Response	N/A
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	None

FLORIDA		
Name(s)		
Title(s)	Major Bridge Design Engineer	
Agency	FDOT	
State/Province	FL	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	500
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
updated (approximatery):	Date	01/01/2020
What were the reference documents used		
for updating? Please specify/explain:	Open-Ended Response	FDOT Structure Design Guidelines, Spec. 462
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	

FLORIDA		
Cast-in-place segmental	Cast-in-place segmental	
Precast segmental	Precast segmental	
Cast-in-place, non-segmental	Cast-in-place, non-segmental	
PT decks	PT decks	
PT slab bridges	PT slab bridges	
Box girders	Box girders	
Pier caps	Pier caps	
Spliced girder	Spliced girder	
Other	PT column, PT U beam, PT straddle beam, PT C pier, footing	
NO		
(number of years)?	75	
NO		
YES		
YES, What is the level specified?	FDOT protection level is equal to or better than PL-2	
	December of and an engage of	
Open-Ended Response	Prepackaged and pre-approved grouts	
NO		
YES	YES	
	Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges  Box girders  Pier caps  Spliced girder  Other  NO  YES, What is the design service life (number of years)?  NO  YES  YES, What is the level specified?  Open-Ended Response	

	EI ODIDA	
	FLORIDA Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
O LAA CDT A A L	PT decks	PT decks
Jesus Special Control of Special		
performed repairs? Please check all that	PT slab bridges	PT slab bridges
apply.	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder Other	Spliced girder
		Pier column
Does your agency have standard or	NO	NO
commonly-used plans, specifications,		
procedures or details for PT tendon		
replacement specifically?	YES, Please provide a link:	
	NO	NO
Does your agency have standard or	110	INO
commonly-used plans, specifications,		
procedures or details for PT repairs?		
	YES, Please provide a link:	
	In-house staff	
Who performs repairs? Please check all		
that apply.	Contractor	Contractor
	Other. Please describe:	
_	NO	
		1.Repair of cracked PT anchor
Has your agency encountered issues		blocks, blisters 2.Repair of cracked
requiring repair during construction?		box girder webs 3.Repair of cracked
rodan me rokan aarme consor account	YES, Please describe issue and	shear keys 4. Re-grouting voids in
	performed repair:	PT ducts
	NO	11 davis
		Since 1999, we have many projects
		repair related to tendon failure /
		corrosion. Sunshine Skyway
		Bridge: tendon corrosion due to lack
		of protection (bleed water); cracked
Has your agency encountered issues		PE duct Ringling Bridge: tendon
requiring repair related to corrosion?		failure and corrosion due to soft
		grout, replaced external tendons
		Wonderwood Bridge: tendon
		corrosion due to soft grout and
		voids, drying and impregnation of
		tendons, added external tendons.
		Nile channel Bridge: replaced
	YES, Please describe issue and	external tendons Mid-Bay Bridge:
	performed repair:	replaced external tendons

FLORIDA		
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons	Member strengthening to address corrosion/impact damage  Re-grouting of tendons
	During construction  At a later stage when structure inservice	During construction  At a later stage when structure inservice
	NDT-aided inspection of PT system  Invasive inspection of PT system	NDT-aided inspection of PT system  Invasive inspection of PT system
	Repair of pour-back (anchor block- out)	Repair of pour-back (anchor block- out)
	Injection of corrosion inhibitor	FRP wrapping  Injection of corrosion inhibitor
	Crack injection  Repair or replacement of deck on a PT superstructure	Crack injection  Repair or replacement of deck on a  PT superstructure
	Internal/bonded tendon replacement External/unbonded tendon replacement	External/unbonded tendon replacement
	Other. Please specify:	Repair tendons due to the presence of soft grout. (Drying of tendons).

	FLORIDA	
Does your agency have established inspection procedures specific to PT	NO	NO
bridges?	YES, Please provide a link or location where procedure can be accessed:	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	Magnetic methods (i.e., magnetic flux leakage)
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
	Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-cell potential)	Electrochemical techniques (i.e., half-cell potential)
	Other, or not sure how to classify. Please describe:	
Please select install	ASBI grouting certification	
certifications/qualifications required by your agency for PT installers. Please	PTI Level 1 installer PTI Level 2 installer	
check all that apply.	Other, please describe:	FDOT required CTQP Level 1 and 2
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	CPAM

FLORIDA		
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	See FDOT Spec. 462
Who conducts QA? Please check all that apply.	Contractor  In-house  Consultant inspection (CEI)  Other, please specify:	Consultant inspection (CEI)
Who conducts QC? Please check all that apply.	Contractor  In-house  Consultant inspection (CEI)  Other, please specify:	Contractor
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	See FDOT Standard Detailing Manual
Have you encountered problematic PT construction details?	YES NO	YES

FLORIDA		
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents	X
	Inspection ports	
	Duct placement	
	Duct splicing	Duct splicing
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves	Heat-shrink sleeves
the best of your knowledge.	Confinement reinforcement	
	Segment mating during erection	
	Match-cast joints	Match-cast joints
	Precast quality	Precast quality
	Deck drainage details	
	Other. Please describe:	blisters / deviators. 2.Grout vent tubes sticking up on the deck, mostly
Have you encountered problematic construction techniques/methods?	YES	YES
	NO	

FLORIDA		
	Air (pressure) test	Air (pressure) test
	Vacuum test	
	Deck-level vent removal/permanent vent cap placement	Deck-level vent removal/permanent vent cap placement
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	Grouting/filler procedures
	Vacuum grouting	
	Preparing anchorage area for block- out pour	
	Other. Please specify.	CIP joints, e.g. for PT spliced girder bridge.
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	Grout filler material
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that apply.	Prestressing steel	
	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	Pour-back materials
	Other, please specify:	

	FLORIDA	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Grout voids in draped tendons.
How have you rectified these issues?	Open-Ended Response	Re-grouting the tendons with vacuum grouting method.
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	Wonderwood Bridge Repair Issue: Repair of soft grout

GEORGIA		
Name(s)		
Title(s)	State Bridge Engineer	
Agency	Georgia DOT	
State/Province	GA	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	150
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	11/06/2006
	Date	11/06/2006
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	PTI Grout Specifications
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
r lease check an that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	

	GEORGIA	
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	
	Cast-in-place, non-segmental	
What type of PT structures are in your	PT decks	
inventory? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a specific service life?	NO	NO
specific service me:	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please		
describe:	Open-Ended Response	pre-bagged
Has your agency initiated repairs on any post-tensioned structures (either during	NO	NO
construction or while the structure is in service)?		
	YES	

	GEORGIA	
	Cast-in-place segmental	
	Precast segmental	
	Cast-in-place, non-segmental	
On what types of PT structures have you	PT decks	
performed repairs? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	
	Spliced girder	
	Other	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT repairs?	YES, Please provide a link:	
	In-house staff	
Who performs repairs? Please check all that apply.	Contractor	Contractor
	Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	NO	
	YES, Please describe issue and performed repair:	segregation/honeycomb in some box girder walls. Repairs were made
Has your agency encountered issues	NO	NO
requiring repair related to corrosion?	YES, Please describe issue and performed repair:	

	GEORGIA	
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage  Re-grouting of tendons	
	During construction  At a later stage when structure inservice  NDT-aided inspection of PT system	During construction
	Invasive inspection of PT system  Repair of pour-back (anchor block- out)	Repair of pour-back (anchor block-out)
	FRP wrapping  Injection of corrosion inhibitor	
	Crack injection  Repair or replacement of deck on a PT superstructure	Crack injection
	Internal/bonded tendon replacement External/unbonded tendon replacement	
Does your agency have established inspection procedures specific to PT	Other. Please specify:  NO	
bridges?	YES, Please provide a link or location where procedure can be accessed:	

	GEORGIA	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)  Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray	
	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.  Please describe:	
Please select install	ASBI grouting certification	ASBI grouting certification  PTI Level 1 installer
certifications/qualifications required by your agency for PT installers. Please check all that apply.	PTI Level 1 installer PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	All of the above are required by contract special provisions.
Does your agency have grout storage requirements?	NO NO	
requirements;	YES, Please specify guiding document, provide link, or describe:	Project specifications require proper storage and shelf life

GEORGIA		
	Contractor	
	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
	Open-Ended Response	N/A
Have you encountered problematic PT	YES	YES
construction details?	NO	

GEORGIA		
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	Duct placement
	Duct splicing	
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves	Heat-shrink sleeves
the best of your knowledge.	Confinement reinforcement	Confinement reinforcement
	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	YES
	NO	

GEORGIA		
	Air (pressure) test	
	Vacuum test	Vacuum test
	Deck-level vent removal/permanent vent cap placement	
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	X
	Vacuum grouting	Vacuum grouting
	Preparing anchorage area for block- out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	
	Flexible filler material (non- cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that apply.	Prestressing steel	
	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	Pour-back materials
	Other, please specify:	

	GEORGIA	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Cracking in decks and leaking between segments
How have you rectified these issues?	Open-Ended Response	epoxy injection
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	N/A

HAWAII		
Name(s)		
Title(s)	CE/SE	
Agency	HDOT	
State/Province	НІ	
Email Address(es)		
Phone Number(s)		
	RVIEW QUESTIO	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	20
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last		
updated (approximately)?	Date	12/31/2018
What were the reference documents used for updating? Please specify/explain:		
for updating. Trease specify explain.	Open-Ended Response	BrM & SI&A
	ASBI/PTI M50	
What PT specifications are you using?	PTI M55	PTI M55
Please check all that apply.	In-house/DOT created specifications	
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	CALTRANS

HAWAII		
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life (number of years)?	50
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged,		
proprietary", "cement/water")? Please describe:	Open-Ended Response	"pre-bagged, proprietary", "cement/water
Has your agency initiated repairs on any post-tensioned structures (either during	NO	
construction or while the structure is in service)?	YES	YES
	ILD	1 LD

HAWAII		
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
On what types of PT structures have you	PT decks	
performed repairs? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	
Does your agency have standard or	NO	NO
commonly-used plans, specifications, procedures or details for PT repairs?	YES, Please provide a link:	
	In-house staff	
Who performs repairs? Please check all that apply.	Contractor	Contractor
	Other. Please describe:	
Has your agency encountered issues	NO	NO
requiring repair during construction?	YES, Please describe issue and performed repair:	
Has your agency encountered issues	NO	NO
requiring repair related to corrosion?	YES, Please describe issue and performed repair:	

	HAWAII	
PT structures due to damage by vessel/vehicle impact?	NO	
	YES, Please describe issue and performed repair:	Oversize vehicle impact strikes: Contractedout repairs per approved repair drawings:
Has your agency performed	NO	NO
repair/replacement of decks on PT bridges?	YES, Please describe issue and performed repair:	
	Member strengthening to address corrosion/impact damage	
	Re-grouting of tendons	Re-grouting of tendons
	During construction	
	At a later stage when structure in- service	At a later stage when structure inservice
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
Have your agency performed (or initiated) the following types of	Invasive inspection of PT system	Invasive inspection of PT system
maintenance, inspection or repairs related to PT structures? Please check all	Repair of pour-back (anchor block- out)	
that apply.	FRP wrapping	FRP wrapping
	Injection of corrosion inhibitor	
	Crack injection	Crack injection
	Repair or replacement of deck on a PT superstructure	Repair or replacement of deck on a PT superstructure
	superstructure	1 1 superstructure
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement Other. Please specify:	
Does your agency have established	NO	
inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	

	HAWAII	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
iscu ili a rescarcii criort.	Direct measurement of tendon force (i.e. gages on strands)	
	Radiation methods (i.e., x-ray diffraction, radiography) Electrochemical techniques (i.e., half-cell potential)	
	Other, or not sure how to classify. Please describe:	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by	PTI Level 1 installer	PTI Level 1 installer
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
-	Open-Ended Response	QA/QC provided by contractors, Reviewed by in house Engineers.
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	NO

	HAWAII	
	Contractor	Contractor
	In-house	
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	In-house
	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details		
which perform as intended and are worthy of note.) Please provide a link, if		
possible.	Open-Ended Response	QA/QC Highly certified contractors, Engineering contractors
Have you encountered problematic PT	YES	
construction details?	NO	NO

HAWAII		
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents  Inspection ports  Duct placement  Duct splicing  Heat-shrink sleeves  Confinement reinforcement  Segment mating during erection  Match-cast joints  Precast quality  Deck drainage details  Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES NO NO	

HAWAII		
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent vent cap placement	
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block- out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	Grout filler material
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	Prestressing steel
been problematic. Please check all that apply.	Elastomeric coatings	Elastomeric coatings
	Epoxy grouts	Epoxy grouts
	Pour-back materials	Pour-back materials
	Other, please specify:	

	HAWAII	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Corrosion
How have you rectified these issues?	Open-Ended Response	Contracted with QA/QC
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	N/A

IDAHO		
Name(s)		
Title(s)	State Bridge Engineer	
Agency	Idaho Transportation Dept	
State/Province	ID	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	40
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
upuateu (approximatery).	Date	01/01/2018
What were the reference documents used		
for updating? Please specify/explain:	Open-Ended Response	PTI Grouting Specification
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	Washington DOT

IDAHO		
	Cast-in-place segmental	Cast-in-place segmental
What type of PT structures are in your inventory? Please check all that apply.	Precast segmental	
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
	PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	
	Other	
Are your PT structures designed for a	NO	NO
specific service life?	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged,		
proprietary", "cement/water")? Please describe:	Open-Ended Response	commercial pre-packaged thixotropic tendon grout
Has your agency initiated repairs on any	NO	minoropie tenden grout
post-tensioned structures (either during construction or while the structure is in service)?		
service).	YES	YES

IDAHO		
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental  Precast segmental	
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	
	Other	Straddle Bent Pier Cap
Does your agency have standard or	NO	NO
commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	
Does your agency have standard or	NO	NO
commonly-used plans, specifications, procedures or details for PT repairs?	YES, Please provide a link:	
	In-house staff	
Who performs repairs? Please check all that apply.	Contractor	Contractor
	Other. Please describe:	
Has your agency encountered issues	NO	
requiring repair during construction?	YES, Please describe issue and performed repair:	Voids or honeycombing underneath p-t anchorages or bearing plates
Has your agency encountered issues	NO	NO
requiring repair related to corrosion?	YES, Please describe issue and performed repair:	

IDAHO		
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	YES, Please describe issue and performed repair:	We have hydro demolished 1-1/2" inches of concrete removal of the deck of a post tensioned box an applied a silica fume composite overlay.
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure  Internal/bonded tendon replacement External/unbonded tendon replacement	During construction  Invasive inspection of PT system  Crack injection
Does your agency have established inspection procedures specific to PT bridges?	Other. Please specify:  NO YES, Please provide a link or location where procedure can be accessed:	NO

	IDAHO	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ASBI grouting certification	ASBI grouting certification
Please select install		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PTI Level 1 installer	
your agency for PT installers. Please		
check all that apply.	PTI Level 2 installer	
	Other, please describe:	
	Other, piease describe.	
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a		
link, if possible.		
, P		On site State Inspectors or CE&I
	Open-Ended Response	consultant inspectors
	NO	NO
Does your agency have grout storage		- 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1
requirements?	YES, Please specify guiding	
	1 10 0	

IDAHO		
	Contractor	
	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES NO	NO

	IDAHO	
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	X
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	Rebar congestion
Have you encountered problematic	YES	YES
construction techniques/methods?		
	NO	
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that	vent cap placement	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	X
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	

	IDAHO	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that apply.	Prestressing steel Elastomeric coatings	
	Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Some concern with older style grout segregation and shrinkage. No problems found to date.
How have you rectified these issues?	Open-Ended Response	Yes
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	We have not had to replace a deteriorated hinge as yet, but would be interested received such information if found.

	INDIANA	
Name(s)		
Title(s)	Standards Engineer	
Agency	Indiana Department of Transportation	
State/Province	IN	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTIO	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	24
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Dete	11/06/2010
	Date	11/06/2019
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	PTI, ASBI
	ASBI/PTI M50	ASBI/PTI M50
What PT specifications are you using?	PTI M55	PTI M55
What PT specifications are you using? Please check all that apply.	1 11 1/1/2/2	1 11 19133
Trease eneck an that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	

	INDIANA	
	î	Cost in place segmental
	Cast-in-place segmental Precast segmental	Cast-in-place segmental Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
What type of PT structures are in your	PT slab bridges	PT slab bridges
inventory? Please check all that apply.	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	Spheed girder
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life	
	(number of years)?	75
	NO	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
, ,	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	pre-bagged, thixotropic, in accordance with 10.9.3 of LRFD Bridge Construction Specifications
Has your agency initiated repairs on any		
post-tensioned structures (either during	NO	
construction or while the structure is in		
service)?	YES	YES
	Cast-in-place segmental	1153
	Precast segmental	
	1 recast segmentar	
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
On what types of PT structures have you	PT decks	1 ,8
performed repairs? Please check all that	PT slab bridges	PT slab bridges
apply.	Box girders	Box girders
	Pier caps	
	Spliced girder	Spliced girder
	Other	
	~ W101	

INDIANA		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	Voids detected in ducts, some strand corrosion. Required vacuum grouting.
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

	INDIANA	
	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction	Member strengthening to address corrosion/impact damage Re-grouting of tendons
	At a later stage when structure inservice	At a later stage when structure inservice
	NDT-aided inspection of PT system  Invasive inspection of PT system	NDT-aided inspection of PT system Invasive inspection of PT system
Have your agency performed (or initiated) the following types of	Repair of pour-back (anchor block- out)	Repair of pour-back (anchor block- out)
maintenance, inspection or repairs related to PT structures? Please check all that apply.	FRP wrapping Injection of corrosion inhibitor	Constraints
	Crack injection Repair or replacement of deck on a PT superstructure	Crack injection
	Internal/bonded tendon replacement External/unbonded tendon replacement	
	Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location	MEG
	where procedure can be accessed:  Visual methods	YES Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	visual methods
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands)	
	Radiation methods (i.e., x-ray diffraction, radiography)	Radiation methods (i.e., x-ray diffraction, radiography)
	Electrochemical techniques (i.e., half-cell potential) Other, or not sure how to classify.	
	Please describe:	

	INDIANA	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by	PTI Level 1 installer	PTI Level 1 installer
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	We currently cover post-tensioning requirements under project specific unique special provisions (USP). Our most current USP required ASBI certification, inspection hold points for duct placement and pressure testing, duct proving prior to strand installation, pre-grouting inspection, and inspection of grout. We also require friction tests and five field tests of the grout (chloride ion, pressure bleed, mud balance, strength, and fluidity).
Does your agency have grout storage requirements?	NO YES, Please specify guiding	
	document, provide link, or describe:	Waterproof location.
Who conducts QA? Please check all that apply.	Contractor  In-house  Consultant inspection (CEI)  Other, please specify:	In-house  Consultant inspection (CEI)  We have used both in-house and consultant inspection services, depending on the project and staff availability.

