

DRILLED SHAFT INSPECTOR'S CHECKLIST

The following is a general checklist to follow when constructing a drilled shaft. The answer to each of these questions should be "YES" or "NA" unless plans, specifications or specific approval has been given otherwise. CONSULT WITH RESPONSIBLE ENGINEER FOR YOUR SPECIFIC PROJECT RESPONSIBILITIES.

Contractor And Equipment Arrive on Site	YES	NO	NA
1. Has the Contractor submitted a Drilled Shaft Installation Plan (xxx.12, Submittals)?			
2. Has the Drilled Shaft Installation Plan been approved?			
3. Does the Contractor have an approved concrete mix design (xxx.60, Concrete Placement)?			
4. Has the Contractor run the required Trial Mix and slump loss test for their concrete mix design (xxx.60, Concrete Placement)?			
5. If concreting is estimated to take over two hours, has the Contractor performed a satisfactory slump loss test for the extended time period in accordance with xxx.60, Concrete Placement)?			
6. If the Contractor proposed a blended mineral-polymer or polymer slurry, do they have an approved Slurry Management Plan (xxx.38, Slurry)?			
7. Is the Contractor prepared to take soil samples or rock cores on the bottom of the shaft in accordance with xxx.35.5, Exploration (Shaft Excavation)?			
8. Has the Contractor met the requirements of xxx.30.1, Protection of Existing Structures?			
9. Has the site preparation been completed for footing in accordance with xxx.30.3, Construction Sequence?			
10. If a cofferdam is required, does the Contractor have a qualified diver and safety diver for inspections in accordance with xxx.35, Excavations?			
11. Does the Contractor have all the equipment and tools shown in the Drilled Shaft Installation Plan?			
12. If casing is to be used, is it the right size in accordance with xxx.36, Casings?			
13. If the Contractor plans to use a manufactured slurry, do they have the proper equipment to mix it?			
14. Is a desander required (xxx.38, Slurry)?			
15. If a desander is required, does the Contractor have it on site and operational?			
16. Does the Contractor's tremie meet the requirements of xxx.61, Tremies?			
17. Do you have all the required drilled shaft forms that need to be filled out during shaft construction?			
18. Do you understand all of the forms (if not contact the responsible Engineer for assistance)?			
Trial Shaft			
19. Is the trial shaft positioned away from the production shafts or as specified in the contract documents (xxx.31 Trial Shaft Installation)?			
20. Has the Contractor performed a successful test hole in accordance with xxx.13, Trial Shaft Installation?			
21. Did the Contractor cut off the shaft 2 feet (0.6 m) below grade in accordance with with xxx.13, Trial Shaft Installation?			
22. Has the Contractor revised the technique and equipment to (and the revision approved) to successfully construct a shaft?			
Shaft Excavation & Cleaning			
23. Is the shaft being constructed in the correct location and within tolerance (xxx.41, Construction Tolerances)?			
24. Does the Contractor have a benchmark so the shaft can be constructed and inspected to the proper elevations?			
25. If core holes are required, has the Contractor taken them in accordance with xxx.35.5, Exploration (Shaft Excavation)?			
26. If a core hole was performed, was the Rock Core form completed and did the Contractor maintain a log, (xxx.35.5, Exploration (Shaft Excavation))?			
27. If the Contractor is using slurry, can they perform tests and report results in accordance with xxx.38, Slurry?			
28. Is the slurry level being properly maintained in accordance with xxx.38, Slurry?			
29. Are the proper number and types of tests being performed on the slurry in accordance with xxx.38, Slurry?			
30. Are you filling out the Soil and Rock Excavation forms?			
31. If permanent casing is being used, does it meet xxx.36 & 36.2, Casing?			
32. If temporary casing is being used, does it meet xxx.36.1, Temporary Casing?			
33. If bellling is required, does it meet the requirements of xxx.35, Excavations?			
34. Is the Contractor maintaining an excavation log in accordance with xxx.35, Excavations?			
35. Is the shaft within allowable vertical alignment tolerances(xxx.41, Construction Tolerances)?			
36. Is the shaft of proper depth?			
37. Does the shaft excavation time meet the specified time limit (xxx.34 Excavation and Drilling Equipment)?			
38. If the shaft required over-reaming, was it performed in accordance with xxx.34 Excavation and Drilling Equipment?			
39. Does the shaft bottom meet the requirements of xxx.40 Excavation Inspection?			
40. Did you complete the Shaft Inspection form?			