	INDIANA	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
լորիլչ.	Consultant inspection (CEI)	
	Other, please specify:	sub-contract this work to a specialty Contractor.
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	We have very general guidance in chapter 406 of our Indiana Design Manual. https://www.in.gov/indot/design_manual/design_manual_2013.htm
Have you encountered problematic PT construction details?	YES	
	NO	NO
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
Please identify construction details that	Duct splicing	
are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details Other. Please describe:	
	other. I lease describe.	
Have you encountered problematic	YES	
construction techniques/methods?	NO	NO

	INDIANA	
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	Other. I lease speerly.	
Have you found encountered issues with	YES	VEC
any of the materials used in PT	YES	YES
construction?		
	NO	
	Grout filler material	Grout filler material
	Flexible filler material (non-	
Please identify materials which have	cementitious, wax, grease, etc.)	
been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings	
appry.	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
		The issues that I'm aware of are
What specific problems with		related to poor grouting or poor
deterioration of CIP post-tensioned		grout materials, or inadequate
bridges have you encountered?		design. These were discovered on
		older bridges that didn't use modern
	Open-Ended Response	grout or modern design software.
		Yes. We have vacuum grouted
How have you rectified these issues?		voids and also performed
•	Open-Ended Response	strengthening retrofits.
Have you replaced a deck on CIP post-	NO	NO
tensioned box girder or segmental	YES, Please describe how it was	
concrete bridge?	performed:	
	performed.	
If you know of a particular PT repair for		
consideration as a case study, please		I70 WB Ramp over I70 on the east
provide some general information (for		side of Indianapolis had some crack
example: bridge name, location, issue		injection and a shear strengthening
type):		retrofit performed within the past
	Open-Ended Response	three years.
		•

IOWA		
Name(s)		
Title(s)	State Bridge Engineer	
Agency	Department of Transportation	
State/Province	IA	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate	NO
	quantity:  Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	Concerns related to quality/durability
Why not? Please check all that apply.	Expense	Expense
	Time consuming design/construction  Other, Please describe:	Lack of a locally established industry presence to build post-tensioned of bridges.
When were your PT Specifications last updated (approximately)?	Date	
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications Other, please provide a link:	
Are your PT specifications very similar to or derived from another state's?	NO	
to of derived from another state s:	YES, Please specify source:	

IOWA		
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	

IOWA		
	Cast-in-place segmental	
	Precast segmental	
	Cast-in-place, non-segmental	
	PT decks	
On what types of PT structures have you	PT slab bridges	
performed repairs? Please check all that	Box girders	
apply.	Pier caps	
	Spliced girder	
	Other	
Does your agency have standard or	NO	
commonly-used plans, specifications, procedures or details for PT tendon		
replacement specifically?	YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications,	NO	
procedures or details for PT repairs?	YES, Please provide a link:	
Who noufoums wonging? Plages shook all	In-house staff	
Who performs repairs? Please check all that apply.	Contractor	
пат арріу.	Other. Please describe:	
Has your agency encountered issues	NO	
requiring repair during construction?	YES, Please describe issue and	
	performed repair:	
	NO	
Has your agency encountered issues		
requiring repair related to corrosion?	YES, Please describe issue and	
	performed repair:	
Has your agency performed repairs to PT structures due to damage by	NO	
vessel/vehicle impact?	YES, Please describe issue and	
ressen remete impace.	performed repair:	
Has your agency performed	NO	
repair/replacement of decks on PT	YES, Please describe issue and	
bridges?	performed repair:	
	Lettermen tehnit.	

IOWA	
Member strengthening to address	
	corrosion/impact damage
	Re-grouting of tendons
	During construction
	At a later stage when structure in-
	service
	NDT-aided inspection of PT system
	Invasive inspection of PT system
Have your agency performed (or	Repair of pour-back (anchor block-
initiated) the following types of	out)
maintenance, inspection or repairs	FRP wrapping
related to PT structures? Please check all	Injection of corrosion inhibitor
that apply.	Crack injection
	Repair or replacement of deck on a PT
	superstructure
	Superstructure
	Internal/bonded tendon replacement
	External/unbonded tendon
	replacement
	Other. Please specify:
D 1 1 1 1	
Does your agency have established	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location
bridges:	where procedure can be accessed:
	Visual methods
	Magnetic methods (i.e., magnetic flux
	leakage)
	Mechanical wave propagation and
	vibration methods (i.e., acoustic
	emission, impact echo, ultrasonic)
Have you used any NDT methods for	Electromagnetic wave propagation
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse
Please check all that apply, including if	radar, ground penetrating radar)
used in a research effort.	Direct measurement of tendon force
	(i.e. gages on strands)
	Radiation methods (i.e., x-ray
	diffraction, radiography)
	Electrochemical techniques (i.e., half-
	cell potential)
	Other, or not sure how to classify.
	Please describe:

Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.  Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing clongation checks, pre-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.  Open-Ended Response  Does your agency have grout storage requirements?  Who conducts QA? Please check all that apply.  Who conducts QC? Please check all that apply.  Contractor In-house Consultant inspection (CEI) Other, please specify:	IOWA		
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.  Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing clongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.  Open-Ended Response  Does your agency have grout storage requirements?  VES, Please specify guiding document, provide link, or describe:  Contractor In-house Consultant inspection (CEI) Other, please specify: Consultant inspection (CEI) Other, please specify:			
your agency for PT installers. Please check all that apply.  Other, please describe:  Other, please describe:  Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBL-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.  Open-Ended Response  NO  YES, Please specify guiding document, provide link, or describe:  Contractor  Who conducts QA? Please check all that apply.  Who conducts QC? Please check all that apply.  Consultant inspection (CEI)  Other, please specify:  Consultant inspection (CEI)  Other, please specify:  Consultant inspection (CEI)  Other, please specify:		5 5	
check all that apply.  Other, please describe:  Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.  Open-Ended Response  Does your agency have grout storage requirements?  VES, Please specify guiding document, provide link, or describe:  Contractor  Who conducts QA? Please check all that apply.  Contractor  In-house Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are	- · · · · · · · · · · · · · · · · · · ·	PTI Level 2 installer	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.  Does your agency have grout storage requirements?  Who conducts QA? Please check all that apply.  Open-Ended Response  NO  YES, Please specify guiding document, provide link, or describe: Contractor In-house Consultant inspection (CEI) Other, please specify: Contractor In-house Consultant inspection (CEI) Other, please specify: Please identify any preferred or "best practice" construction details. (Details which perform as intended and are			
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.  Does your agency have grout storage requirements?  Does your agency have grout storage requirements?  Who conducts QA? Please check all that apply.  NO  YES, Please specify guiding document, provide link, or describe: Contractor In-house Consultant inspection (CEI) Other, please specify:  Contractor In-house Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are	check all that apply.	Other place describer	
during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.    Open-Ended Response		Other, prease describe.	
Does your agency have grout storage requirements?  Who conducts QA? Please check all that apply.  Who conducts QC? Please check all that apply.  Who conducts QC? Please check all that apply.  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are	during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a		
Does your agency have grout storage requirements?  Who conducts QA? Please check all that apply.  Who conducts QC? Please check all that apply.  Who conducts QC? Please check all that apply.  Contractor In-house Consultant inspection (CEI) Other, please specify: Contractor In-house Consultant inspection (CEI) Other, please specify:  Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are		Open-Ended Response	
Who conducts QA? Please check all that apply.  Contractor In-house Consultant inspection (CEI) Other, please specify: Contractor In-house Contractor In-house Contractor In-house Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are		YES, Please specify guiding	
Who conducts QA? Please check all that apply.    In-house		7.1	
Consultant inspection (CEI) Other, please specify: Contractor In-house Consultant inspection (CEI)  Other, please specify:  Contractor In-house Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are	Who conducts OA? Please cheek all that		
Other, please specify:  Contractor  In-house  Consultant inspection (CEI)  Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are			
Who conducts QC? Please check all that apply.  Contractor In-house Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are	appry.		
Who conducts QC? Please check all that apply.  In-house  Consultant inspection (CEI)  Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are		71 1 2	
apply.  Consultant inspection (CEI) Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are	( (		
Other, please specify:  Please identify any preferred or "best practice" construction details. (Details which perform as intended and are			
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are			
possible.  Open-Ended Response	practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if		

IOWA		
Have you encountered problematic PT construction details?	YES	
	NO Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to the best of your knowledge.	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	
construction techniques/methods?		
	NO	
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement Grouting/filler procedures	
apply.	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	Other. I lease specify.	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	

IOWA	
Please identify materials which have been problematic. Please check all that	Grout filler material  Flexible filler material (non- cementitious, wax, grease, etc.)  Prestressing steel  Elastomeric coatings  Epoxy grouts  Pour-back materials
apply.	Other, please specify:
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response
How have you rectified these issues?	Open-Ended Response
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO
	YES, Please describe how it was performed:
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response

KANSAS		
Name(s)		
Title(s)	Bridge Design Engineer	
Agency	Kansas DOT	
State/Province	KS	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	21
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	06/12/2018
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	
	ASBI/PTI M50	ASBI/PTI M50
What PT specifications are you using?	PTI M55	
Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	

	KANSAS	
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder	PT slab bridges Box girders
Are your PT structures designed for a	Other  NO	NO
specific service life?	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	prequalified prebagged
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	PT slab bridges Box girders

KANSAS		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	required repair of the anchorages of transverse tendons We a had major
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

KANSAS		
	Member strengthening to address corrosion/impact damage	
	Re-grouting of tendons	Re-grouting of tendons
	During construction	
	At a later stage when structure inservice	At a later stage when structure inservice
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
	Invasive inspection of PT system	Invasive inspection of PT system
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Repair of pour-back (anchor block- out)	Repair of pour-back (anchor block- out)
	FRP wrapping	
	Injection of corrosion inhibitor	
	Crack injection	Crack injection
	Repair or replacement of deck on a PT superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon replacement	
	Other. Please specify:	
Does your agency have established	NO	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	

KANSAS		
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Visual methods Magnetic methods (i.e., magnetic flux leakage) vibration methods (i.e., acoustic emission, impact echo, ultrasonic) (i.e., infrared thermography, impulse radar, ground penetrating radar) Direct measurement of tendon force (i.e. gages on strands) Radiation methods (i.e., x-ray	Visual methods  Magnetic methods (i.e., magnetic flux leakage)  vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  (i.e., infrared thermography, impulse radar, ground penetrating radar)
	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.  Please describe:	
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification  PTI Level 1 installer  PTI Level 2 installer	ASBI grouting certification
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Other, please describe:  Open-Ended Response	http://www.ksdot.org/Assets/wwwks dotorg/bureaus/burConsMain/specpr ov/2015/PDF/15-07014.pdf
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	NO

	KANSAS	
	Contractor	
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	• , ,
	Contractor	
Who conducts QC? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	1 /
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
	Open-Ended Response	
Have you encountered problematic PT construction details?	YES NO	YES
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents	
	Inspection ports	
	Duct placement	Duct placement
Diago identify construction details that	Duct splicing	
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	Deck drainage details
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	
	NO	NO

	KANSAS	
	Air (pressure) test	
	Vacuum test	
	, acadir test	
	Deck-level vent removal/permanent	
Please identify construction methods that	-	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
appry.	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	Other. I lease speerly.	
Have you found encountered issues with	YES	YES
any of the materials used in PT	TES	IES
construction?	N.O.	
	NO	
	Grout filler material	
	Flexible filler material (non-	
Please identify materials which have	cementitious, wax, grease, etc.)	
been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings	
	Epoxy grouts	Epoxy grouts
	Pour-back materials	
	Other, please specify:	
What specific problems with		
deterioration of CIP post-tensioned		
bridges have you encountered?		anchorage protection for transverse
	Open-Ended Response	tendons on PT slab bridges
How have you rectified these issues?		
nave you rectified these issues.	Open-Ended Response	Better material, closer inspection
Warrange work and a dark or CID work		
Have you replaced a deck on CIP post-	NO	NO
tensioned box girder or segmental concrete bridge?	YES, Please describe how it was	
concrete bridge:	performed:	
If you know of a particular PT repair for		
consideration as a case study, please		
provide some general information (for		
example: bridge name, location, issue		US-54 Central Business District
type):		Viaduct- Wichita, KS PT Box
- J. F J.	Onen Ended Pasnonss	<i>,</i>
	Open-Ended Response	girder, voids in metal ducts

	KENTUCKY	
Name(s)		
Title(s)	Branch Managers	
Agency	KY Transportation Cabinet	
State/Province	KY	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	6
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
	Date	
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	KY does not have any specific PT specifications currently. If it is not covered by AASHTO, we don't specify anything else. Anything else would have to be covered by special
	ASBI/PTI M50	modia have to be covered by special
	PTI M55	
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	

	KENTUCKY	
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Precast segmental  post tensioned stay cables with grout.
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	999
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges  Box girders  Pier caps  Spliced girder	Precast segmental
	Other	Post tensioned stay cables.

KENTUCKY		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	adjacent duct. He could not get strands placed for next sequence. We
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

	KENTUCKY	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure Internal/bonded tendon replacement	NDT-aided inspection of PT system
Does your agency have established inspection procedures specific to PT bridges?	External/unbonded tendon replacement  Other. Please specify:  NO  YES, Please provide a link or location where procedure can be accessed:	NO
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Visual methods Magnetic methods (i.e., magnetic flux leakage) Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify. Please describe:	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)

KENTUCKY		
	ASBI grouting certification	
Please select install certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	
Does your agency have grout storage requirements?	NO	NO
requirements.	YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor In-house Consultant inspection (CEI)
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor In-house Consultant inspection (CEI)
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	

KENTUCKY		
Have you encountered problematic PT construction details?	YES	YES
construction details.	NO	
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	YES
construction techniques/methods?		
•	NO	
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	Grouting/filler procedures
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with	YES	YES
any of the materials used in PT construction?		
construction?	NO	
	Grout filler material	Grout filler material
	Flexible filler material (non-	
	cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that	Elastomeric coatings	
apply.	Epoxy grouts	Epoxy grouts
	Pour-back materials	
	T OWL OWNER HIMSTORIES	

KENTUCKY		
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

LOUISIANA		
Name(s)		
Title(s)	Assistant Bridge Design Administrator	
Agency	Louisiana Dept. of Transportation and	Development
State/Province	LA	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTIO	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?		
(1 1) structures in its bridge inventory.	YES, please specify approximate	10
	quantity:	10
	Lack of familiarity with post-	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last		
updated (approximately)?		
	Date	01/01/2014
		LA DOTD does not have standard
What were the reference documents used		PT specifications. PT specifications
for updating? Please specify/explain:		are created on a project by project
	Open-Ended Response	basis.
	ASBI/PTI M50	ASBI/PTI M50
What PT specifications are you using?	PTI M55	PTI M55
Please check all that apply.		
The state of the s	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
	270	
Are your PT specifications very similar	NO	
to or derived from another state's?		borrowed for the most recent PT
	YES, Please specify source:	project

LOUISIANA		
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
What type of DT structures are in your	PT decks	
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	bridges utilitizing transverse PT bars (mostly built in the 70s and 80s) that
Are your PT structures designed for a	NO	NO
specific service life?	YES, What is the design service life (number of years)?	
Do you specify a protection level (PL-1a	NO	
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	PL-2
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please		
describe:	Open-Ended Response	Pre-bagged grout meeting the requirements of PTI M55 Type C
Has your agency initiated repairs on any post-tensioned structures (either during	NO	
construction or while the structure is in service)?	WEG.	VEG
	YES	YES

	LOUISIANA	
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
On what types of PT structures have you	PT decks	
performed repairs? Please check all that	PT slab bridges	
apply.	Box girders	
<b>"PP-J"</b>	Pier caps	
	Spliced girder	
	Other	
	Other	
Does your agency have standard or	110	N.O.
commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon		
replacement specifically?		
	YES, Please provide a link:	
Does your agency have standard or		
commonly-used plans, specifications,	NO	NO
procedures or details for PT repairs?		
r	YES, Please provide a link:	
	1 ES, Flease provide a filik.	
	Y 1	
	In-house staff	
Who performs repairs? Please check all		
that apply.	Contractor	Contractor
	Other. Please describe:	
	other. I lease describe.	
Has your agancy angountous discuss	NO	
Has your agency encountered issues requiring repair during construction?		
requiring repair during construction:	YES, Please describe issue and	concrete voids / honeycombs -
	performed repair:	Concrete surrounding PT anchor
Has your agency encountered issues	NO	NO
requiring repair related to corrosion?	YES, Please describe issue and	
	performed repair:	
Has your agency performed repairs to	NO	NO
PT structures due to damage by vessel/vehicle impact?	YES, Please describe issue and	
	performed repair:	
	P	
Has your agency performed	NO	NO
repair/replacement of decks on PT		INU
bridges?	YES, Please describe issue and	
	performed repair:	

	LOUISIANA	
	LOUISIANA	
	Member strengthening to address	
	corrosion/impact damage	D
	Re-grouting of tendons	Re-grouting of tendons
	During construction	During construction
	At a later stage when structure in-	
	service	
	NDT-aided inspection of PT system	
Have your agency performed (or	Invasive inspection of PT system	
initiated) the following types of	Repair of pour-back (anchor block-	Repair of pour-back (anchor block-
maintenance, inspection or repairs	out)	out)
related to PT structures? Please check all	FRP wrapping	
that apply.	Injection of corrosion inhibitor	Injection of corrosion inhibitor
	Crack injection	Crack injection
	Repair or replacement of deck on a PT	
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	External/unbonded tendon
	replacement	replacement
	Other. Please specify:	
Does your agency have established	NO	NO
inspection procedures specific to PT		
bridges?	YES, Please provide a link or location	
bridges.	where procedure can be accessed:	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	

	LOUISIANA	
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification PTI Level 1 installer PTI Level 2 installer Other, please describe:	ASBI grouting certification PTI Level 1 installer PTI Level 2 installer
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	All of the above (Project specific requirements based on ASBI / PTI documents)
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	Project specific requirements based on ASBI / PTI documents
Who conducts QA? Please check all that apply.	Contractor  In-house  Consultant inspection (CEI)  Other, please specify:	In-house  Consultant inspection (CEI)

	LOUISIANA	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
	Open-Ended Response	N/A
Have you encountered problematic PT construction details?	YES	YES
001001 400011 40001100	NO	
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to the best of your knowledge.	Confinement reinforcement	Confinement reinforcement
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	Precast quality
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	YES
4	NO	
	Air (pressure) test	Air (pressure) test
	Vacuum test	<u> </u>
	Deck-level vent removal/permanent vent cap placement	
Please identify construction methods that	Permanent grout cap placement	Permanent grout cap placement
are problematic. Please check all that	Grouting/filler procedures	Grouting/filler procedures
apply.	Vacuum grouting	Vacuum grouting
	Preparing anchorage area for block-	Preparing anchorage area for block-
	out pour	out pour
	Other. Please specify.	

	LOUISIANA	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that apply.	Prestressing steel Elastomeric coatings	
арріу.	Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	None to date
How have you rectified these issues?	Open-Ended Response	N/A
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	performed:  Open-Ended Response	N/A

MAINE		
Name(s)		
Title(s)	Fabrication Engineer	
Agency	MaineDOT	
State/Province	ME	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
(1 1) structures in its bridge inventory.	quantity:	50
		50
	Lack of familiarity with post- tensioned structures	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last		
updated (approximately)?	D.	
	Date	
What were the reference documents used		
for updating? Please specify/explain:		
	Open-Ended Response	PCI Design and Standard Details
	ASBI/PTI M50	
What PT specifications are you using? Please check all that apply.	PTI M55	
	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	MNL-116
Are your PT specifications very similar	NO	NO
to or derived from another state's?		
	YES, Please specify source:	
	, rJ	

MAINE		
	Cast-in-place segmental Precast segmental	Precast segmental
What type of PT structures are in your	Cast-in-place, non-segmental PT decks PT slab bridges	PT slab bridges
inventory? Please check all that apply.	Box girders Pier caps	Box girders
	Spliced girder Other	
Are your PT structures designed for a	NO YES, What is the design service life	
specific service life?	(number of years)?	75
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in	NO YES	
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		ready mix grout with a compressive
	Open-Ended Response	strength of 6ksi
Has your agency initiated repairs on any post-tensioned structures (either during	NO	
construction or while the structure is in service)?	YES	YES
The state of the s	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	

MAINE	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:
Who performs repairs? Please check all that apply.	In-house staff  Contractor  Other. Please describe:
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:

MAINE	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction
	At a later stage when structure inservice  NDT-aided inspection of PT system
	Invasive inspection of PT system  Repair of pour-back (anchor blockout)
	FRP wrapping Injection of corrosion inhibitor Crack injection
	Repair or replacement of deck on a PT superstructure  Internal/bonded tendon replacement
	External/unbonded tendon replacement  Other. Please specify:
Does your agency have established inspection procedures specific to PT	NO
bridges?	YES, Please provide a link or location where procedure can be accessed:  Visual methods
	Magnetic methods (i.e., magnetic flux leakage)  Mechanical wave propagation and
	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force
	(i.e. gages on strands) Radiation methods (i.e., x-ray diffraction, radiography)
	Electrochemical techniques (i.e., half-cell potential) Other, or not sure how to classify. Please describe:

MAINE		
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification  PTI Level 1 installer  PTI Level 2 installer	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Other, please describe:	
Does your agency have grout storage requirements?	NO  YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	

MAINE		
Have you encountered problematic PT construction details?	YES NO	
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents Inspection ports Duct placement Duct splicing Heat-shrink sleeves Confinement reinforcement Segment mating during erection Match-cast joints Precast quality Deck drainage details Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES NO	
Please identify construction methods that are problematic. Please check all that apply.	Air (pressure) test  Vacuum test  Deck-level vent removal/permanent vent cap placement  Permanent grout cap placement  Grouting/filler procedures  Vacuum grouting  Preparing anchorage area for blockout pour  Other. Please specify.	
Have you found encountered issues with any of the materials used in PT construction?	YES NO	

MAINE		
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials	
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

MARYLAND			
Name(s)			
Title(s)	Division Chief		
Agency	Maryland State Highway Administrati	on	
State/Province	MD		
Email Address(es)			
Phone Number(s)			
INTE	RVIEW QUESTIO	NS	
Does your agency have post-tensioned	NO	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:		
	Lack of familiarity with post- tensioned structures	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense		
	Time consuming design/construction		
	Other, Please describe:		
When were your PT Specifications last updated (approximately)?			
apanted (approximately).	Date		
What were the reference documents used for updating? Please specify/explain:			
	Open-Ended Response		
	ASBI/PTI M50		
What PT specifications are you using?	PTI M55		
Please check all that apply.	In-house/DOT created specifications		
	Other, please provide a link:		
Are your PT specifications very similar	NO		
to or derived from another state's?	YES, Please specify source:		

MARYLAND		
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps	
Are your PT structures designed for a specific service life?	Other  NO YES, What is the design service life	
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	(number of years)?  NO  YES  YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	•	
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	
J 1	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	

MARYLAND		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	
Who performs repairs? Please check all that apply.	In-house staff  Contractor  Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	

MARYLAND		
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	MARYLAND  Member strengthening to address corrosion/impact damage  Re-grouting of tendons  During construction  At a later stage when structure inservice  NDT-aided inspection of PT system  Invasive inspection of PT system  Repair of pour-back (anchor blockout)	
	FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure Internal/bonded tendon replacement External/unbonded tendon replacement	
Does your agency have established inspection procedures specific to PT bridges?	Other. Please specify:  NO  YES, Please provide a link or location where procedure can be accessed:	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Visual methods  Magnetic methods (i.e., magnetic flux leakage)  Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.  Please describe:	

MARYLAND		
Please select install certifications/qualifications required by	ASBI grouting certification	
	PTI Level 1 installer	
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
	Open-Ended Response	
Have you encountered problematic PT construction details?	YES	
	NO	

MARYLAND		
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	2 con diamings accumi	
	Other. Please describe:	
	VIDG	
Have you encountered problematic	YES	
construction techniques/methods?		
	NO	
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with	YES	
any of the materials used in PT construction?	NO	
	NO	
	Grout filler material	
	Flexible filler material (non-	
Please identify materials which have	cementitious, wax, grease, etc.)	
been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	

MARYLAND		
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

N	IASSACHUSETTS		
Name(s)	ASSACITOSETTS		
Title(s)	State Bridge Engineer		
Agency	MassDOT		
State/Province	MA		
Email Address(es)	IWA		
Phone Number(s)			
		0	
INTE	CRVIEW QUESTION	NS	
Does your agency have post-tensioned	NO		
(PT) structures in its bridge inventory?	YES, please specify approximate		
	quantity:	62	
	Lack of familiarity with post-		
	tensioned structures		
Why not? Please check all that apply.	Concerns related to quality/durability		
why not. I lease eneck an that apply.	Expense		
	Time consuming design/construction		
	Other, Please describe:		
When were your DT Specifications last			
When were your PT Specifications last updated (approximately)?			
updated (approximately):	Date	10/10/2004	
W/l4			
What were the reference documents used			
for updating? Please specify/explain:			
	Open-Ended Response	Boston Central Artery Specification	
	ASBI/PTI M50	ASBI/PTI M50	
What PT specifications are you using?			
Please check all that apply.	PTI M55		
one one upp.y.			
	In-house/DOT created specifications		
	Other, please provide a link:		
Are your PT specifications very similar	NO	NO	
to or derived from another state's?		110	
	YES, Please specify source:		

MACCACILICETTC		
1VI	IASSACHUSETTS	
	Cast-in-place segmental Precast segmental	Precast segmental
	Cast-in-place, non-segmental PT decks	PT decks
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges Box girders	PT slab bridges
	Pier caps Spliced girder	Pier caps Spliced girder
	Other	
Are your PT structures designed for a	NO	NO
specific service life?	YES, What is the design service life (number of years)?	
	NO	NO
	YES	
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?		
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		
	Open-Ended Response	pre-bagged
Has your agency initiated repairs on any post-tensioned structures (either during	NO	NO
construction or while the structure is in service)?	YES	
	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental	
On what types of PT structures have you performed repairs? Please check all that apply.	PT decks PT slab bridges Box girders	
	Pier caps Spliced girder	
	Other	

MASSACHUSETTS		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Not Applicable
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

	ASSACHUSETTS	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	
	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor	NDT-aided inspection of PT system
	Crack injection Repair or replacement of deck on a PT superstructure Internal/bonded tendon replacement External/unbonded tendon replacement	
Does your agency have established inspection procedures specific to PT bridges?	Other. Please specify:  NO  YES, Please provide a link or location	NO
	where procedure can be accessed: Visual methods Magnetic methods (i.e., magnetic flux leakage) Mechanical wave propagation and	Visual methods
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)  Electrochemical techniques (i.e., half-	Radiation methods (i.e., x-ray diffraction, radiography)
	cell potential)  Other, or not sure how to classify.  Please describe:	

M	ASSACHUSETTS	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	
Does your agency have grout storage	NO	NO
requirements?	YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	In-house
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
	Open-Ended Response	Not Applicable
Have you encountered problematic PT construction details?	YES	YES
construction details.	NO	

MASSACHUSETTS		
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	Duct splicing
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	NO.
	NO	NO
	Air (pressure) test	
	Vacuum test  Deck-level vent removal/permanent	
Please identify construction methods that	vent cap placement	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO

N	IASSACHUSETTS	
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials  Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	None
How have you rectified these issues?	Open-Ended Response	N/A
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO	NO
	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	N/A

MICHIGAN		
Name(s)		
Title(s)	Chief Bridge Engineer	
Agency	Michigan Department of Transportation	on
State/Province	MI	)II
Email Address(es)		
Phone Number(s)		
	RVIEW QUESTIO	NS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate quantity:	6
	Lack of familiarity with post-tensioned structures	0
Why not? Please check all that apply.	Concerns related to quality/durability	
why not: I lease check an that apply.	Expense	
	Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	12/01/2013
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	ASBI, PTI, AASHTO, fib
	ASBI/PTI M50	ASBI/PTI M50
	PTI M55	PTI M55
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	

	MICHIGAN	
	Cast-in-place segmental Precast segmental	Cast-in-place segmental Precast segmental
	Cast-in-place, non-segmental	5
	PT decks	
What type of PT structures are in your	PT slab bridges	PT slab bridges
inventory? Please check all that apply.	Box girders	
	Pier caps	Pier caps
	Spliced girder	
	Other	
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life (number of years)?	50
Do you specify a protection level (PL-1a	NO	
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	PL-3
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		
	Open-Ended Response	pre-bagged, thixotropic
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO	
	YES	YES
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place, non-segmental	
	PT decks	
	PT slab bridges	
	Box girders	
	Pier caps	
	Spliced girder	
	Other	

MICHIGAN		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

	MICHIGAN	
	Member strengthening to address corrosion/impact damage	
	Re-grouting of tendons	
	During construction	
	At a later stage when structure inservice	At a later stage when structure inservice
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
Have your agency performed (or initiated) the following types of	Invasive inspection of PT system Repair of pour-back (anchor blockout)	Invasive inspection of PT system
maintenance, inspection or repairs related to PT structures? Please check all	FRP wrapping Injection of corrosion inhibitor	
that apply.	Crack injection Repair or replacement of deck on a PT	Crack injection
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement	
	Od N	additional external tendon
	Other. Please specify:	installation (reason not given).
Does your agency have established	NO	NO
inspection procedures specific to PT		NO
bridges?	YES, Please provide a link or location where procedure can be accessed:	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	10000 1110000
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system? Please check all that apply, including if	(i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify. Please describe:	
	I lease describe.	

MICHIGAN		
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	mock-up construction, grout QA/QC
Does your agency have grout storage requirements?	NO YES, Please specify guiding	
	document, provide link, or describe:  Contractor	ASBI, PTI
Who conducts QA? Please check all that apply.	In-house Consultant inspection (CEI) Other, please specify:	Consultant inspection (CEI)
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	

MICHIGAN		
Have you encountered problematic PT construction details?	YES	YES
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	NO Anchorage pour-back details Mid-tendon vents Inspection ports Duct placement	
	Duct splicing Heat-shrink sleeves Confinement reinforcement Segment mating during erection	
	Match-cast joints Precast quality Deck drainage details Other. Please describe:	Precast quality  Large shear keys cracking during erection.
Have you encountered problematic construction techniques/methods?	YES NO	YES
Please identify construction methods that are problematic. Please check all that apply.	Air (pressure) test Vacuum test  Deck-level vent removal/permanent	Grouting/filler procedures
Have you found encountered issues with any of the materials used in PT construction?	YES	NO

	MICHIGAN	
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Other, please specify:  Open-Ended Response	principle web tension cracks, requiring injection and/or segment strengthening.
How have you rectified these issues?	Open-Ended Response	Capital projects to strengthen.
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO  YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	Zilwaukee bridge, Saginaw, MI - bearing replacement US-131 over Muskegon River - addition of external tendons for strengthening.

	MINNESOTA	
Name(s)		
Title(s)	Metro District Structures Engineer	
Agency	MnDOT	
State/Province	MN	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate quantity:	40
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability  Expense	
	Time consuming design/construction  Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	01/01/2015
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	ASBI/PTI M50 and PTI M55
	ASBI/PTI M50 PTI M55	1102011111100 0110111111100
	In-house/DOT created specifications	In-house/DOT created specifications
What PT specifications are you using? Please check all that apply.	Other, please provide a link:	We have updated for each segmental project with input from the consultant designer. We have incorporated much of ASBI/PTI M50 and PTI M55 but have not switched completely to those specifications. We plan to do so in the future.

	MINNESOTA	
	NO	
Are your PT specifications very similar to or derived from another state's?	YES, Please specify source:	Similar to FDOT with modifications for ASBI/PTI M50, PTI M55, and best practices suggested from consultant designers.
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	100
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES  YES, What is the level specified?	PL-2 except we have not successfully used duct couplers on precast segmental.
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	pre-bagged thixotropic grout
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Cast-in-place segmental  Cast-in-place, non-segmental

	MINNESOTA	
	NO NO	no
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	No standard plans but there are project-specific details for tendon replacement on the Plymouth Ave bridge over the Mississippi River in Minneapolis. This structures is owned by the city of Minneapolis. We also replaced external tendons that formed the tension-tie on a steel arch bridge.
	NO	<u> </u>
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	YES, Please provide a link:	Yes, we have a standard procedure for remedial grouting. See the following research projects: Considerations for Development of Inspection and Remedial Grouting Contracts for Post-tensioned Bridges - WJE/VSL: http://www.dot.state.mn.us/research/reports/2017/201704.pdf Development of Best Practices for Inspection of PT Bridges in Minnesota – Andrea Schokker, UMD: http://www.dot.state.mn.us/research/TS/2012/2012-09.pdf We have also performed invasive inspection of tendons in response to the Sika grout chloride issue.
Who performs repairs? Please check all	In-house staff	
that apply.	Contractor	Contractor
	Other. Please describe:	

	MINNESOTA	
	NO	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	We have performed vacuum grouting repairs of partially grouted tendons during construction. We have many challenges with PT construction due to cold weather in MN. Segmental construction continues through the winter with strand placed in duct but not grouted due to low temperatures. Corrosion inhibitor is used as mitigation in the winter to protect ungrouted tendons. We have had to replace some tendons prior to grouting in the spring due to initial corrosion from water infiltration. We have also had PT anchorage blockouts (precast segments) that were not filled after grouting during the construction season. Water infiltrated the blockouts, froze, and spalled concrete around the anchorage blockout. The damaged areas were inspected with NDT methods (impact echo) and found no damage to concrete in front of the anchorage. Spalled areas were repaired with epoxy pourback material.
Has your agency encountered issues requiring repair related to corrosion?	YES, Please describe issue and performed repair:	The city of Minneapolis replaced continuity tendons on the Plymouth Ave bridge over the Mississippi River in Minneapolis. This bridge is a CIP concrete box girder constructed with a mix of segmental and falsework methods. Deck drains routed inside the box girders leaked and saturated the bottom slab with chlorides.
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO

	MINNESOTA	
Has your agency performed repair/replacement of decks on PT	NO	NO
bridges?	YES, Please describe issue and performed repair:	
	Member strengthening to address corrosion/impact damage	Member strengthening to address corrosion/impact damage
	Re-grouting of tendons	Re-grouting of tendons
	During construction	During construction
	At a later stage when structure inservice	At a later stage when structure inservice
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
Have your agency performed (or	Invasive inspection of PT system	Invasive inspection of PT system
initiated) the following types of	Repair of pour-back (anchor block-	Repair of pour-back (anchor block-
maintenance, inspection or repairs	out)	out)
	FRP wrapping	
that apply.	Injection of corrosion inhibitor Crack injection	Constantian
	3	Crack injection
	Repair or replacement of deck on a PT superstructure	
	Internal/bonded tendon replacement	Internal/bonded tendon replacement
	External/unbonded tendon	External/unbonded tendon
	replacement	replacement
	Other. Please specify:	
Does your agency have established	NO	
inspection procedures specific to PT	NO	
bridges?	YES, Please provide a link or location	
w. rages.	where procedure can be accessed:	YES

MINNESOTA		
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
	Direct measurement of tendon force	
	(i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)	
	Electrochemical techniques (i.e., half-cell potential)	
	Other, or not sure how to classify. Please describe:	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by	PTI Level 1 installer	PTI Level 1 installer
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	Stressing ram calibration, stressing elongation check prior to cutting strands, air pressure test prior to grouting, visual grout vent inspection after grouting, drilling of a percentage of vent inspection ports, ASBI and PTI L1 & 2 certifications, grout tests – mud balance, flow cone, Schupack bleed test, and grout cubes.
	NO	
Does your agency have grout storage	NO	
requirements?	YES, Please specify guiding document, provide link, or describe:	See attached specs.

	MINNESOTA	
	Contractor	
Will be considered to the constant of the cons	In-house	In-house
Who conducts QA? Please check all that	Consultant inspection (CEI)	Consultant inspection (CEI)
apply.		consultants hired to supplement the
	Other, please specify:	team.
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	tendon grouting mock-up prior to field installation
Have you encountered problematic PT construction details?	YES NO	YES

	MINNESOTA	
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents	
	Inspection ports	Inspection ports
	Duct placement	
	Duct splicing	
	Heat-shrink sleeves	
	Confinement reinforcement	Confinement reinforcement
	Segment mating during erection	Segment mating during erection
	Match-cast joints	
	Precast quality	Precast quality
	Deck drainage details	Deck drainage details
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Other. Please describe:	Deck drainage details in the past have caused deterioration. We try not to route deck drainage pipe to interior of box girder unless absolutely necessary and provide a secondary containment system if inside box. Sealing openings in the top slab for construction access. CIP closure pours on segmental bridges develop cracks. We have tried to mitigate by modifying stressing sequence to get early transverse compression during curing but the top slab still cracks.  Maybe not a true construction detail, but need good shop drawings that identify conflicts before construction. Consider 3D shop drawings for complicated/congested areas of with high density of rebar and PT. Also, curved (both longitudinal curvature and curved web forms) cast-in-place box girder on falsework, difficult to layout web tendon ducts to tolerance as it is hard to define reference points. 3D shop drawings and additional field surveys may help with that.
Have you encountered problematic construction techniques/methods?	YES NO	YES
<u> </u>		

	MINNESOTA	
	Air (pressure) test	Air (pressure) test
	Vacuum test	, , , , , , , , , , , , , , , , , , ,
	Deck-level vent removal/permanent	
Please identify construction methods that	vent cap placement	X
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	X
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	NO Grout filler material	C £11
		Grout filler material
	Flexible filler material (non-	
Please identify materials which have	cementitious, wax, grease, etc.)	
been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings	
	Epoxy grouts	Epoxy grouts
	Pour-back materials	Pour-back materials
	Other, please specify:	
What specific problems with		
deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Deck drainage issue mentioned above on the Plymouth Ave bridge.
How have you rectified these issues?	Open-Ended Response	Try not to route deck drainage through box girders and provide secondary containment if drains inside the box cannot be avoided.
Have you replaced a deck on CIP post-	NO	
tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	No, but we have begun using stainless steel rebar in PT decks for that reason.
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	Plymouth Ave Bridge over Mississippi River in Minneapolis – Bridge No. 27611 – replaced continuity tendons due to leaking drainage system.

	MISSISSIPPI	
Name(s)		
Title(s)	Director of Structures	
Agency	Mississippi DOT	
State/Province	MS	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTIO	VS
	TOTAL TOTAL	
	Wo	
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	_
	quantity:	7
	Lack of familiarity with post-	
	tensioned structures	
	Concome valeted to avality/dynatitite	
Why not? Please check all that apply.	Concerns related to quality/durability	
	Expense	
	Time consuming design/construction	
	Other, Please describe:	
	Other, i lease describe.	
When were your PT Specifications last		
updated (approximately)?	Data	10/24/2019
	Date	10/24/2019
What were the reference documents used		
for updating? Please specify/explain:		
for updating. Hease specify/explain.	Open-Ended Response	
	ASBI/PTI M50	
	PTI M55	PTI M55
What PT specifications are you using?	1111133	11111133
Please check all that apply.	In-house/DOT created specifications	
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?		
	YES, Please specify source:	
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	<u>-</u>
What type of PT structures are in your inventory? Please check all that apply.	PT decks	PT decks
	PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	

	MISSISSIPPI		
NO	NO		
YES, What is the design service life (number of years)?			
NO			
YES			
YES, What is the level specified?	PL-2		
Open-Ended Response	just that it meet PTI M55.1		
NO	NO		
YES			
Cast-in-place segmental Precast segmental			
PT decks			
Box girders Pier caps			
Spliced girder Other			
NO	NO		
YES, Please provide a link:			
NO	NO		
YES, Please provide a link:			
	YES, What is the design service life (number of years)?  NO  YES  YES, What is the level specified?  Open-Ended Response  NO  YES  Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other  NO  YES, Please provide a link:		

MISSISSIPPI			
Who monforms noncing? Dlagge shook all	In-house staff		
Who performs repairs? Please check all that apply.	Contractor	Contractor	
	Other. Please describe:		
Has your agency encountered issues	NO	NO	
requiring repair during construction?	YES, Please describe issue and		
	performed repair:		
Has your agency encountered issues	NO	NO	
requiring repair related to corrosion?	YES, Please describe issue and		
	performed repair:		
	Financial		
Has your agency performed repairs to	NO	NO	
PT structures due to damage by	YES, Please describe issue and	-1.0	
vessel/vehicle impact?	performed repair:		
	performed repair.		
Has your agency performed	NO	NO	
repair/replacement of decks on PT	YES, Please describe issue and	110	
bridges?	performed repair:		
	Member strengthening to address		
	corrosion/impact damage		
	Re-grouting of tendons		
	During construction		
	At a later stage when structure in-		
	service		
	NDT-aided inspection of PT system		
	Invasive inspection of PT system		
Have your agency performed (or	Repair of pour-back (anchor block-		
initiated) the following types of	out)		
maintenance, inspection or repairs related to PT structures? Please check all	FRP wrapping		
that apply.	Injection of corrosion inhibitor		
one apply	Crack injection		
	Repair or replacement of deck on a PT		
	superstructure		
	Tutania 1/1, and 1 1 tan 1 an and 1		
	Internal/bonded tendon replacement		
	External/unbonded tendon		
	replacement		
	Other Place creeify		
	Other. Please specify:		
Does your agency have established	NO	NO	
inspection procedures specific to PT	NO	NO	
bridges?	YES, Please provide a link or location		
	where procedure can be accessed:		

	MISSISSIPPI	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if used in a research effort.	radar, ground penetrating radar)  Direct measurement of tendon force	
used in a research effort.	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
Please select install	ASBI grouting certification	
certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please		
check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your OA/OC presedures		
Please describe your QA/QC procedures during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		ASBI inspectors required, Agency
link, if possible.		will hire a 3rd party inspector to
	Open-Ended Response	provide QA
		No
Does your agency have grout storage	NO	NO
requirements?	YES, Please specify guiding	
	document, provide link, or describe:	

MISSISSIPPI		
	Contractor	
Who conducts QA? Please check all that	In-house	
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	<u> </u>
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES	
	NO	NO
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
Please identify construction details that	Duct splicing	
are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	
construction techniques/methods.	NO	NO
	Air (pressure) test	NO
	Vacuum test	
	v acuum test	
	Dooly loved years none overly common out	
Dlagge identify construction motheds that	Deck-level vent removal/permanent	
Please identify construction methods that are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
appry.	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	outer. I lease specify.	