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Reinforcing Cage	YES	NO	NA
41. Is the rebar the correct sizes and configured in accordance with the project plans?			
42. Is the rebar properly tied in accordance with xxx.50, Reinforcing Steel Cage Construction and Placement?			
43. Does the Contractor have the proper spacers for the steel cage in accordance with xxx.50, Reinforcing Steel Cage Construction and Placement?			
44. Does the Contractor have the proper amount of spacers for the steel cage in accordance with xxx.50, Reinforcing Steel Cage Construction and Placement?			
45. If the steel cage was spliced, was it done in accordance with contract documents?			
46. Is the steel cage secured from settling and from floating (during concrete placement steel cages sometimes rise with the placement of the concrete) (xxx.50, Reinforcing Steel Cage Construction and Placement)?			
47. Is the top of the steel cage at the proper elevation in accordance with xxx.41, Construction Tolerances?			
Concreting Operations			
48. prior to concrete placement, has the slurry (both manufactured and natural) been tested in accordance with xxx.38, Slurry?			
49. If required, was the casing removed in accordance with xxx.36.1, Temporary Casing?			
50. Was the discharge end of the tremie maintained in the concrete mass with proper concrete head above it (xxx.61, Tremies)?			
51. If free-fall placement (dry shaft construction only), was concrete placed in accordance with xxx.60, Concrete Placement?			
52. Did concrete placement occur within the specified time limit (xxx.60, Concrete Placement)?			
53. Are you filling out the Concrete Placement and Volume forms?			
54. When placing concrete, did the Contractor overflow the shaft until good concrete flowed (xxx.60, Concrete Placement)?			
55. Were concrete acceptance tests performed as required?			
Post Installation			
56. If shaft is constructed in open water, is the shaft protected for seven days or until the concrete reaches a minimum compressive strength of 2500 psi (17 Mpa) in accordance with xxx.36, Casings?			
57. Is all casing removed to the proper elevation in accordance with xxx.36.2, Permanent Casing?			
58. If required, has the Contractor complied with xxx.64, Nondestructive Evaluation?			
59. Is the shaft within the applicable construction tolerances (xxx.41, Construction Tolerances)?			
60. Has the Drilled Shaft Log been completed?			
61. Have you documented the pay items?			
Notes/Comments			

DRILLED SHAFT CONCRETE VOLUMES

Project Name _____	Page _____ of _____
FIN Project No. _____	Pier No. _____
Contractor _____	Shaft No. _____
Inspected By _____ Date _____	Station _____
Approved By _____ Date _____	Offset _____

Concrete Curve

Depth (ft) (m)										

Concrete Volume (cy) (m³)

Volume Delivered	VD _____ cy/m ³	Cross-Sec. Area of Rebar, Telltales, etc. AR = [(#bars)(As) + (#telltales)(At)]	AR = _____ in ² /m ²
Volume in Lines	VL _____ cy/m ³	Rock Socket Length	RSL = _____ ft/m
Wastage	VW _____ cy/m ³	Est. Rock Socket Volume From Curve	VRS = _____ cy/m ³
Volume Placed = VD-VL-VW	VP _____ cy/m ³	Actual Rock Socket Volume VRS + (AR)(RSL)/(3888) - VL	VRS* = _____ cy
Theoretical Volume	VT _____ cy/m ³	VRS + (AR)(RSL) - VL	VRS* = _____ m ³
Overpour, VP-VT	OP _____ cy/m ³	Average Rock Socket Diameter SQRT[(4950)VSL*/RSL]	RSD = _____ in
		SQRT[(1.273)VSL*/RSL]	RSD = _____ m

DRILLED SHAFT LOG

Project Name _____	Page _____ of _____
FIN Project No. _____	Pier No. _____
Contractor _____	Shaft No. _____
Inspected By _____ Date _____	Station _____
Approved By _____ Date _____	Offset _____

<p style="text-align: center;">Casing Information (if applicable)</p> ID (in)/(mm) _____ Type _____ OD (in)/(mm) _____ Top Elev. _____ Length (ft)/(m) _____ Bot. Elev. _____	Graphic Drilled Shaft Profile	<p style="text-align: center;">Time Information</p> Date Opened _____ Date Cased _____ Date Poured _____
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Depth (ft)/(m)	Time		Elevation (ft)/(m)	Soil Description & Notes			
	in	out				Elevations (ft)/(m)	
					<div style="border: 1px solid black; width: 100%; height: 100%;"></div>	Reference Elev. _____	
						Ground Surface Elev. _____	
						Water Table Elev. _____	
						Cutoff Elev. _____	
						Tip Elev. _____	
						Dimensions	
						Soil Auger Dia. _____	
						Rock Socket Dia. _____	
						Rock Socket Length _____	
						Overburd. Shaft Dia. _____	
						Overburd. Shaft Lgth. _____	
						Constrd. Shaft Lgth. _____	
						Drilling Mud	
						Type _____	
						Test Results _____	
						Meet Specs. <input type="radio"/> Yes <input type="radio"/> No	
						Concrete Volume	
						Theoretical (cy)/(m ³) _____	
						Actual (cy)/(m ³) _____	
						Ratio (A/T) _____	
						Legend	
						(Indicate the following in the graphic drilled shaft profile)	
						TOC Top of Casing	
						TOG Top of Ground	
						TOS Top of Shaft	
					TOR Top of Rock		
					BOC Bottom of Casing		
					BOS Bottom of Shaft		
					Soil/Rock Types		
					<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 15px; margin-right: 5px;"></div> _____ </div>		
					<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 15px; margin-right: 5px;"></div> _____ </div>		
					<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 15px; margin-right: 5px;"></div> _____ </div>		
					<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 15px; margin-right: 5px;"></div> _____ </div>		
					<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 30px; height: 15px; margin-right: 5px;"></div> _____ </div>		
					<div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; margin-right: 5px; position: relative;"> ▽ </div> Water Table </div>		