	MISSISSIPPI	
Have you found encountered issues with any of the materials used in PT construction?	YES	NO
Please identify materials which have been problematic. Please check all that apply.	NO Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:	NO
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

MISSOURI		
Name(s)		
Title(s)	State Bridge Engineer	
Agency	Missouri DOT	
State/Province	MO	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	5
	Lack of familiarity with post-	
	tensioned structures	
W	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
NT C 18 11 1		
When were your PT Specifications last		
updated (approximately)?	Date	
What were the reference documents used		
for updating? Please specify/explain:		
	Open-Ended Response	Unknown.
	ASBI/PTI M50	
What DT ansaifications are you using?	PTI M55	
What PT specifications are you using? Please check all that apply.		
r lease check an that apply.	In-house/DOT created specifications	
	Other, please provide a link:	Unknown
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	
	Cast-in-place segmental	
What type of PT structures are in your inventory? Please check all that apply.	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	1100ast segmentar
	PT decks	PT decks
	PT slab bridges	11 0000
	Box girders	
	Pier caps	
	Spliced girder	Spliced girder
	Other	Spriced girder
	Other	

MISSOURI		
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	Unknown. It's been 20 years since we built one.
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	NO
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	PT decks
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor

	MISSOURI	
т.	NO	NO
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and	NO
	performed repair:	
Has your agency performed repairs to PT structures due to damage by	NO	NO
vessel/vehicle impact?	YES, Please describe issue and performed repair:	
Has your agency performed repair/replacement of decks on PT bridges?	YES, Please describe issue and performed repair:	We removed a 5" thick post tensioned concrete deck overlay and replaced it with a non-post tensioned concrete overlay.
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	
	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout)	
	FRP wrapping Injection of corrosion inhibitor Crack injection	
	Repair or replacement of deck on a PT superstructure	
	Internal/bonded tendon replacement External/unbonded tendon replacement Other. Please specify:	
Does your agency have established	NO	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	

	MISSOURI	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
	emission, impact ceno, util asome)	
A NOTE OF A	771	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ASBI grouting certification	
	ASDI grouning certification	
Please select install	DTV V 1.1.1.1.11	
certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please	PTI Level 2 installer	
check all that apply.		
	Other, please describe:	
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		
link, if possible.		Unknown. It's been over 20 years
	Open-Ended Response	since we built one.
	Open-Ended Response	since we built one.
Does your agency have grout storage	NO	NO
requirements?	YES, Please specify guiding	
1		
	document, provide link, or describe:	
	Contractor	
Who conducts QA? Please check all that In-house		
apply.	Consultant inspection (CEI) Other, please specify:	

	MISSOURI	
	Contractor	
Wiles and brate OC9 Pl	In-house	
Who conducts QC? Please check all that	Consultant inspection (CEI)	
apply.	Other, please specify:	Unknown. It's been over 20 years since we've built one.
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES	
	NO	NO
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
Please identify construction details that	Duct splicing	
are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
l san a s	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details Other, Please describe:	
	Other. Please describe:	
W	YES	
Have you encountered problematic construction techniques/methods?	I ES	
construction techniques/methods.	NO	NO
	Air (pressure) test	NO
	Vacuum test	
	v account test	
	Deck-level vent removal/permanent	
Please identify construction methods that	_	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	

	MISSOURI	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material Flexible filler material (non-	
Please identify materials which have been problematic. Please check all that	cementitious, wax, grease, etc.) Prestressing steel	
apply.	Elastomeric coatings Epoxy grouts	
	Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):		
01 /	Open-Ended Response	

MONTANA		
Name(s)		
Title(s)	Bridge Engineer	
Agency	Montana Dept of Transportation	
State/Province	MT	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate quantity:	5
Why not? Please check all that apply.	Lack of familiarity with post- tensioned structures  Concerns related to quality/durability	
	Expense  Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	01/01/2016
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	Do not have standard specifications, only project specific provisions.
What PT specifications are you using?	ASBI/PTI M50 PTI M55	
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications Other, please provide a link:	In-house/DOT created specifications
Are your PT specifications very similar to or derived from another state's?	NO YES, Please specify source:	
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks	Cast-in-place segmental PT decks
	PT slab bridges Box girders Pier caps Spliced girder	Pier caps
	Other	

	MONTANA	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	pre-bagged
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	NO
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO

	MONTANA	
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure	
	Internal/bonded tendon replacement External/unbonded tendon replacement Other. Please specify:	

	MONTANA	
Does your agency have established inspection procedures specific to PT	NO	NO
bridges?	YES, Please provide a link or location where procedure can be accessed:	XII dada
	Visual methods Magnetic methods (i.e., magnetic flux leakage)	Visual methods
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands) Radiation methods (i.e., x-ray	
	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.	
	Please describe:	
Please select install	ASBI grouting certification	
certifications/qualifications required by your agency for PT installers. Please	PTI Level 1 installer	
check all that apply.	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	

MONTANA		
	NO	
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES NO NO	
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents Inspection ports  Duct placement  Duct splicing  Heat-shrink sleeves  Confinement reinforcement  Segment mating during erection  Match-cast joints  Precast quality  Deck drainage details  Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES NO NO	

MONTANA		
Please identify construction methods that are problematic. Please check all that apply.	Air (pressure) test Vacuum test  Deck-level vent removal/permanent	
Have you found encountered issues with any of the materials used in PT construction?	YES	NO
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

	NEBRASKA	
Name(s)		
Title(s)	Assistant State Bridge Engineer	
Agency	DOT	
State/Province	NE	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTIO	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	10
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability	
	Expense  Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	07/28/2017
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	LRFD SPEC,ASBI,PTI,fib,
What PT specifications are you using?	ASBI/PTI M50 PTI M55	PTI M55
Please check all that apply.	In-house/DOT created specifications	
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	

	NEBRASKA	
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
	PT decks	
What type of PT structures are in your	PT slab bridges	PT slab bridges
inventory? Please check all that apply.	Box girders	
	Pier caps	
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life	
	(number of years)?	75
Do you specify a protection level (PL-1a	NO	
or PL-1b, PL-2, PL-3 as specified in	YES	
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	Pl-1a and 1b
, ,	YES, what is the level specified?	PI-1a and 1b
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		
describe.	Open-Ended Response	pre-bagged
Has your agency initiated repairs on any		
post-tensioned structures (either during	NO	NO
construction or while the structure is in		
service)?	YES	
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	1 0
	Cast-in-place, non-segmental	
On what types of PT structures have you	PT decks	
	PT slab bridges	
apply.	Box girders	
	Pier caps	
	Spliced girder	
	Other	
Does your agency have standard or	210	220
commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon		
replacement specifically?	YES, Please provide a link:	
	, F :	

NEBRASKA		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor block- out) FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure Internal/bonded tendon replacement External/unbonded tendon replacement	NDT-aided inspection of PT system  Crack injection

	NEBRASKA	
Does your agency have established inspection procedures specific to PT	NO	NO
bridges?	YES, Please provide a link or location where procedure can be accessed:	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	Magnetic methods (i.e., magnetic flux leakage)
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
Please select install	ASBI grouting certification	ASBI grouting certification
certifications/qualifications required by your agency for PT installers. Please	PTI Level 1 installer PTI Level 2 installer	PTI Level 1 installer
check all that apply.	Other, please describe:	
eneck an enac apply.	other, preuse deserroe.	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	NOT done
	NO	
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	see Manual BOPP on line
	Contractor	Contractor
Who conducts QA? Please check all that	In-house	
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	

NEBRASKA		
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	not in position to provide best practice.
Have you encountered problematic PT	YES	
construction details?	NO	NO
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
Please identify construction details that	Duct splicing	
are problematic. Check all that apply, to	Heat-shrink sleeves	
the best of your knowledge.	Confinement reinforcement	
	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	
construction techniques/methods?	NO	NO
	Air (pressure) test	
	Vacuum test	
Please identify construction methods that	Deck-level vent removal/permanent	
apply.	vent cap placement  Permanent grout cap placement	
	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	omer. I lease specify.	

NEBRASKA		
Have you found encountered issues with any of the materials used in PT construction?	YES NO	YES
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:	Grout filler material
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	camber
How have you rectified these issues?	Open-Ended Response	overlay
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

N	ORTH DAKOTA	
Name(s)		
Title(s)	State Bridge Engineer	
Agency	Nevada DOT	
State/Province	NV	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
(1 1) structures in its struge inventory.	quantity:	430
	Lack of familiarity with post-	150
	tensioned structures	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	LAPense	
	Time consuming design/construction	
	Other, Please describe:	
	Other, Freuse describe.	
When were your PT Specifications last		
updated (approximately)?	<b>D</b>	
	Date	
What were the reference documents used		
for updating? Please specify/explain:		
for updating: Flease specify/explain:	Open-Ended Response	
	ASBI/PTI M50	
	PTI M55	
What PT specifications are you using?		
Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	1
	71 1	
Are your PT specifications very similar	NO	
to or derived from another state's?	VEC Diago specify course	Caltrans
	YES, Please specify source: Cast-in-place segmental	Cannans
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	PT slab bridges
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	Spireca giraci
	Oulei	

NORTH DAKOTA		
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	pre-bagged
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Cast-in-place, non-segmental  PT slab bridges Box girders
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor

N	ORTH DAKOTA	
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:  Member strengthening to address	Deck spalling. repairs have included isolated repairs and deck overlays.
	corrosion/impact damage  Re-grouting of tendons  During construction  At a later stage when structure inservice	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor block- out)	Repair of pour-back (anchor block-out)
	FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure	Crack injection  Repair or replacement of deck on a  PT superstructure
	Internal/bonded tendon replacement External/unbonded tendon replacement Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	NO

N	ORTH DAKOTA	
	Visual methods	
	Magnetic methods (i.e., magnetic flux leakage) Mechanical wave propagation and	
	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands) Radiation methods (i.e., x-ray	
	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)	
	Other, or not sure how to classify. Please describe:	
Please select install	ASBI grouting certification	
certifications/qualifications required by your agency for PT installers. Please	PTI Level 1 installer	
check all that apply.	PTI Level 2 installer	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g.	Other, please describe:	
ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	Inspection of grouting and PT operations
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	
Who conducts QA? Please check all that	Contractor In-house	In-house
apply.	Consultant inspection (CEI) Other, please specify:	Consultant inspection (CEI)

NORTH DAKOTA			
	Contractor	Contractor	
Who conducts QC? Please check all that	In-house		
	Consultant inspection (CEI)		
apply.			
	Other, please specify:		
	71 1 3		
Please identify any preferred or "best			
practice" construction details. (Details			
which perform as intended and are			
worthy of note.) Please provide a link, if			
possible.			
	Open-Ended Response		
Have you encountered problematic PT	YES		
construction details?			
	NO	NO	
	Anchorage pour-back details		
	Mid-tendon vents		
	Inspection ports		
	Duct placement		
Diago identify construction details that	Duct splicing		
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves		
the best of your knowledge.	Confinement reinforcement		
the best of your knowledge.	Segment mating during erection		
	Match-cast joints		
	Precast quality		
	Deck drainage details		
	Other. Please describe:		
Have you encountered problematic	YES		
construction techniques/methods?			
	NO	NO	
	Air (pressure) test		
	Vacuum test		
	Deck-level vent removal/permanent		
Please identify construction methods that vent cap placement			
are problematic. Please check all that	Permanent grout cap placement		
apply.	Grouting/filler procedures		
	Vacuum grouting		
	Preparing anchorage area for block-		
	out pour		
	Other. Please specify.		

N	ORTH DAKOTA	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings	
	Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	none
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

N	EW HAMPSHIRE	
Name(s)		
Title(s)	Senior Project Engineer	
Agency	NHDOT	
State/Province	NH	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	6
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability	
why not: I lease check an that apply.	Expense	
	Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
apatica (approximately).	Date	12/04/2014
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	We were using PCINE guidance.
	ASBI/PTI M50	
What PT specifications are you using?	PTI M55	
Please check all that apply.	In-house/DOT created specifications Other, please provide a link:	In-house/DOT created specifications
	NO	
Are your PT specifications very similar		We used MassDOT and FDOT as a
to or derived from another state's?	YES, Please specify source:	starting point
	Cast-in-place segmental	starting point
	Precast segmental	
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place, non-segmental	
	PT decks	PT decks
	PT slab bridges	11 0000
	Box girders	
	Pier caps	
	Spliced girder	
	Other	
	Onto	

N	EW HAMPSHIRE	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	75
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in	NO YES	NO
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	Pre-bagged to meet specific physical properties stated in spec.
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	NO
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO

NEW HAMPSHIRE		
	In-house staff	In-house staff
Who performs repairs? Please check all	Contractor	Contractor
that apply.		handle the smaller type bridges but
	Other. Please describe:	if the bridge is too big we would
Has your agency encountered issues	NO	NO
requiring repair during construction?	YES, Please describe issue and	
	performed repair:	
	1	
Has your agency encountered issues	NO	NO
requiring repair related to corrosion?	YES, Please describe issue and	
	performed repair:	
	1	
Has your agency performed repairs to	NO	NO
PT structures due to damage by	YES, Please describe issue and	
vessel/vehicle impact?	performed repair:	
	1	
Has your agency performed	NO	NO
repair/replacement of decks on PT	YES, Please describe issue and	
bridges?	performed repair:	
	Member strengthening to address	
	corrosion/impact damage	
	Re-grouting of tendons	
	During construction	
	At a later stage when structure in-	
	service	
	NDT-aided inspection of PT system	
Have your agency performed (or	Invasive inspection of PT system	
initiated) the following types of	Repair of pour-back (anchor block-	
maintenance, inspection or repairs	out)	
related to PT structures? Please check all that apply.	Injection of corrosion inhibitor	
that apply.	Crack injection	
	Repair or replacement of deck on a PT	1
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement	
	Other. Please specify:	

N	EW HAMPSHIRE	
Does your agency have established	NO	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location	
	where procedure can be accessed:	
	Visual methods Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands) Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ASBI grouting certification	
	PTI Level 1 installer	
Please select install	PTI Level 2 installer	
certifications/qualifications required by your agency for PT installers. Please check all that apply.	Other, please describe:	A qualified rep of the post- tensioning manufacturer per specification. On the projects that I designed, I believe they had ASBI certification.
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	I will send you the special provision that we use that has this information.

N	EW HAMPSHIRE	
	NO	NO
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	
	Contractor	
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	https://www.pci.org/PCINE/Technic al_Resources/Bridge_Resources/Bri dge_Deck_Panels/PCINE/Technical _Resources/Bridge_Resources/Bridg e_Deck_Panels.aspx?hkey=7053473 2-9293-4eea-bf89-503c3cf492df
Have you encountered problematic PT construction details?	YES	YES
constituction details.	NO	
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	Duct placement
	Duct splicing	Duct splicing
Please identify construction details that	Heat-shrink sleeves	1 0
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	YES
construction techniques/methods?	NO	

Please identify construction methods that are problematic. Please check all that apply.  Please identify construction methods that are problematic. Please check all that apply.  Deck-level vent removal/permanent vent cap placement Permanent grout cap placement Grouting/filler procedures Vacuum grouting Preparing anchorage area for blockout pour  Other. Please specify. Alignment of panels and decks.  YES  YES  NO  Grout filler material Grout filler material Flexible filler material [Flexible filler material (noncementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials  Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  What specific problems with deterioration of CIP post-tensioned bridges have you rectified these issues?  Have you replaced a deck on CIP post-tensioned bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge aname, location, issue	N	EW HAMPSHIRE	
Please identify construction methods that are problematic. Please check all that apply.  Please identify construction methods that apply.  Please check all that apply.  Promain anchorage area for block-out pour  Other. Please specify.  Alignment of panels and decks.  YES  YES  NO  Grout filler material  Flexible filler material			
Please identify construction methods that are problematic. Please check all that apply.  Please identify materials used in PT construction?  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  Grout filler material Grout filler material Flexible filler material (non-comentitious, wax, grease, etc.)  Prestressing steel Elastomeric coatings  Epoxy grouts  Pour-back materials  Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  Open-Ended Response  N/A  NO  YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for			
are problematic. Please check all that apply.    Content   Content	Disease identify constant the second of the	vent cap placement	
apply.    Vacuum grouting   Preparing anchorage area for block-out pour	<b> </b>	i ermanem grout cap placement	
Preparing anchorage area for block- out pour  Other. Please specify. Alignment of panels and decks.  YES  YES  YES  NO  Grout filler material Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	*		
out pour  Other. Please specify. Alignment of panels and decks.  Have you found encountered issues with any of the materials used in PT construction?  Please identify materials which have been problematic. Please check all that apply.  Grout filler material Grout filler material Flexible filler material (non-cementious, wax, grease, etc.)  Prestressing steel Elastomeric coatings  Epoxy grouts  Pour-back materials  Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Open-Ended Response  N/A  NO  NO  YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	app.y.		
Other. Please specify. Alignment of panels and decks.  YES  YES  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Have you replaced a deck on CIP posttensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for		1 0	
Have you found encountered issues with any of the materials used in PT construction?  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  What specified these issues?  What was you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for		out pour	
any of the materials used in PT construction?  Please identify materials which have been problematic. Please check all that apply.  Please identify materials which have been problematic. Please check all that apply.  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for		Other. Please specify.	Alignment of panels and decks.
Please identify materials which have been problematic. Please check all that apply.  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	*	YES	YES
Please identify materials which have been problematic. Please check all that apply.  Please check all that apply.  Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Open-Ended Response N/A  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	*		
Please identify materials which have been problematic. Please check all that apply.  Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Open-Ended Response N/A  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for			Grout filler material
Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  How have you rectified these issues?  Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?  Open-Ended Response N/A  NO NO YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for		`	
been problematic. Please check all that apply.    Elastomeric coatings   Epoxy grouts	Please identify materials which have		
apply.  Elastomeric coatings  Epoxy grouts  Pour-back materials  Other, please specify:  What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  Open-Ended Response  N/A  How have you rectified these issues?  Open-Ended Response  N/A  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	<u> </u>		
Epoxy grouts   Pour-back materials	-	Ü	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  Open-Ended Response  N/A  How have you rectified these issues?  Open-Ended Response  N/A  Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?  NO YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for			
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?  Open-Ended Response  N/A  How have you rectified these issues?  Open-Ended Response  N/A  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  If you know of a particular PT repair for consideration as a case study, please provide some general information (for			
deterioration of CIP post-tensioned bridges have you encountered?  Open-Ended Response  N/A  How have you rectified these issues?  Open-Ended Response  N/A  Have you replaced a deck on CIP post-tensioned box girder or segmental concrete bridge?  NO  YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for		Other, please specify:	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?  NO YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	deterioration of CIP post-tensioned	Open-Ended Response	N/A
tensioned box girder or segmental concrete bridge?  YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for	How have you rectified these issues?	Open-Ended Response	N/A
concrete bridge?  YES, Please describe how it was performed:  If you know of a particular PT repair for consideration as a case study, please provide some general information (for		NO	NO
consideration as a case study, please provide some general information (for	0		
type):  Open-Ended Response	consideration as a case study, please provide some general information (for example: bridge name, location, issue		

	NEW MEXICO		
Name(s)			
Title(s)	State Bridge Load Rating Engineer		
Agency	New Mexico Department of Trnasport	New Mexico Department of Trnasportation	
State/Province	NM		
Email Address(es)			
Phone Number(s)			
INTE	RVIEW QUESTION	NS	
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO		
(1 1) structures in its bridge inventory;	YES, please specify approximate quantity:	13	
Why not? Please check all that apply.	Lack of familiarity with post- tensioned structures  Concerns related to quality/durability  Expense		
	Time consuming design/construction Other, Please describe:		
When were your PT Specifications last updated (approximately)?	Date	01/01/1930	
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	N/A	
What PT specifications are you using? Please check all that apply.	ASBI/PTI M50 PTI M55 In-house/DOT created specifications Other, please provide a link:	Unknown	
Are your PT specifications very similar to or derived from another state's?	NO YES, Please specify source:		

	NEW MEXICO	
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	Cast-III-place, Iloii-segilientai
		DT alab baidasa
What type of PT structures are in your	PT slab bridges	PT slab bridges
inventory? Please check all that apply.	Box girders	Box girders
	Pier caps	
	Spliced girder	
	Other	
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life	
	(number of years)?	75
	NO	NO
Do you specify a protection level (PL-1a		
or PL-1b, PL-2, PL-3 as specified in	YES	
ASBI/PTI M50) for your PT structures?	I ES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		520.2.5 Grout The Contractor shall provide pre-packaged grout with minimum 28-day compressive strength of 6000 psi. The Contractor shall use grout specifically
	Open-Ended Response	manufactured for grouting of post- tensioning ducts, and approved by the Project Manager prior to use.
Has your agency initiated repairs on any		tensioning ducts, and approved by the Project Manager prior to use.
Has your agency initiated repairs on any post-tensioned structures (either during	Open-Ended Response	tensioning ducts, and approved by
		tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during	NO	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in	NO YES	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in	NO YES Cast-in-place segmental	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in	NO YES Cast-in-place segmental Precast segmental	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in service)?	NO YES Cast-in-place segmental Precast segmental Cast-in-place, non-segmental	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in service)?  On what types of PT structures have you	NO YES Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in service)?  On what types of PT structures have you performed repairs? Please check all that	NO  YES  Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in service)?  On what types of PT structures have you	YES Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in service)?  On what types of PT structures have you performed repairs? Please check all that	NO  YES  Cast-in-place segmental  Precast segmental  Cast-in-place, non-segmental  PT decks  PT slab bridges  Box girders  Pier caps	tensioning ducts, and approved by the Project Manager prior to use.
post-tensioned structures (either during construction or while the structure is in service)?  On what types of PT structures have you performed repairs? Please check all that	YES Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders	tensioning ducts, and approved by the Project Manager prior to use.

	NEW MEXICO	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

	NEW MEXICO	
	Member strengthening to address	
	corrosion/impact damage	
	Re-grouting of tendons	
	During construction	
	At a later stage when structure in-	
	service	
	NDT-aided inspection of PT system	
	Invasive inspection of PT system	
Have your agency performed (or	Repair of pour-back (anchor block-	
initiated) the following types of	out)	
maintenance, inspection or repairs	FRP wrapping	
related to PT structures? Please check all	Injection of corrosion inhibitor	
that apply.	Crack injection	
	Repair or replacement of deck on a PT	
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement	
	1	
	Other. Please specify:	
Does your agency have established	NO	NO
inspection procedures specific to PT	YES, Please provide a link or location	
bridges?	where procedure can be accessed:	
	Visual methods	
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
	,	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	

	NEW MEXICO	
	ASBI grouting certification	
Please select install certifications/qualifications required by	PTI Level 1 installer	PTI Level 1 installer
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		
	Open-Ended Response	
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	NO
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT	YES	YES
construction details?	NO	

	NEW MEXICO	
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
one sess of your missinger	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Dook dramage details	interior upper corners of segmental
	Other. Please describe:	box girders; possible link to
	Other. I lease describe.	box gracis, possible link to
Have you an exercise down 11	YES	
Have you encountered problematic	TES	
construction techniques/methods?		
	NO	NO
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with	YES	
any of the materials used in PT		
construction?	NO	NO
	Grout filler material	110
	Flexible filler material (non-	
	cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that apply.	Prestressing steel	
	Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
	Other, prease specify:	
What specific problems with		
deterioration of CIP post-tensioned		
bridges have you encountered?	Open-Ended Response	
	Open-Ended Response	

	NEW MEXICO
How have you rectified these issues?	Open-Ended Response
Have you replaced a deck on CIP post-	NO NO
tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue	
type):	Open-Ended Response

NEW YORK		
Name(s)		
Title(s)		
Agency	NYS Department of Transportation	
State/Province	NY	
Email Address(es)		
Phone Number(s)		
INTERVIEW QUESTIONS		
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate	
(11) ser detailes in its bridge inventory.	quantity:	1
	Lack of familiarity with post-	1
	tensioned structures	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Expense	
	Time a maxima design/a material	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
updated (approximatery):	Date	05/01/2018
What were the reference documents used for updating? Please specify/explain:		
	Open-Ended Response	PTI M50 PTI M55
	ASBI/PTI M50	ASBI/PTI M50
What DT anasifications are you using?	PTI M55	PTI M55
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
What type of PT structures are in your inventory? Please check all that apply.	PT decks	PT decks
	PT slab bridges	
	Box girders	
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	1 0

NEW YORK		
Are your PT structures designed for a specific service life?	NO YES, What is the design service life	75
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in	(number of years)?  NO  YES	73
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	PL-2 PTI M50
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	Prepackaged cementitious, no metallic expansion aides w/c <= 0.40
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Prestressed precast girders
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor

	NEW YORK	
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	required repairs to reduce chloride infiltration and required external PT
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	removed 2" replaced with overlay
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	Member strengthening to address corrosion/impact damage Re-grouting of tendons  At a later stage when structure inservice
	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout)	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout)
	FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure	Crack injection Repair or replacement of deck on a PT superstructure
	Internal/bonded tendon replacement External/unbonded tendon replacement Other. Please specify:	External/unbonded tendon replacement
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	YES

	NEW YORK	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
	Radiation methods (i.e., x-ray diffraction, radiography) Electrochemical techniques (i.e., half-	
	cell potential) Other, or not sure how to classify. Please describe:	
	ASBI grouting certification	
Please select install certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a		
link, if possible.	Open-Ended Response	Engineer in Charge monitors all aspects of construction
Does your agency have grout storage	NO	NO
requirements?	YES, Please specify guiding document, provide link, or describe:	

	NEW YORK	
	Contractor	Contractor
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	<u> </u>
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	<u> </u>
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
	Open-Ended Response	
Have you encountered problematic PT	YES	
construction details?	NO	NO
	Anchorage pour-back details	110
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	
construction techniques/methods?	NO	NO
	Air (pressure) test	
	Vacuum test	
Please identify construction methods that	Deck-level vent removal/permanent vent cap placement	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block- out pour	
	Other. Please specify.	
	o mor. I reade specify.	

	NEW YORK	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
	Grout filler material  Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings Epoxy grouts	
	Pour-back materials  Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	I-81 (NB & SB) over the Oneida River Syracuse, NY structure required external PT

NODTH CAROLINA		
NORTH CAROLINA		
Name(s)		
Title(s)	Bridge Engineer	
Agency	NCDOT Structures Management Unit	
State/Province	NC	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate quantity:	11
Why not? Please check all that apply.	Lack of familiarity with post- tensioned structures  Concerns related to quality/durability Expense  Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	01/01/2020
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	
What PT specifications are you using? Please check all that apply.	ASBI/PTI M50 PTI M55 In-house/DOT created specifications Other, please provide a link:	NCDOT Specifications
Are your PT specifications very similar to or derived from another state's?	NO YES, Please specify source:	NO

NORTH CAROLINA		
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
	PT decks	PT decks
What type of PT structures are in your	PT slab bridges	
inventory? Please check all that apply.	Box girders	
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	
Are your PT structures designed for a	NO	
specific service life?		
specific service inc.	YES, What is the design service life (number of years)?	100
	(number of years):	100
	NO	NO
	NO	NO
	******	
Do you specify a protection level (PL-1a	YES	
or PL-1b, PL-2, PL-3 as specified in		
ASBI/PTI M50) for your PT structures?		
	YES, What is the level specified?	
	1 ES, What is the level specified.	
Wil at the second decrease size for form		
What type of PT grout do you specify for initial construction (i.e., "pre-bagged,		
proprietary", "cement/water")? Please		
describe:		
describe.	Open Ended Pagnenge	probagged
Has your agency initiated repairs on any	Open-Ended Response	prebagged
post-tensioned structures (either during		
construction or while the structure is in	NO	
service)?	YES	YES
	Cast-in-place segmental	
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
On what types of PT structures have you	PT decks	
performed repairs? Please check all that	PT slab bridges	
apply.	Box girders	
	Pier caps	
	Spliced girder	Spliced girder
	Other	

No	ORTH CAROLINA	<b>L</b>
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all	In-house staff Contractor	Contractor
that apply.	Other. Please describe:	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and	Improper dunnage for storage of precast segment that damaged bottom slab of box segment: Repaired bottom slab by removal of portion of slab and replaced with cast in place concrete.  - Damage ducts at segment joints: Repaired by reshaping ducts or partial removal & replacement with splices and/or heat shrink Blocked or Miss-Aligned Duct: Repaired by coring, ramming, or partial replacement - Poor quality grout cap & other block out pour backs: Repaired by removal of Poor quality materials and replacement Missing grout cap: Repaired by cutting access hole in concrete to install cap in one or more pieces. Broken or Missing shear key on match cast faces: Repaired with grout after segment erection Shrinkage cracking in cast in place closure pours: Repaired by crack injections and HMWM coating Missing or damaged grout port/vent: Repaired by field drilling ports & access holes Honeycombs & voids in precast Members: Repaired by chipping out voided areas and pour back with CIP concrete, grout, epoxy grouts, etc.
	yES, Please describe issue and performed repair:	
	performed repair.	

NO	ORTH CAROLINA	
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	anchorage blockouts
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	Re-grouting of tendons During construction
	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout)	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout)
	FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure	Injection of corrosion inhibitor Crack injection
	Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	Project specific

NO	ORTH CAROLINA	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands)	Direct measurement of tendon force (i.e. gages on strands)
	Radiation methods (i.e., x-ray diffraction, radiography) Electrochemical techniques (i.e., half-	,
	cell potential)  Other, or not sure how to classify.  Please describe:	
Please select install	ASBI grouting certification	ASBI grouting certification
certifications/qualifications required by	PTI Level 1 installer	PTI Level 1 installer
your agency for PT installers. Please check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	There is not a set or standard stand alone procedure(s). Procedures tend to be project specific and are derived from Contract Project Special Provisions, ASBI/FHWA Publications, PTI publications, Contractor & Producers work plans, Engineer & Technician past experiences. etc.
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	approved pre-packaged grout that exhibits thixotropic properties and is

NO	ORTH CAROLINA	
Will be of a built of	Contractor	Y 1
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
FF V		
	Other, please specify:	
Please identify any preferred or "best		
practice" construction details. (Details		
which perform as intended and are		
worthy of note.) Please provide a link, if		
possible.		
Possion	Open-Ended Response	
Have you encountered problematic PT	YES	YES
construction details?	NO	
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents	Mid-tendon vents
	Inspection ports	Inspection ports
	Duct placement	Duct placement
	Duct splicing	Duct splicing
Please identify construction details that	Heat-shrink sleeves	Heat-shrink sleeves
are problematic. Check all that apply, to	Confinement reinforcement	Confinement reinforcement
the best of your knowledge.	Segment mating during erection	Segment mating during erection
	Match-cast joints	Match-cast joints
	Precast quality	Precast quality
	Deck drainage details	Deck drainage details
	Other. Please describe:	
Have you encountered problematic	YES	YES
construction techniques/methods?	TES	TES
4	NO	
	Air (pressure) test	Air (pressure) test
	Vacuum test	
	Deale level west some of 1/	Deals level west some 1/
DI 11 416 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Deck-level vent removal/permanent	Deck-level vent removal/permanent
Please identify construction methods that		vent cap placement
are problematic. Please check all that	Permanent grout cap placement	Permanent grout cap placement
apply.	Grouting/filler procedures	Grouting/filler procedures
	Vacuum grouting	Vacuum grouting
	Preparing anchorage area for block-	Preparing anchorage area for block-
	out pour	out pour
	Other. Please specify.	

NO	ORTH CAROLINA	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	Grout filler material
Discovidantife made violantial base	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that	Prestressing steel	Prestressing steel
apply.	Elastomeric coatings	Elastomeric coatings
арріу.	Epoxy grouts	Epoxy grouts
	Pour-back materials	Pour-back materials
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

N	NORTH DAKOTA
Name(s)	
Title(s)	Assistant Bridge Engineer
Agency	NDDOT
State/Province	ND
Email Address(es)	
Phone Number(s)	
INTE	RVIEW QUESTIONS
Does your agency have post-tensioned (PT) structures in its bridge inventory?	NO YES, please specify approximate quantity:  1
	Lack of familiarity with post- tensioned structures
Why not? Please check all that apply.	Concerns related to quality/durability  Expense  Time consuming design/construction
When were your PT Specifications last updated (approximately)?	Other, Please describe:  Date
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response
What PT specifications are you using? Please check all that apply.	ASBI/PTI M50 PTI M55 In-house/DOT created specifications Other, please provide a link:
Are your PT specifications very similar to or derived from another state's?	NO YES, Please specify source:
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders
	Pier caps Spliced girder Other

N	ORTH DAKOTA
	NO
Are your PT structures designed for a specific service life?	YES, What is the design service life
specific service ine?	(number of years)?
Do you specify a protection level (PL-1a	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES
	YES, What is the level specified?
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	
	Open-Ended Response
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in	NO
service)?	YES
	Cast-in-place segmental
	Precast segmental  Cast-in-place, non-segmental
On what types of PT structures have you	PT decks
Jesus Special Control of the Control	PT slab bridges
apply.	Box girders
FF-J	Pier caps
	Spliced girder
	Other
Does your agency have standard or commonly-used plans, specifications,	NO
procedures or details for PT tendon replacement specifically?	YES, Please provide a link:
Does your agency have standard or commonly-used plans, specifications,	NO
procedures or details for PT repairs?	YES, Please provide a link:
Who performs repairs? Please check all	In-house staff
that apply.	Contractor
	Other. Please describe:

N	NORTH DAKOTA
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:
	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs	NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout)
related to PT structures? Please check all that apply.	FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure
	Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:

NORTH DAKOTA		
	Visual methods	
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
	-	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	I lease describe.	
Please select install	ACDI	
certifications/qualifications required by	ASBI grouting certification	
your agency for PT installers. Please	PTI Level 1 installer	
check all that apply.	PTI Level 2 installer	
PF J	Other, please describe:	
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing		
elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		
link, if possible.		
	Open-Ended Response	
	NO	
Does your agency have grout storage		
requirements?	YES, Please specify guiding	
	document, provide link, or describe:	
	Contractor	
	In-house	
Who conducts QA? Please check all that	Consultant inspection (CEI)	
apply.	* ` ` ′	
	Other, please specify:	
L	outer, preuse speerry.	

N	ORTH DAKOTA
	Contractor
WI L COCO DI L I NA L	T 1
	In-house
apply.	G to the company of t
	Consultant inspection (CEI)
	Other, please specify:
Please identify any preferred or "best	
practice" construction details. (Details	
which perform as intended and are	
worthy of note.) Please provide a link, if	
possible.	
	Open-Ended Response
Hove you encountered muchlemetic PT	YES
Have you encountered problematic PT construction details?	
construction details:	NO
	Anchorage pour-back details
	Mid-tendon vents
	Inspection ports
	Duct placement
Di	Duct splicing
Please identify construction details that are problematic. Check all that apply, to	Heat-shrink sleeves
the best of your knowledge.	Confinement reinforcement
the best of your knowledge.	Segment mating during erection
	Match-cast joints
	Precast quality
	Deck drainage details
	Other. Please describe:
W	YES
Have you encountered problematic construction techniques/methods?	
construction techniques/methods:	NO
	Air (pressure) test
	Vacuum test
	Deck-level vent removal/permanent
Please identify construction methods that	
are problematic. Please check all that	Permanent grout cap placement
apply.	Grouting/filler procedures
	Vacuum grouting
	Preparing anchorage area for block-
	out pour
	Other. Please specify.

N	ORTH DAKOTA
Have you found encountered issues with any of the materials used in PT	YES
construction?	NO
	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.)
Please identify materials which have been problematic. Please check all that	Prestressing steel
apply.	Elastomeric coatings Epoxy grouts
	Pour-back materials
	Other, please specify:
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response
How have you rectified these issues?	Open-Ended Response
Have you replaced a deck on CIP post- tensioned box girder or segmental	NO
concrete bridge?	YES, Please describe how it was performed:
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	
, , , , , , , , , , , , , , , , , , ,	Open-Ended Response

OHIO		
Name(s)		
Title(s)	OSE Administrator, Bridge Engineer	
Agency	Ohio DOT	
State/Province	ОН	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTIO	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	83
	Lack of familiarity with post- tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	04/20/2018
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	FHWA PT tendon instillation and grouting manual. ASBI specification guide and construction practice handbook. PTI M55. FHWA - HRT -13-028
	ASBI/PTI M50	ASBI/PTI M50
	PTI M55	PTI M55
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	Florida DOT specifications

	ОНЮ	
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
What type of PT structures are in your	PT slab bridges	
inventory? Please check all that apply.	Box girders	
The state of the s	Pier caps	Pier caps
	Spliced girder	Spliced girder
		Post tensioned hold downs at end
	Other	pier
		F
Are your PT structures designed for a	NO	
specific service life?	YES, What is the design service life	
specific service me.	(number of years)?	999
	(number of years):	999
	NO	
Do you specify a protection level (PL-1a	NO	
or PL-1b, PL-2, PL-3 as specified in		
ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for		
initial construction (i.e., "pre-bagged,		Grouts are accepted based upon
proprietary", "cement/water")? Please		meeting the property requirements
describe:	0 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	listed in the supplemental
	Open-Ended Response	specification.
Has your agency initiated repairs on any		
post-tensioned structures (either during	NO	
construction or while the structure is in		
service)?	VEC	MEG
	YES	YES
	Cast-in-place segmental	
	Precast segmental	
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
a non-	PT decks	
On what types of PT structures have you	PT slab bridges	
performed repairs? Please check all that	Box girders	
apply.	Pier caps	
	Spliced girder	
		Straddle Bent Pier Cap *not
		included in survey but from outside
	Other	knowledge

OHIO		
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	External PT duct failed during grouting
Has your agency encountered issues requiring repair related to corrosion?	YES, Please describe issue and performed repair:	Voids in PT ducts to be regrouted with vacuum grouting. Using Vector Corrosion Post-Tech to mitigate corrosion. Replacing anchorage pour backs.
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	ODOT answer = No. Note: Decks containing PT in deck receive a new overlay approximately every 10 years.