DRILLED SHAFT INSPECTION

Project Name _____	Page _____ of _____
FIN Project No. _____	Pier No. _____
Contractor _____	Shaft No. _____
Inspected By _____	Date _____
Approved By _____	Date _____
	Station _____
	Offset _____

Type of Drilling Fluid _____	Rebar Cage: _____
Drilling Fluid Check _____	Proper # Vert. Bars _____
Bottom Cleanout Method _____	Proper # Horz. Bars _____
Time/Date Final Cleanout _____	Side Standoffs _____
Shaft Bottom Elevation _____	Bottom Standoffs _____
Est. Shaft Bottom Diameter _____	Epoxy Conditions _____
Shaft Plumbness Check _____	Ties & Connections _____

Inspected By: _____ Visual _____ Sounding	12:00	Job North At _____
Time Started _____		
Time Finished _____		
9:00		3:00
Comments _____ _____ _____	6:00	Recommendations _____ _____ _____

Results: _____ Satisfactory	Given to _____	verbal/written	date _____/_____/_____
_____ Unsatisfactory	by _____	time _____	

INSPECTOR'S "TOOLS" CHECKLIST

Approved Job Information

- Project Plans & Specifications
With Revisions
- Special Provisions & Technical
Special Provisions
- Drilled Shaft Installation Plan

References

- Standard Specifications
- Drilled Shaft Inspector's
Manual (Local Department)
- Drilled Shaft Inspector's
Qualification Course Manual
(NHI #132070)

Testing Equipment

- Sampler
- Sand Content Testing
Equipment
- Mud Density Test Equipment
- Viscosity Test Equipment

Blank Forms

- Drilled Shaft Soil/Rock Excavation Log
- Drilled Shaft Rock Core Log
- Drilled Shaft Inspection Log
- Concrete Placement Log
- Concrete Volume Form
- Drilled Shaft Log
- Drilled Shaft Construction & Pay Summary

Daily Essentials

- Hard Hat
- Boots
- Ear & Eye Protection
- Pen / Pencil (with spare)
- 12-Foot Tape (Preferably 25')
- 150-Foot Tape
- Builders Square
- Life or Reflective Jacket
- Watch
- Calculator
- Camera
- Scale
- Level
- Weighted 100-Foot Tape
- Plumb Bob

DRILLED SHAFT CONSTRUCTION & PAY SUMMARY

Project Name _____	Page _____ of _____
FIN Project No. _____	Pier No. _____
Contractor _____	Shaft No. _____
Inspected By _____ Date _____	Station _____
Approved By _____ Date _____	Offset _____

Type of Construction _____ Casing _____ None
 _____ Dry _____ Wet/Drill mud only _____ Removed
 _____ Wet/Casing only _____ Wet/Drill mud and casing _____ Permanent

Notes: _____

Construction Activity	Time	Date mm/dd/yy	Shaft Details	Plan	Built
Set Casing	_____	_____	Shaft Top El. ST	_____	_____
Begin Excavation (Below Casing)	_____	_____	Casing Top El. CT	_____	_____
Beg. Soil Excav.	_____	_____	Water Table El. WT	_____	_____
Fin. Soil Excav.	_____	_____	Perm. Casing ID CID	_____	_____
Beg. Rock Excav.	_____	_____	Perm. Casing OD COD	_____	_____
Fin. Rock Excav.	_____	_____	Ground Surf. El. GS	_____	_____
Rock Core Taken	_____	_____	Casing Bot. El. CB	_____	_____
Overream	_____	_____	Shaft Diameter SD	_____	_____
Init. Inspection	_____	_____	Top of Rock El. RT	_____	_____
Fin. Inspection	_____	_____	Rk. Core Top El. RCT	_____	_____
Beg. Concrete Pl.	_____	_____	Rock Core Dia. RCD	_____	_____
Fin. Concrete Pl.	_____	_____	Rock Socket Dia. RD	_____	_____
Constr. Complete	_____	_____	Overream Top El. OT	_____	_____
_____	_____	_____	Overream Bot. El. OB	_____	_____
_____	_____	_____	Shaft Bottom El. SB	_____	_____
_____	_____	_____	Rk Core Bot. El. RCB	_____	_____