	OHIO	
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor block-	Re-grouting of tendons During construction  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor block-
	out) FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure	out)  Injection of corrosion inhibitor
	Internal/bonded tendon replacement External/unbonded tendon replacement Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Visual methods Magnetic methods (i.e., magnetic flux leakage) Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force	Visual methods Magnetic methods (i.e., magnetic flux leakage)
	(i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.  Please describe:	

OHIO		
Please select install	ASBI grouting certification	ASBI grouting certification
certifications/qualifications required by your agency for PT installers. Please	PTI Level 1 installer PTI Level 2 installer	PTI Level 1 installer PTI Level 2 installer
check all that apply.	Other, please describe:	F11 Level 2 instance
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	http://www.dot.state.oh.us/Divisions/ConstructionMgt/Specification%20Files/855_04202018_for_2019.pdf
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	See section 855.08.C.7 Grout storage of 855 supplemental specification. (link in question above)
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor In-house Consultant inspection (CEI)
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	In-house Consultant inspection (CEI)
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	N/A
Have you encountered problematic PT construction details?	YES	YES
	NO	

OHIO		
	Anchorage pour-back details	
	Mid-tendon vents	Mid-tendon vents
	Inspection ports	
	Duct placement	
	Duct splicing	Duct splicing
Please identify construction details that	Heat-shrink sleeves	Heat-shrink sleeves
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	YES
construction techniques/methods?		
a construction with a construction with the	NO	
	Air (pressure) test	Air (pressure) test
	Vacuum test	All (pressure) test
Please identify construction methods that are problematic. Please check all that	Deck-level vent removal/permanent vent cap placement  Permanent grout cap placement	Deck-level vent removal/permanent vent cap placement
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	
	T1 11 1 0111 1 1 1 /	
	Flexible filler material (non-	
	cementitious, wax, grease, etc.)	
Please identify materials which have	`	
been problematic. Please check all that	cementitious, wax, grease, etc.)	
· ·	cementitious, wax, grease, etc.) Prestressing steel	
been problematic. Please check all that	cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings	Pour-back materials

OHIO		
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	Currently under construction
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	N/A

OKLAHOMA		
Name(s)		
Title(s)	Assistant Bridge Engineer - Maintenar	nce
Agency	ODOT	
State/Province	OK	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?		
(11) structures in its bridge inventory.	YES, please specify approximate	27
	quantity:  Lack of familiarity with post-	37
	tensioned structures	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	LAPONSC	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last		
updated (approximately)?	Date	12/16/2009
What were the reference documents used		
for updating? Please specify/explain:		
The second secon	Open-Ended Response	Florida DOT Specifications
	ASBI/PTI M50	1
What PT specifications are you using?	PTI M55	
Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	-
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	Florida
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	C
	PT decks	PT decks
What type of PT structures are in your	PT slab bridges	
inventory? Please check all that apply.	Box girders	
	Pier caps	Pier caps
	Spliced girder	*
	Other	
	Spliced girder	1 ici capo

OKLAHOMA		
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	pre-bagged,
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
on white types of I I structures have you	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Pier caps
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor

	OKLAHOMA	
Т.	NO	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	repaired and strengthened the anchor - successfully tensioned
, e ,	NO	
requiring repair related to corrosion?	YES, Please describe issue and performed repair:	Isolated incidents of corrosion in tendons.
Has your agency performed repairs to PT structures due to damage by	NO	NO
vessel/vehicle impact?	YES, Please describe issue and performed repair:	
Has your agency performed repair/replacement of decks on PT	NO	NO
bridges?	YES, Please describe issue and performed repair:	
	Member strengthening to address corrosion/impact damage	
	Re-grouting of tendons	Re-grouting of tendons
	During construction	
	At a later stage when structure inservice	At a later stage when structure inservice
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
Have your agency performed (or	Invasive inspection of PT system	Invasive inspection of PT system
initiated) the following types of maintenance, inspection or repairs	Repair of pour-back (anchor block- out)	Repair of pour-back (anchor block- out)
	FRP wrapping	FRP wrapping
that apply.	Injection of corrosion inhibitor	Injection of corrosion inhibitor
	Crack injection	
	Repair or replacement of deck on a PT	
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement	
	Other. Please specify:	
Does your agency have established inspection procedures specific to PT	NO	NO
bridges?	YES, Please provide a link or location where procedure can be accessed:	
	where procedure can be accessed:	

	OKLAHOMA	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux	
	leakage)	flux leakage)
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
Please select install	ASBI grouting certification	ASBI grouting certification
certifications/qualifications required by your agency for PT installers. Please check all that apply.	PTI Level 1 installer	
	PTI Level 2 installer	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		Test tendons with compressed air to
link, if possible.		determine if duct connections need
anny ir possibio	0 5 1 1 1	repair. Preform fluidity tests for
	Open-Ended Response	grout.
Doog vous ogenes have event store	NO	NO
Does your agency have grout storage	VEC Places and if-	
requirements?	YES, Please specify guiding	
	document, provide link, or describe:	
W/ 1 / 0 / 2 PV	Contractor	T. 1
Who conducts QA? Please check all that	In-house	In-house (GER)
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	

	OKLAHOMA	
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best	1 1	
practice" construction details. (Details		
which perform as intended and are		
worthy of note.) Please provide a link, if		Location of grout inlets and outlets
possible.		includes duct high points 3' upstream
	Open-Ended Response	and downstream
Have you encountered problematic PT	YES	YES
construction details?	NO	
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
	o uner. I rease deserree.	
Have you encountered problematic	YES	
construction techniques/methods?		
•	NO	NO
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that	_	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
mpp-y-	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	Salet. I fease specify.	
Have you found encountered issues with	YES	
any of the materials used in PT construction?		
construction:	NO	NO

	OKLAHOMA	
Please identify materials which have been problematic. Please check all that	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.)	
	Prestressing steel	
apply.	Elastomeric coatings Epoxy grouts	
	Pour-back materials	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Other, please specify:	
How have you rectified these issues?	Open-Ended Response Open-Ended Response	Grout voids  Inspection using boroscoping, grout evaluation, and filling grout voids
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	Grout repairs: 224265542 0210WX04OKLAHOMAI- 235 SBNE16TH PL/23RDST/RR/RAMP

Name(s) Title(s) Prestressed Concrete Standards Engineer Agency Oregon Department of Transportation State/Province Email Address(es) Phone Number(s)  INTERVIEW QUESTIONS			
Title(s) Prestressed Concrete Standards Engineer Agency Oregon Department of Transportation State/Province OR Email Address(es) Phone Number(s)			
Agency Oregon Department of Transportation  State/Province OR  Email Address(es)  Phone Number(s)			
State/Province OR Email Address(es) Phone Number(s)			
Email Address(es) Phone Number(s)			
Phone Number(s)			
``			
INTERVIEW QUESTIONS			
	INTERVIEW QUESTIONS		
Does your agency have post-tensioned NO			
(PT) structures in its bridge inventory? YES, please specify approximate			
quantity: 220			
Lack of familiarity with post-			
tensioned structures			
Why not? Please check all that apply.  Concerns related to quality/durability			
Expense			
Time consuming design/construction			
Other, Please describe:			
When were your DT Specifications last			
When were your PT Specifications last updated (approximately)?			
Date 01/31/2017			
What were the reference documents used			
for updating? Please specify/explain:			
Open-Ended Response ASBI/PTI M50 and PTI M53	5		
ASBI/PTI M50 ASBI/PTI M50			
What PT specifications are you using?  PTI M55  PTI M55			
Please check all that annly			
In-house/DOT created specifications In-house/DOT created specifications	ications		
Other, please provide a link:			
Are your PT specifications very similar NO NO			
to or derived from another state's?			
YES, Please specify source:			
Cast-in-place segmental Cast-in-place segmental			
Precast segmental			
Cast-in-place, non-segmental Cast-in-place, non-segmental	l		
PT decks PT decks			
What type of PT structures are in your  PT slab bridges			
inventory? Please check all that apply.  Box girders  Box girders			
Pier caps Pier caps			
Spliced girder Spliced girder			
In process of the second secon			

OREGON		
Are your PT structures designed for a specific service life?	NO	
	YES, What is the design service life (number of years)?	75
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES	
	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:		commercial, pre-packaged,
	Open-Ended Response	thixotropic tendon grout
Has your agency initiated repairs on any post-tensioned structures (either during	NO	
construction or while the structure is in service)?	YES	YES
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Cost in place non accomental
On what types of DT structures have you	Cast-in-place, non-segmental PT decks	Cast-in-place, non-segmental PT decks
On what types of PT structures have you performed repairs? Please check all that	PT slab bridges	1 1 decks
apply.	Box girders	Box girders
mpp-y.	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	1 0
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT repairs?	YES, Please provide a link:	
Who norforms renaire? Dlags shark all	In-house staff	In-house staff
Who performs repairs? Please check all that apply.	Contractor	Contractor
that apply.	Other. Please describe:	

OREGON		
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	1) After tensioning, cracks occurred in PT box stems due to poor quality of formwork and shifted PT ducts during concrete pour. On the same project, rebar cages were not built per specs. The PT box stems were reconstructed. 2) Grout leak during grouting. The leak spots were sealed. 3) Voids in grout were found using probing. Grouting was stopped and couldn't push it through from the original side later. The subsequent grouting was done from the opposite side. So, the probing was conducted. Small holes were drilled and grout was injected afterward. 4) Rebar cages shift caused side concrete cover issue. 5) Over tensioning was done and caused cracks in PT decks. Some decks were re-cast and some received epoxy injection.
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

	OREGON	
	Member strengthening to address corrosion/impact damage	Member strengthening to address corrosion/impact damage
	Re-grouting of tendons	Re-grouting of tendons
	During construction	During construction
	At a later stage when structure in-	
	service	
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
Have your agency performed (or	Invasive inspection of PT system	Invasive inspection of PT system
initiated) the following types of maintenance, inspection or repairs	Repair of pour-back (anchor block- out)	
related to PT structures? Please check all	11 0	FRP wrapping
that apply.	Injection of corrosion inhibitor	
	Crack injection	Crack injection
	Repair or replacement of deck on a PT	<u> </u>
	superstructure	PT superstructure
	Internal/bonded tendon replacement	
	External/unbonded tendon	External/unbonded tendon
	replacement	replacement
	Other. Please specify:	
Does your agency have established	NO	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location	
blidges:	where procedure can be accessed:	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
moon in a research cityre.	Direct measurement of tendon force	
	(i.e. gages on strands) Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half- cell potential)	Electrochemical techniques (i.e., half-cell potential)
	Other, or not sure how to classify. Please describe:	man son posential)

	OREGON	
	ASBI grouting certification	ASBI grouting certification
Please select install certifications/qualifications required by your agency for PT installers. Please	PTI Level 1 installer	
check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	https://www.oregon.gov/odot/Busine ss/Documents/2018_STANDARD_S PECIFICATIONS.pdf Please look for Section 00555.
Does your agency have grout storage requirements?	NO YES, Please specify guiding	NO
Who conducts QA? Please check all that apply.	document, provide link, or describe:  Contractor In-house  Consultant inspection (CEI) Other, please specify:	In-house
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor In-house Consultant inspection (CEI)
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES	YES
	NO	

	OREGON	
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	Duct placement
	Duct splicing	Duct splicing
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	Confinement reinforcement
the best of your knowledge.	Segment mating during erection	
·	Match-cast joints	
	Precast quality	Precast quality
	Deck drainage details	
		interfered with reinforcing bars. Use
	Other. Please describe:	of non-metal PT ducts.
Have you encountered problematic construction techniques/methods?	YES NO	NO
	Air (pressure) test	
	Vacuum test	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	

	OREGON	
	Grout filler material	
	Flexible filler material (non-	
	cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that	Elastomeric coatings	
-	Epoxy grouts	
apply.	Pour-back materials	
	Other, please specify:	Non-metal PT ducts.
What specific problems with deterioration of CIP post-tensioned		Cracking along PT ducts Cold joint cracking in spliced girder bridges
bridges have you encountered?	Open-Ended Response	Voids in PT ducts
How have you rectified these issues?	Open-Ended Response	are small. When cracks increase to a certain size, causes will be
	NO	NO
		110
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?		
	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for		
example: bridge name, location, issue		
type):	Open-Ended Response	NA

	PENNSYLVANIA	
Name(s)		
Title(s)	Chief Bridge Engineer	
Agency	PennDOT	
State/Province	PA	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTIO	NS
D	NO	
Does your agency have post-tensioned (PT) structures in its bridge inventory?		
(F1) structures in its bridge inventory:	YES, please specify approximate	27
	quantity:	37
	Lack of familiarity with post-	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Emperied .	
	Time consuming design/construction	
	Time consuming design construction	
	Other, Please describe:	
	Other, I rease describe.	
When were your PT Specifications last		
updated (approximately)?	Date	01/01/2019
		7 3 7 3 3 2 7 3 7
		Publication 15 (Design Manual-4
		Structures, Section 5.9.5,5.12.5.3.9
		&5.12.5; Publication 218-Bridge
What were the reference documents used		Design standards, Publication 219-
for updating? Please specify/explain:		Bridge Construction standards,
		Publication 408- Highway
		Construction Specifications Section
		1000 - Structures, Section 1100-
		Manufactured Materials, Section
	Open-Ended Response	1108 - Post Tensioning Operations
	ASBI/PTI M50	ASBI/PTI M50
What PT specifications are you using?	PTI M55	PTI M55
Please check all that annly		
FF-J*	In-house/DOT created specifications	
	Other, please provide a link:	

	PENNSYLVANIA	
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	
	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental	
What type of PT structures are in your inventory? Please check all that apply.	PT decks PT slab bridges	PT decks
inventory: Trease check an that apply.	Box girders Pier caps Spliced girder	Pier caps Spliced girder
	Other	Spriced grider
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	100
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES	
, , , , , , , , , , , , , , , , , , , ,	YES, What is the level specified?	PL-2 or PL-3
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	prebagged, please refer to BC-790M. http://www.dot.state.pa.us/public/Bu reaus/BOPD/Bridge/2019/BC/BC79 0M.pdf
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in	NO	NO
service)?	YES Cast-in-place segmental Precast segmental	
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place, non-segmental PT decks PT slab bridges Box girders	
	Pier caps Spliced girder Other	

	PENNSYLVANIA	
	NO	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	Publication 15 (Design Manual-4 Structures, Section 5.9.5,5.12.5.3.9 &5.12.5; Publication 218-Bridge Design standards, Publication 219-Bridge Construction standards, Publication 408- Highway Construction Specifications Section 1000 - Structures, Section 1100-Manufactured Materials, Section 1108 - Post Tensioning Operations http://www.dot.state.pa.us/public/Bu reaus/BOPD/Bridge/NewProducts/dr awings/NP59.pdf http://www.dot.state.pa.us/public/Bu reaus/BOPD/Bridge/NewProducts/dr awings/NP74.pdf
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff  Contractor  Other. Please describe:	N/a
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO

PENNSYLVANIA		
	Member strengthening to address corrosion/impact damage  Re-grouting of tendons	
	During construction At a later stage when structure inservice	
Have your agency performed (or initiated) the following types of	NDT-aided inspection of PT system  Invasive inspection of PT system	
maintenance, inspection or repairs related to PT structures? Please check all that apply.	Repair of pour-back (anchor block- out) FRP wrapping	
	Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT	
	Internal/bonded tendon replacement  External/unbonded tendon	
	replacement Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed: Project specific	

I	PENNSYLVANIA	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	Magnetic methods (i.e., magnetic flux leakage)
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
	(i.e. gages on strands) Radiation methods (i.e., x-ray	Radiation methods (i.e., x-ray
	diffraction, radiography) Electrochemical techniques (i.e., half-cell potential)	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)
	Other, or not sure how to classify. Please describe:	report: http://www.dot7.state.pa.us/BPR_P
	ASBI grouting certification	ASBI grouting certification
	PTI Level 1 installer	
Please select install certifications/qualifications required by	PTI Level 2 installer	PTI Level 2 installer
your agency for PT installers. Please check all that apply.	Other, please describe:	Professional Engineer with Post Tensioning Operational Experience or PTI Level 2 with minimum 3 years post tensioning experience or ASBI certification with 3 years experience. Per Publication 408, Section 1108.01.
N. 1 1 04/05	7.	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		http://www.dot.state.pa.us/public/PubsForms/Publications/Pub_408/408_2020/408_2020_IE/408_2020_IE.pdfhttp://www.dot.state.pa.us/public/PubsForms/Publications/Pub_408/408_2020/408_2020_IE/40

	PENNSYLVANIA	
	NO	
Does your agency have grout storage requirements?	YES, Please specify guiding	ttp://www.dot.state.pa.us/public/PubsForms/Publications/Pub_408/408_2020/408_2020_IE/40
Who conducts QA? Please check all that apply.	document, provide link, or describe:  Contractor In-house Consultant inspection (CEI)	8_2020_IE.pdf In-house
Who conducts QC? Please check all that apply.	Other, please specify: Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	Please refer to question regarding standard plans.
Have you encountered problematic PT construction details?	YES	NO
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	NO Anchorage pour-back details Mid-tendon vents Inspection ports Duct placement Duct splicing Heat-shrink sleeves Confinement reinforcement Segment mating during erection Match-cast joints Precast quality Deck drainage details Other. Please describe:	NO
Have you encountered problematic construction techniques/methods?	YES NO	NO

	PENNSYLVANIA	
	Air (pressure) test	
	Vacuum test	
	, account cost	
	Deck-level vent removal/permanent	
	vent cap placement	
Please identify construction methods that	Permanent grout cap placement	
are problematic. Please check all that	Grouting/filler procedures	
apply.	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	-	
Have you found encountered issues with	YES	
any of the materials used in PT construction?		
construction?	NO	NO
	Grout filler material	
	Flexible filler material (non-	
	cementitious, wax, grease, etc.)	
Please identify materials which have	Prestressing steel	
been problematic. Please check all that	Elastomeric coatings	
apply.	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
What specific problems with		
deterioration of CIP post-tensioned		
bridges have you encountered?		27/
and the second s	Open-Ended Response	N/a
How have you rectified these issues?		
,	Open-Ended Response	N/a
Have you replaced a deck on CIP post-		
tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was	
Ü	performed:	
If you know of a particular PT repair for		
consideration as a case study, please		
provide some general information (for		
example: bridge name, location, issue		
type):	Open-Ended Response	N/a

	RHODE ISLAND	
Name(s)		
Title(s)	Managing Engineer	
Agency	Department of Transportation	
State/Province	RI	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
D	NO	
Does your agency have post-tensioned		
(PT) structures in its bridge inventory?	YES, please specify approximate	
	quantity:	2
	Lack of familiarity with post-	
	tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability	
why not: I lease check an that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
NATION AND AND AND AND AND AND AND AND AND AN		
When were your PT Specifications last		
updated (approximately)?	Date	12/31/2007
What were the reference documents used		
for updating? Please specify/explain:		AASHTO LRFD Bridge
	Open-Ended Response	Construction Specifications
	ASBI/PTI M50	ASBI/PTI M50
	PTI M55	PTI M55
What PT specifications are you using?		
Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
		AASHTO LRFD Bridge
	Other, please provide a link:	Construction Specifications
	NO	•
Are your PT specifications very similar		
to or derived from another state's?	YES, Please specify source:	Massachusetts' Highway Department
	Cast-in-place segmental	<i>5 7</i> 1
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	
	PT decks	
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	
	Box girders	Box girders
	Pier caps	Don Brucio
	Spliced girder	Spliced girder
	Other	Spriced grider
	Outer	

	RHODE ISLAND	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in	(number of years)?  NO	
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	PL-2
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	Pre-bagged grouts mixed with water to obtain W/C ratio specified Thixotropic grout property for even distribution within the ducts
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	Box girders Pier caps Spliced girder
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor

	RHODE ISLAND	
	NO NO	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	For both segmental girder and box girder construction, voids in ducts were refilled with grout. Ports were used to ensure that the ducts were entirely filled with grout. Exterior post tensioning exterior Bulb-Tee girder to gain more capacity due to manufacturing defect and drilling through tendon ducts cutting some strands.
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice	Re-grouting of tendons During construction
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure Internal/bonded tendon replacement	NDT-aided inspection of PT system  Invasive inspection of PT system
	External/unbonded tendon replacement Other. Please specify:	

]	RHODE ISLAND	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	NO
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Visual methods Magnetic methods (i.e., magnetic flux leakage) vibration methods (i.e., acoustic emission, impact echo, ultrasonic) (i.e., infrared thermography, impulse radar, ground penetrating radar) Direct measurement of tendon force (i.e. gages on strands) Radiation methods (i.e., x-ray diffraction, radiography) Electrochemical techniques (i.e., half-cell potential) Other, or not sure how to classify. Please describe:	vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification  PTI Level 1 installer  PTI Level 2 installer  Other, please describe:	PTI Level 2 installer
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	Use of thixotropic grout property for even distribution within the ducts, Addition of downstream grout vents at high points to allow air to escape. Use of high speed mixer. On site testing with certified inspectors on site.
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:	NO

	RHODE ISLAND	
	Contractor	Contractor
Who conducts QA? Please check all that apply.	In-house	
	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	1 /
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	, p	
Please identify any preferred or "best		
practice" construction details. (Details		
which perform as intended and are		
worthy of note.) Please provide a link, if		
possible.		
	Open-Ended Response	
Have you encountered problematic PT	YES	
construction details?	NO	NO
	Anchorage pour-back details	
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	
construction techniques/methods?		
on on the state of	NO	NO
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that	-	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	

	RHODE ISLAND	
Have you found encountered issues with any of the materials used in PT	YES	
construction?	NO	NO
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	N/A
How have you rectified these issues?	Open-Ended Response	N/A
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	Non

SC	<b>DUTH CAROLINA</b>	
Name(s)		
Title(s)	District Bridge Engineer	
Agency	SCDOT	
State/Province	SC	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Does your agency have post-tensioned	NO	
(PT) structures in its bridge inventory?	YES, please specify approximate quantity:	4
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability Expense	
	Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?	Date	03/01/2019
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	FLDOT specifications were used as a basis for contract special provisions
	ASBI/PTI M50	
	PTI M55	
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications Other, please provide a link:	In-house/DOT created specifications
	NO	
Are your PT specifications very similar to or derived from another state's?	YES, Please specify source:	FLDOT
	Cast-in-place segmental	
What type of PT structures are in your inventory? Please check all that apply.	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
	PT slab bridges	
	Box girders	
	Pier caps	
	Spliced girder	Spliced girder
	Other	
	<u> </u>	

SC	OUTH CAROLINA	
	NO	
Are your PT structures designed for a	YES, What is the design service life	
specific service life?	(number of years)?	100
	NO	100
Do you specify a protection level (PL-1a	YES	
or PL-1b, PL-2, PL-3 as specified in	TES	
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	prebagged
	Open-Ended Response	prebagged
Has your agency initiated repairs on any		
post-tensioned structures (either during	NO	
construction or while the structure is in		
service)?	VEC	VEC
	YES	YES
	Cast-in-place segmental	Dunnest commental
	Precast segmental	Precast segmental
C L C C C C C C C C C C C C C C C C C C	Cast-in-place, non-segmental PT decks	PT decks
On what types of PT structures have you		PT decks
1-	PT slab bridges	
apply.	Box girders	
	Pier caps	
	Spliced girder	
	Other	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon replacement specifically?	YES, Please provide a link:	
	, 1	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT repairs?	YES, Please provide a link:	
Who morforms non-design black that I	In-house staff	
Who performs repairs? Please check all	Contractor	Contractor
that apply.	Other. Please describe:	
	210	
Has your agency encountered issues	NO	
requiring repair during construction?	YES, Please describe issue and	Epoxy repair of widespread cracking
	performed repair:	to PT decks.

SOUTH CAROLINA		
	NO	
Has your agency encountered issues requiring repair related to corrosion?	YES, Please describe issue and performed repair:	Numerous repairs to Wando River Bridge related to water intrusion and subsequent corrosion. Filling open Grout vent tubes, methacrylate application, tendon replacement, supplemental tendons, anti corrosion impregnation. HDPE and anchorage repairs and coating.
Has your agency performed repairs to	NO	NO
PT structures due to damage by vessel/vehicle impact?	YES, Please describe issue and performed repair:	
Has your agency performed	NO	
repair/replacement of decks on PT	YES, Please describe issue and	epoxy filling cracking that occurred
bridges?	performed repair:  Member strengthening to address	during construction  Member strengthening to address
	corrosion/impact damage	corrosion/impact damage
	Re-grouting of tendons	correspond impute duringe
	During construction	
	At a later stage when structure inservice	At a later stage when structure inservice
	NDT-aided inspection of PT system	NDT-aided inspection of PT system
Have your agency performed (or	Invasive inspection of PT system	Invasive inspection of PT system
initiated) the following types of maintenance, inspection or repairs	Repair of pour-back (anchor block-out)	Repair of pour-back (anchor block- out)
related to PT structures? Please check all		
that apply.	Injection of corrosion inhibitor	Injection of corrosion inhibitor
	Crack injection  Repair or replacement of deck on a PT	Crack injection
	superstructure	
	Superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	External/unbonded tendon
	replacement	replacement
	Other. Please specify:	
Does your agency have established	NO	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location	1,0
	where procedure can be accessed:	
	Proceeding can be decembed.	

SC	OUTH CAROLINA	
	Visual methods	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)	Magnetic methods (i.e., magnetic flux leakage)
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray	
	diffraction, radiography)  Electrochemical techniques (i.e., half-cell potential)  Other, or not sure how to classify.  Please describe:	Electrochemical techniques (i.e., half-cell potential)
Please select install	ASBI grouting certification	
certifications/qualifications required by your agency for PT installers. Please check all that apply.	PTI Level 1 installer PTI Level 2 installer	
eneck an that apply.	Other, please describe:	project specific
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	project specific but generally follow FLDOT specifications
Does your agency have grout storage	NO	
requirements?	YES, Please specify guiding document, provide link, or describe:	Generally follow FLDOT

SO	OUTH CAROLINA	
	Contractor	
Who conducts QA? Please check all that	In-house	
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	•
	Contractor	Contractor
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.		
possible.	Open-Ended Response	
Have you encountered problematic PT	YES	YES
construction details?	NO	
	Anchorage pour-back details	Anchorage pour-back details
	Mid-tendon vents	Mid-tendon vents
	Inspection ports	
	Duct placement	
	Duct splicing	Duct splicing
Please identify construction details that	Heat-shrink sleeves	Buct sprieting
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
	Other. Flease describe.	
Have you encountered problematic	YES	
construction techniques/methods?	NO	NO
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	

SO	OUTH CAROLINA	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	Grout filler material
Please identify materials which have	Flexible filler material (non- cementitious, wax, grease, etc.)	
been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings	
	Epoxy grouts	D 1 1
	Pour-back materials	Pour-back materials
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?		
ariages may e you encountered	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post-	NO	NO
tensioned box girder or segmental concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for		
consideration as a case study, please		
provide some general information (for		Wando River Bridge, I-526
example: bridge name, location, issue type):	Open-Ended Response	Charleston SC. Corrosion of external tendons.

	SOUTH DAKOTA	
Name(s)		
Title(s)	Chief Bridge Engineer	
Agency	SDDOT	
State/Province	SD	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
D	NO	NO
Does your agency have post-tensioned (PT) structures in its bridge inventory?	YES, please specify approximate quantity:	
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability Expense	
	Time consuming design/construction	
	Other, Please describe:	Have not had need for Post Tensioning
When were your PT Specifications last updated (approximately)?	Date	
What were the reference documents used for updating? Please specify/explain:	Open Ended Regnance	
	Open-Ended Response ASBI/PTI M50	
	PTI M55	
What PT specifications are you using?	PTI MISS	
Please check all that apply.	In-house/DOT created specifications	
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?		
	YES, Please specify source:	
	Cast-in-place segmental	
	Precast segmental	
	Cast-in-place, non-segmental	
What type of PT structures are in your	PT decks	
inventory? Please check all that apply.	PT slab bridges	
	Box girders	
	Pier caps	
	Spliced girder Other	
	Ouici	

S	SOUTH DAKOTA
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES YES, What is the level specified?
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES
Jesus Special Control of the Control	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:

S	SOUTH DAKOTA
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Injection of corrosion inhibitor Crack injection
	Repair or replacement of deck on a PT superstructure  Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:

	SOUTH DAKOTA
	Visual methods
	Magnetic methods (i.e., magnetic flux leakage)
	Mechanical wave propagation and
	vibration methods (i.e., acoustic
	emission, impact echo, ultrasonic)
Hove you used any NDT methods for	Electromagnetic wave propagation
Have you used any NDT methods for evaluating the post-tensioning system?	(i.e., infrared thermography, impulse
Please check all that apply, including if	radar, ground penetrating radar)
used in a research effort.	Direct measurement of tendon force
used in a research errore.	(i.e. gages on strands)
	Radiation methods (i.e., x-ray
	diffraction, radiography)
	Electrochemical techniques (i.e., half-
	cell potential)
	Other, or not sure how to classify.
	Please describe:
Please select install	ASBI grouting certification
certifications/qualifications required by	PTI Level 1 installer
your agency for PT installers. Please	PTI Level 2 installer
check all that apply.	Other, please describe:
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response
Does your agency have grout storage	
requirements?	YES, Please specify guiding
	document, provide link, or describe:  Contractor
Who conducts OA9 Bloom shock all that	In-house
Who conducts QA? Please check all that apply.	Consultant inspection (CEI)
appry.	Other, please specify:
	Contractor
Who conducts QC? Please check all that	In-house
apply.	Consultant inspection (CEI)
appij.	Other, please specify:
	Office, prease specify.

S	SOUTH DAKOTA
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response
Have you encountered problematic PT construction details?	YES NO
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents  Inspection ports  Duct placement  Duct splicing  Heat-shrink sleeves  Confinement reinforcement  Segment mating during erection  Match-cast joints  Precast quality  Deck drainage details  Other. Please describe:
Have you encountered problematic construction techniques/methods?	YES NO
Please identify construction methods that are problematic. Please check all that apply.	Air (pressure) test Vacuum test  Deck-level vent removal/permanent
Have you found encountered issues with any of the materials used in PT construction?	YES NO

S	SOUTH DAKOTA
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response
How have you rectified these issues?	Open-Ended Response
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response

	TEXAS	
Name(s)		
Title(s)	Transportation Engineer	
Agency	TxDOT	
State/Province	TX	
Email Address(es)	1A	
Phone Number(s)		
INTE	RVIEW QUESTION	NS
Door worm against have most toneioned	NO	
Does your agency have post-tensioned (PT) structures in its bridge inventory?	YES, please specify approximate	
(F1) structures in its bridge inventory:	quantity:	20
	Lack of familiarity with post-	
	tensioned structures	
W/l	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
1 (11	Date	01/01/2014
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	PTI M55 PTI/ASBI M50
	ASBI/PTI M50	TTI WIJJ TTI/ABBI WIJU
	PTI M55	PTI M55
What PT specifications are you using?	F 11 M33	F 11 W133
Please check all that apply.	In-house/DOT created specifications	
	Other, please provide a link:	
	Other, prease provide a link.	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
What type of DT stynetures are in very	PT decks	PT decks
What type of PT structures are in your inventory? Please check all that apply.	PT slab bridges	PT slab bridges
inventory: Ticase check all that apply.	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	

	TEXAS	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	100
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES YES, What is the level specified?	
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	Per Departmental Material Specification through Material Producer List
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	YES
on what types of I I structures have you	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	PT decks PT slab bridges  Spliced girder
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
	TEXAS	

	NO	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	PT strand replacement, Vacuum Grouting, Bad Grout, Spalling due to PT duct clearance
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	NO
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor	Re-grouting of tendons During construction  Repair of pour-back (anchor blockout)  Injection of corrosion inhibitor
	Crack injection  Repair or replacement of deck on a PT superstructure  Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	NO

Visual methods  (i.e., magnetic flux  Tropagation and i.e., acoustic vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Tropagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Tropagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Tropagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Tropagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
ropagation and i.e., acoustic vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  ropagation ography, impulse rating radar)  t of tendon force ds)  (i.e., x-ray aphy)  chniques (i.e., half-
vibration methods (i.e., acoustic emission, impact echo, ultrasonic)  Electromagnetic wave propagation ography, impulse rating radar)  t of tendon force ds)  (i.e., x-ray aphy)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
ography, impulse (i.e., infrared thermography, impulse rating radar) t of tendon force ds) (i.e., x-ray aphy) chniques (i.e., half-
ds) (i.e., x-ray aphy) chniques (i.e., half-
(i.e., x-ray aphy) chniques (i.e., half-
•
OW to classify.
fication ASBI grouting certification
PTI Level 1 installer
er PTI Level 2 installer
be:
nse In accordance with PTI and ASBI
)

	TEXAS	
	Contractor	Contractor
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
	Contractor	
Who conducts QC? Please check all that	In-house	
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
	or and a start and	
Have you encountered problematic PT	YES	
construction details?	NO	NO
	Anchorage pour-back details	110
	Mid-tendon vents	
	Inspection ports	
	Duct placement	
	Duct splicing	
Please identify construction details that	Heat-shrink sleeves	
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	
construction techniques/methods?	NO	NO
	Air (pressure) test	
	Vacuum test	
	Deck-level vent removal/permanent	
Please identify construction methods that		
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	

	TEXAS	
Have you found encountered issues with any of the materials used in PT	YES	YES
construction?	NO	
	Grout filler material	Grout filler material
	Flexible filler material (non-cementitious, wax, grease, etc.)	
Please identify materials which have been problematic. Please check all that	Prestressing steel	Prestressing steel
apply.	Elastomeric coatings	
mpp-y.	Epoxy grouts	
	Pour-back materials	Pour-back materials
	Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	Secondary/Transverse PT corrosion damaged failure
How have you rectified these issues?	Open-Ended Response	Restrained by means other than PT
Have you replaced a deck on CIP post- tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):		
type).	Open-Ended Response	YES, please contact me.

UTAH			
Name(s)			
Title(s)	Structures Design Manager		
Agency	Utah Department of Transportation		
State/Province	UT		
Email Address(es)			
Phone Number(s)			
INTE	INTERVIEW QUESTIONS		
	NO		
Does your agency have post-tensioned (PT) structures in its bridge inventory?	YES, please specify approximate quantity:	100	
	Lack of familiarity with post- tensioned structures		
Why not? Please check all that apply.	Concerns related to quality/durability  Expense		
	Time consuming design/construction Other, Please describe:		
	Other, Please describe:		
When were your PT Specifications last updated (approximately)?	Date	01/01/2017	
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	See UDOT Standard Specification 03251 Section 1.3 for a list of reference documents that were used.	
	ASBI/PTI M50	ASBI/PTI M50	
	PTI M55	PTI M55	
What PT specifications are you using?	1 11 14133	1 11 14133	
Please check all that apply.	In-house/DOT created specifications Other, please provide a link:	In-house/DOT created specifications	
Are your PT specifications very similar to or derived from another state's?	NO		
to of defived from another state s:	YES, Please specify source:		
	Cast-in-place segmental	Cast-in-place segmental	
	Precast segmental	Precast segmental	
	Cast-in-place, non-segmental		
What type of PT structures are in your	PT decks	PT decks	
inventory? Please check all that apply.	PT slab bridges		
inventory: riease check all that apply.	Box girders		
	Pier caps	Pier caps	
	Spliced girder	Spliced girder	
	Other		

	UTAH	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	NO
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	commercial, prepackaged, anti- bleed, post tensioning grout conforming to the requirements for Class C grout as defined by PTI M55.1
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	NO
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO

	UTAH	
Who norforms voncins? Place about all	In-house staff	
Who performs repairs? Please check all that apply.	Contractor	Contractor
тпат аррту.	Other. Please describe:	
TT	NO	NO
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and	
requiring repair during construction:	performed repair:	
	NO	NO
Has your agency encountered issues	YES, Please describe issue and	
requiring repair related to corrosion?	performed repair:	
	1	
Has your agency performed repairs to	NO	NO
PT structures due to damage by	YES, Please describe issue and	
vessel/vehicle impact?	performed repair:	
	NO	NO
Has your agency performed	110	110
repair/replacement of decks on PT	YES, Please describe issue and	Not that I am aware of, but we have
bridges?	performed repair:	widened bridges with PT decks.
	Member strengthening to address	widefied bridges with 1 1 decks.
	corrosion/impact damage	
	Re-grouting of tendons	
	During construction	
	At a later stage when structure in-	
	service	
	Service	
	NDT-aided inspection of PT system	
Have your agency newformed (or	Invasive inspection of PT system	
Have your agency performed (or initiated) the following types of	Repair of pour-back (anchor block-	
maintenance, inspection or repairs	out)	
, .	FRP wrapping	
that apply.	Injection of corrosion inhibitor	
T. T.	Crack injection	
	Repair or replacement of deck on a PT	
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement	
	Other. Please specify:	
	1 ,	
Does your agency have established	NO	NO
inspection procedures specific to PT	YES, Please provide a link or location	
bridges?	where procedure can be accessed:	
	where procedure can be accessed.	

	UTAH	
	Visual methods	
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for	Electromagnetic wave propagation	
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse	
Please check all that apply, including if	radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
	ACDI	
	ASBI grouting certification	
Please select install	DTI I 11' / 11	
certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please		
check all that apply.	PTI Level 2 installer	PTI Level 2 installer
	Other, please describe:	
	71	
DI I I OA/OC		
Please describe your QA/QC procedures		
during construction. For example,		
inspections prior to casting, stressing elongation checks, pre-duct fill		
pressure/vacuum checks, post-duct fill		
grout quality checks, certification of (e.g.		
ASBI-certified) PT inspectors, mud		
balance, or flow meter? Please provide a		
link, if possible.		See UDOT Specification 03251
	0 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	https://www.udot.utah.gov/main/f?p
	Open-Ended Response	=100:pg:0:::1:T,V:4867,

UTAH		
	NO	
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	Deliver grout in plastic lined or coated moisture proof containers, stamped with the applicatino type, date of manufacture, lot number. Use within 6 months of manufacture.
	Contractor	Contractor
Who conducts QA? Please check all that apply.	In-house Consultant inspection (CEI) Other, please specify:	In-house Consultant inspection (CEI)
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house Consultant inspection (CEI) Other, please specify:	In-house Consultant inspection (CEI)
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	NA
Have you encountered problematic PT construction details?	YES NO	NO
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents Inspection ports Duct placement Duct splicing Heat-shrink sleeves Confinement reinforcement Segment mating during erection Match-cast joints Precast quality Deck drainage details Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES NO	NO

UTAH		
Air (pressure) test		
	Vacuum test	
	v deddiir test	
	Deck-level vent removal/permanent	
Please identify construction methods that	-	
are problematic. Please check all that	Permanent grout cap placement	
apply.	Grouting/filler procedures	
mpPij.	Vacuum grouting	
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
	other. I lease speerly.	
Have you found encountered issues with	VEC	
any of the materials used in PT	YES	
construction?		
	NO	NO
	Grout filler material	
	Flexible filler material (non-	
Please identify materials which have	cementitious, wax, grease, etc.)	
been problematic. Please check all that	Prestressing steel	
apply.	Elastomeric coatings	
appry.	Epoxy grouts	
	Pour-back materials	
	Other, please specify:	
What specific problems with		
deterioration of CIP post-tensioned		
bridges have you encountered?	O F 1 1 P	NIA
	Open-Ended Response	NA
How have you rectified these issues?		
	Open-Ended Response	NA
Have you replaced a deck on CIP post-		
tensioned box girder or segmental	NO	NO
concrete bridge?	YES, Please describe how it was	
- Control of Straiger	performed:	
If and the second secon		
If you know of a particular PT repair for		
consideration as a case study, please		
provide some general information (for example: bridge name, location, issue		
type):		
type).	Open-Ended Response	NA

VERMONT		
Name(s)		
Title(s)		
Agency		
State/Province	VT	
Email Address(es)		
Phone Number(s)		
INTE	RVIEW QUESTION	NS
	NO	
Does your agency have post-tensioned	YES, please specify approximate	
(PT) structures in its bridge inventory?	quantity:	150
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability  Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last updated (approximately)?		27/21/2010
	Date	07/01/2010
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	AASHTO LRFD code, and PCI
	ASBI/PTI M50	AASITTO ERTD code, and FCI
	PTI M55	
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications Other, please provide a link:	In-house/DOT created specifications
Are your PT specifications very similar to or derived from another state's?	NO	
to or derived from another state s:	YES, Please specify source:	NYSDOT
	Cast-in-place segmental	Cast-in-place segmental
What type of PT structures are in your inventory? Please check all that apply.	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
	PT decks	PT decks
	PT slab bridges	PT slab bridges
	Box girders	Box girders
	Pier caps	
	Spliced girder	Spliced girder
	Other	

	VERMONT	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?	75
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	NO YES  YES, What is the level specified?	NO
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	Proprietary, submittals must go through the approved products group.
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES	NO
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	NO
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:	NO
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:	Contractor
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:	NO

VERMONT		
	NO NO	
Has your agency encountered issues requiring repair related to corrosion?	YES, Please describe issue and performed repair:	
Has your agency performed repairs to	NO NO	
PT structures due to damage by vessel/vehicle impact?	YES, Please describe issue and performed repair:	
Has your agency performed	NO NO	
repair/replacement of decks on PT bridges?	YES, Please describe issue and performed repair:	
	Member strengthening to address corrosion/impact damage Re-grouting of tendons	
	During construction	
	At a later stage when structure in-	
	service	
	NDT-aided inspection of PT system Invasive inspection of PT system	
Have your agency performed (or initiated) the following types of	Repair of pour-back (anchor block-	
maintenance, inspection or repairs	out)	
related to PT structures? Please check all	FRP wrapping	
that apply.	Injection of corrosion inhibitor	
	Crack injection	
	Repair or replacement of deck on a PT	
	superstructure	
	Internal/bonded tendon replacement	
	External/unbonded tendon	
	replacement	
	Other. Please specify:	
Does your agency have established	NO NO	
inspection procedures specific to PT bridges?	YES, Please provide a link or location where procedure can be accessed:	

VERMONT		
	Visual methods	
	Magnetic methods (i.e., magnetic flux	
	leakage)	
	Mechanical wave propagation and	
	vibration methods (i.e., acoustic	
	emission, impact echo, ultrasonic)	
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	
used in a research effort.	Direct measurement of tendon force	
	(i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography)	
	Electrochemical techniques (i.e., half-	
	cell potential)	
	Other, or not sure how to classify.	
	Please describe:	
Please select install	ASBI grouting certification	ASBI grouting certification
certifications/qualifications required by	PTI Level 1 installer	
your agency for PT installers. Please	PTI Level 2 installer	PTI Level 2 installer
check all that apply.	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response	
	NO	NO
Does your agency have grout storage requirements?	YES, Please specify guiding	
	document, provide link, or describe:	
	Contractor	
Who conducts QA? Please check all that	In-house	In-house
apply.	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	Consultant Inspection (CDI)
	o mer, prease speerry.	

	VERMONT	
Who conducts QC? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:	Contractor
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT construction details?	YES NO	NO
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents Inspection ports  Duct placement Duct splicing Heat-shrink sleeves Confinement reinforcement Segment mating during erection Match-cast joints Precast quality Deck drainage details Other. Please describe:	
Have you encountered problematic construction techniques/methods?	YES	NO
Please identify construction methods that are problematic. Please check all that apply.	Air (pressure) test Vacuum test  Deck-level vent removal/permanent vent cap placement Permanent grout cap placement Grouting/filler procedures Vacuum grouting Preparing anchorage area for blockout pour Other. Please specify.	INO .
Have you found encountered issues with any of the materials used in PT construction?	YES	NO

	VERMONT	
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	None
How have you rectified these issues?	Open-Ended Response	N/A
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

	WASHINGTON	
Name(s)		
Title(s)	State Bridge Engineer	
Agency	Washington State DOT	
State/Province	WA	
Email Address(es)	.,,,,,	
Phone Number(s)		
· ·		
INTE	RVIEW QUESTION	NS
	NO	
Does your agency have post-tensioned	YES, please specify approximate	
(PT) structures in its bridge inventory?	quantity:	180
	Lack of familiarity with post-	
	tensioned structures	
	Concerns related to quality/durability	
Why not? Please check all that apply.	Expense	
	1	
	Time consuming design/construction	
	Other, Please describe:	
	3 11101, 1 101110 110011	
When were your PT Specifications last		
updated (approximately)?		
	Date	01/01/2015
What were the reference documents used		
for updating? Please specify/explain:		
	Open-Ended Response	ASBI/PTI
	ASBI/PTI M50	11222111
	PTI M55	
What PT specifications are you using?	1111133	
Please check all that apply.	In-house/DOT created specifications	In-house/DOT created specifications
	Other, please provide a link:	in nease 201 ereated specifications
	saler, preude provide a mix.	
A we would DT on esiding diameters and a	NO	NO
Are your PT specifications very similar to or derived from another state's?	NO	NO
to of derived from another state s:	ALC DI	
	YES, Please specify source:	C v 1
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental	Precast segmental
	Cast-in-place, non-segmental	Cast-in-place, non-segmental
What type of PT structures are in your	PT decks	PT decks
inventory? Please check all that apply.	PT slab bridges	PT slab bridges
	Box girders	Box girders
	Pier caps	Pier caps
	Spliced girder	Spliced girder
	Other	

	WASHINGTON	
	WINDINI (GT OT)	
Are your PT structures designed for a	NO	NO
specific service life?	YES, What is the design service life	
	(number of years)?	
Do you specify a protection level (PL-1a	NO	NO
or PL-1b, PL-2, PL-3 as specified in	YES	
ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	
What type of PT grout do you specify for		
initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please		
describe:		pre-bagged, proprietary non-
	Open-Ended Response	segregating (like SikaGrout 300 PT)
Has your agency initiated repairs on any		
post-tensioned structures (either during	NO	
construction or while the structure is in		
service)?	YES	YES
	Cast-in-place segmental	Cast-in-place segmental
	Precast segmental  Cast-in-place, non-segmental	Cast-in-place, non-segmental
On what types of PT structures have you	PT decks	cust in place, non segmentar
performed repairs? Please check all that	PT slab bridges	
apply.	Box girders	
	Pier caps Spliced girder	
	Spliced girder Other	
Does your agency have standard or		
commonly-used plans, specifications,	NO	NO
procedures or details for PT tendon		
replacement specifically?		
	YES, Please provide a link:	
Does your agency have standard or commonly-used plans, specifications,	NO	NO
procedures or details for PT repairs?	INO	INU
	YES, Please provide a link:	
Who noufoums was also Discount at	In-house staff	
Who performs repairs? Please check all that apply.	Contractor	Contractor
тпат арргу.	Other. Please describe:	

	WASHINGTON	
	NO	
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and performed repair:	Poorly-grouted tendons requiring vacuum grouting to fill voids in the ducts.
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:	NO
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:	Bridge deck overlays on PT box girder bridges. The original deck is left in place with limited repair.
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor	During construction At a later stage when structure inservice
	Crack injection  Repair or replacement of deck on a PT superstructure  Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:	
Does your agency have established inspection procedures specific to PT bridges?	NO YES, Please provide a link or location where procedure can be accessed:	NO

	WASHINGTON	
	Visual methods	
	Magnetic methods (i.e., magnetic flux leakage)	
	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)	Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)
	Direct measurement of tendon force (i.e. gages on strands)	
	Radiation methods (i.e., x-ray	
	diffraction, radiography) Electrochemical techniques (i.e., half-cell potential)	
	Other, or not sure how to classify. Please describe:	
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification	ASBI grouting certification
	PTI Level 1 installer PTI Level 2 installer	
	F11 Level 2 Ilistaller	
	Other, please describe:	
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.		Verification of tendon profiles, stressing elongation checks, pregrouting pressure test of the tendons,
	Open-Ended Response NO	verification of grout properties.  NO
Does your agency have grout storage requirements?	YES, Please specify guiding document, provide link, or describe:	110
	Contractor	
Who conducts QA? Please check all that apply.	In-house	In-house
	Consultant inspection (CEI)	Consultant inspection (CEI)
	Other, please specify:	

	WASHINGTON	
	Contractor	Contractor
Who conducts QC? Please check all that apply.	In-house	
	Consultant inspection (CEI)	
	Other, please specify:	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response	
Have you encountered problematic PT	YES	
construction details?	No.	No
	NO	NO
	Anchorage pour-back details  Mid-tendon vents	
	Inspection ports	
	Duct placement Duct splicing	
Please identify construction details that	Heat-shrink sleeves	_
are problematic. Check all that apply, to	Confinement reinforcement	
the best of your knowledge.	Segment mating during erection	
	Match-cast joints	
	Precast quality	
	Deck drainage details	
	Other. Please describe:	
Have you encountered problematic	YES	YES
construction techniques/methods?		
_	NO	
	Air (pressure) test	
	Vacuum test	
Please identify construction methods that are problematic. Please check all that apply.	Deck-level vent removal/permanent vent cap placement	
	Permanent grout cap placement	Grouting/filler procedures
	Grouting/filler procedures Vacuum grouting	Grouting/filler procedures
	Preparing anchorage area for block-	
	out pour	
	Other. Please specify.	
Have you found encountered issues with	YES	
any of the materials used in PT construction?	NO	NO

	WASHINGTON	
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	None.
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:	NO
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response	

WISCONSIN		
	WISCONSIN	
Name(s)	g ID . I	
Title(s)	Structural Development Engineer	
Agency	WisDOT	
State/Province	WI	
Email Address(es) Phone Number(s)		
· /		
INTE	RVIEW QUESTIO	NS
	NO	
Does your agency have post-tensioned	YES, please specify approximate	
(PT) structures in its bridge inventory?	quantity:	6
	Lack of familiarity with post-	
	tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability	
why not: Flease check an that apply.	Expense	
	Time consuming design/construction	
	Other, Please describe:	
When were your PT Specifications last		
updated (approximately)?		
The state of the s	Date	01/01/2015
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	For Integral Pier Caps: -AASHTO LRFD Bridge Design Spec - AASHTO LRFD Construction Spec -1999 AASHTO Guide Spec for Design and Construction of Segmental Concrete Bridges For Wall Tiebacks: - AASHTO LRFD Bridge Design Spec - AASHTO LRFD Construction Spec - "Guide Specification for Post-Tensioning Materials, "Post-Tensioning Manual, Post Tensioning Institute "Specification for Unbonded Single Strand Tendons, "Post-Tensioning Institute "Recommendations for Prestressed Rock and Soil Anchors,"Post-Tensioning.

	WISCONSIN	
What PT specifications are you using? Please check all that apply.	ASBI/PTI M50 PTI M55	
	In-house/DOT created specifications Other, please provide a link:	In-house/DOT created specifications
Are your PT specifications very similar	NO	NO
to or derived from another state's?	YES, Please specify source:	
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place segmental Precast segmental	Cast-in-place segmental Precast segmental
	Cast-in-place, non-segmental PT decks	
	PT slab bridges Box girders	PT slab bridges Box girders
	Pier caps Spliced girder	Pier caps
	Other	Retaining wall tiebacks for soldier piles walls and sheet pile walls with anchors
Are your PT structures designed for a specific service life?	NO	
	YES, What is the design service life (number of years)?	75

	WISCONSIN	
	NO	
	YES	
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES, What is the level specified?	WisDOT specifications do not call out a specific protection level, however Integral Pier Caps and Anchored Retaining Wall Systems are generally PL-2 (Engineered grout, permanent grout cap, and an enclosed envelope for a permanent leak-light barrier). For adjacent box girders PT transversely, they are either PL1A or PL1B, depending on the grout used. Engineered premixed grouts are often used with permanent grout caps.
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response	For PT pier caps: Grouts shall be prebagged in plastic lined or coated bags, proprietary. For adjacent box girders PT transversely: Use a grout composition of 94 pounds of Type 1 cement, 5 gallons of water and 1 pound of approved plasticizer or a pre-mixed packaged non-shrink grout
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO	
On what types of PT structures have you performed repairs? Please check all that apply.	YES Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:	

WISCONSIN	
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:
Who performs repairs? Please check all that apply.	In-house staff Contractor Other. Please describe:
Has your agency encountered issues requiring repair during construction?	NO YES, Please describe issue and performed repair:
Has your agency encountered issues requiring repair related to corrosion?	NO YES, Please describe issue and performed repair:
Has your agency performed repairs to PT structures due to damage by vessel/vehicle impact?	NO YES, Please describe issue and performed repair:
Has your agency performed repair/replacement of decks on PT bridges?	NO YES, Please describe issue and performed repair:
Have your agency performed (or initiated) the following types of maintenance, inspection or repairs related to PT structures? Please check all that apply.	Member strengthening to address corrosion/impact damage Re-grouting of tendons During construction At a later stage when structure inservice  NDT-aided inspection of PT system Invasive inspection of PT system Repair of pour-back (anchor blockout) FRP wrapping Injection of corrosion inhibitor Crack injection Repair or replacement of deck on a PT superstructure
	Internal/bonded tendon replacement  External/unbonded tendon replacement  Other. Please specify:

WISCONSIN	
Does your agency have established inspection procedures specific to PT bridges?	NO NO YES, Please provide a link or location
	where procedure can be accessed:  Visual methods  Magnetic methods (i.e., magnetic flux leakage)  Mechanical wave propagation and vibration methods (i.e., acoustic emission, impact echo, ultrasonic)
Have you used any NDT methods for evaluating the post-tensioning system? Please check all that apply, including if used in a research effort.	Electromagnetic wave propagation (i.e., infrared thermography, impulse radar, ground penetrating radar)  Direct measurement of tendon force (i.e. gages on strands)  Radiation methods (i.e., x-ray diffraction, radiography)  Electrochemical techniques (i.e., half- cell potential)  Other, or not sure how to classify. Please describe:
Please select install certifications/qualifications required by your agency for PT installers. Please check all that apply.	ASBI grouting certification PTI Level 1 installer PTI Level 2 installer Other, please describe:
Please describe your QA/QC procedures during construction. For example, inspections prior to casting, stressing elongation checks, pre-duct fill pressure/vacuum checks, post-duct fill grout quality checks, certification of (e.g. ASBI-certified) PT inspectors, mud balance, or flow meter? Please provide a link, if possible.	Open-Ended Response
Does your agency have grout storage requirements?	NO YES, Please specify guiding document, provide link, or describe:
Who conducts QA? Please check all that apply.	Contractor In-house Consultant inspection (CEI) Other, please specify:

WISCONSIN	
Contractor	
Who conducts QC? Please check all that apply.	In-house
	Consultant inspection (CEI)
	Other, please specify:
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response
Have you encountered problematic PT	YES
construction details?	
construction details:	NO
	Anchorage pour-back details
	Mid-tendon vents
	Inspection ports
	Duct placement
	Duct splicing
Please identify construction details that	Heat-shrink sleeves
are problematic. Check all that apply, to	Confinement reinforcement
the best of your knowledge.	Segment mating during erection
	Match-cast joints
	Precast quality
	Deck drainage details
	Other. Please describe:
Have you encountered problematic construction techniques/methods?	YES NO
	Air (pressure) test
	Vacuum test
Please identify construction methods that	Deck-level vent removal/permanent
are problematic. Please check all that	Permanent grout cap placement
apply.	Grouting/filler procedures
	Vacuum grouting
	Preparing anchorage area for block-
	out pour
	Other. Please specify.
Have you found encountered issues with	YES
any of the materials used in PT construction?	NO

	WISCONSIN	
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non-	
	cementitious, wax, grease, etc.)	
	Prestressing steel Elastomeric coatings	
	Epoxy grouts	
	Pour-back materials Other, please specify:	
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response	
How have you rectified these issues?	Open-Ended Response	
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was	
concrete bridge.	performed:	
If you know of a particular PT repair for consideration as a case study, please provide some general information (for		
example: bridge name, location, issue type):	Open-Ended Response	I'm not aware of any PT repair cases.

WYOMING		
Name(s)		
Title(s)		
Agency		
State/Province	WY	
Email Address(es)		
Phone Number(s)		
INTE	CRVIEW QUESTIONS	
	NO NO	
Does your agency have post-tensioned (PT) structures in its bridge inventory?	YES, please specify approximate quantity:	
	Lack of familiarity with post- tensioned structures	
Why not? Please check all that apply.	Concerns related to quality/durability	
The second of th	Expense Expense	
	Time consuming design/construction Other, Please describe:	
When were your PT Specifications last updated (approximately)?		
updated (approximately):	Date	
What were the reference documents used for updating? Please specify/explain:	Open-Ended Response	
	ASBI/PTI M50	
	PTI M55	
What PT specifications are you using? Please check all that apply.	In-house/DOT created specifications	
	Other, please provide a link:	
Are your PT specifications very similar	NO	
to or derived from another state's?	YES, Please specify source:	
	Cast-in-place segmental	
	Precast segmental	
What type of PT structures are in your inventory? Please check all that apply.	Cast-in-place, non-segmental	
	PT decks	
	PT slab bridges	
	Box girders	
	Pier caps	
	Spliced girder	
	Other	

WYOMING	
Are your PT structures designed for a specific service life?	NO YES, What is the design service life (number of years)?
Do you specify a protection level (PL-1a or PL-1b, PL-2, PL-3 as specified in ASBI/PTI M50) for your PT structures?	YES YES, What is the level specified?
What type of PT grout do you specify for initial construction (i.e., "pre-bagged, proprietary", "cement/water")? Please describe:	Open-Ended Response
Has your agency initiated repairs on any post-tensioned structures (either during construction or while the structure is in service)?	NO YES
On what types of PT structures have you performed repairs? Please check all that apply.	Cast-in-place segmental Precast segmental Cast-in-place, non-segmental PT decks PT slab bridges Box girders Pier caps Spliced girder Other
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT tendon replacement specifically?	NO YES, Please provide a link:
Does your agency have standard or commonly-used plans, specifications, procedures or details for PT repairs?	NO YES, Please provide a link:

WYOMING	
Who performs repairs? Please check all	In-house staff
that apply.	Contractor
	Other. Please describe:
Use your aganay anacuntored issues	NO
Has your agency encountered issues requiring repair during construction?	YES, Please describe issue and
	performed repair:
Has your agency encountered issues	NO
requiring repair related to corrosion?	YES, Please describe issue and
requiring repair related to corrosion:	performed repair:
Has your agency performed repairs to	NO
PT structures due to damage by	YES, Please describe issue and
vessel/vehicle impact?	performed repair:
Has your agency performed	NO
repair/replacement of decks on PT	YES, Please describe issue and
bridges?	performed repair:
	Member strengthening to address
	corrosion/impact damage
	Re-grouting of tendons
	During construction
	At a later stage when structure in-
	service
	NDT-aided inspection of PT system
Have your agency performed (or	Invasive inspection of PT system
initiated) the following types of	Repair of pour-back (anchor block-
maintenance, inspection or repairs	out)
related to PT structures? Please check all	11 0
that apply.	Injection of corrosion inhibitor
	Crack injection
	Repair or replacement of deck on a PT
	superstructure
	Internal/bonded tendon replacement
	External/unbonded tendon
	replacement
	Other. Please specify:
Does your agency have established	NO
inspection procedures specific to PT bridges?	YES, Please provide a link or location
	where procedure can be accessed:

WYOMING	
	Visual methods
	Magnetic methods (i.e., magnetic flux
	leakage)
	Mechanical wave propagation and
	vibration methods (i.e., acoustic
	emission, impact echo, ultrasonic)
	ermonon, imparo cono, un accino)
Have you used any NDT methods for	Electromagnetic wave propagation
evaluating the post-tensioning system?	(i.e., infrared thermography, impulse
Please check all that apply, including if	radar, ground penetrating radar)
used in a research effort.	Direct measurement of tendon force
used in a research crioic.	(i.e. gages on strands)
	Radiation methods (i.e., x-ray
	diffraction, radiography)
	Electrochemical techniques (i.e., half-
	cell potential)
	• /
	Other, or not sure how to classify.
	Please describe:
Please select install	ASBI grouting certification
certifications/qualifications required by	PTI Level 1 installer
your agency for PT installers. Please	PTI Level 2 installer
check all that apply.	Other, please describe:
	other, please describe.
Please describe your QA/QC procedures	
during construction. For example,	
inspections prior to casting, stressing	
elongation checks, pre-duct fill	
pressure/vacuum checks, post-duct fill	
grout quality checks, certification of (e.g.	
ASBI-certified) PT inspectors, mud	
balance, or flow meter? Please provide a	
link, if possible.	
	Open-Ended Response
D 1	NO
Does your agency have grout storage	YES, Please specify guiding
requirements?	document, provide link, or describe:
	Contractor
Who conducts QA? Please check all that apply.	In-house
	Consultant inspection (CEI)
	Other, please specify:
	Contractor
Who conducts QC? Please check all that apply.	In-house
	Consultant inspection (CEI)
	Other, please specify:
	omer, prease specify.

WYOMING	
Please identify any preferred or "best practice" construction details. (Details which perform as intended and are worthy of note.) Please provide a link, if possible.	Open-Ended Response
Have you encountered problematic PT construction details?	YES NO
Please identify construction details that are problematic. Check all that apply, to the best of your knowledge.	Anchorage pour-back details  Mid-tendon vents  Inspection ports  Duct placement  Duct splicing  Heat-shrink sleeves  Confinement reinforcement  Segment mating during erection  Match-cast joints  Precast quality  Deck drainage details  Other. Please describe:
Have you encountered problematic construction techniques/methods?	YES NO
Please identify construction methods that are problematic. Please check all that apply.	Air (pressure) test Vacuum test  Deck-level vent removal/permanent
Have you found encountered issues with any of the materials used in PT construction?	YES NO

WYOMING	
Please identify materials which have been problematic. Please check all that apply.	Grout filler material Flexible filler material (non- cementitious, wax, grease, etc.) Prestressing steel Elastomeric coatings Epoxy grouts Pour-back materials Other, please specify:
What specific problems with deterioration of CIP post-tensioned bridges have you encountered?	Open-Ended Response
How have you rectified these issues?	Open-Ended Response
Have you replaced a deck on CIP post- tensioned box girder or segmental concrete bridge?	NO YES, Please describe how it was performed:
If you know of a particular PT repair for consideration as a case study, please provide some general information (for example: bridge name, location, issue type):	Open-Ended Response NA