	Length Provided (ft)/(m)	Length Adjustment (ft)/(m)	Pay Length (ft)/(m)	Notes
Permanent Casing	CT-CB	_____	_____	_____
Soil Excavation	GS-RT	_____	_____	_____
Rock Excavation	RT-SB	_____	_____	_____
Extra Depth Excav. (SB _{plan} - SB _{built})		_____	_____	_____
Overream Length	OT-OB	_____	_____	_____
Drilled Shaft Length	ST-SB	_____	_____	_____
Rock Core Length	RCT-RCB	_____	_____	_____
_____		_____	_____	_____
_____		_____	_____	_____

Adjustments
 Soil Excavation = (GS - RT) x (SB_{plan} - SB_{built}) / (SB_{plan}) = _____
 Rock Excavation = (RT - SB) x (RD_{plan} - RD_{built}) / (RD_{plan}) = _____
 Drilled Shaft Length = Excavation Adjustments + Any Other Adjustments

PLANS AND SPECIFICATIONS CHECKLIST

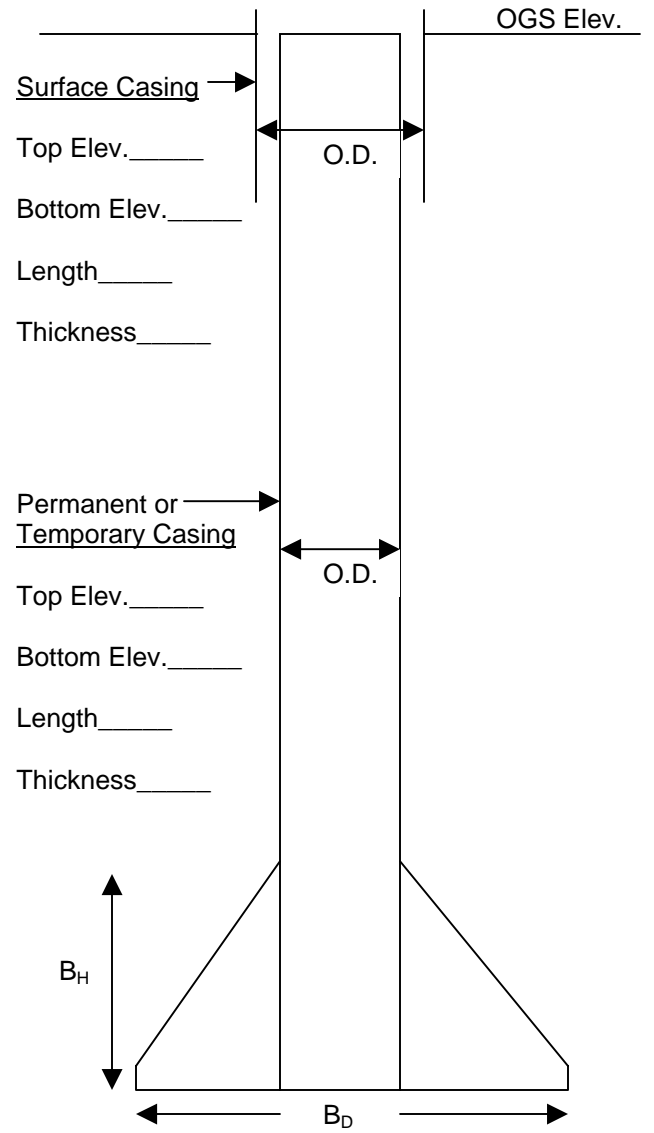
The Inspector needs to be able to locate the following in the Plans and Specifications and be familiar with them before the job commences. **These documents should be with you at the job site and all times for reference.**

YES	NO	PLANS	
		Revisions	
		Key Sheets	
		Construction Estimate Sheet	
		Plan/Profile Sheets	
		Traffic Control Plans	
		Drainage Plans	
		Utility Adjustments	
YES	NO	STRUCTURES PLANS	
		General Notes	
		Report of Core Borings	
		Foundation Layout	
		Details	
		Bridge Hydraulic Sheet	
YES	NO	SPECIFICATIONS	
		Technical Special Provisions	
		Standard Specifications	
		Supplemental Specs	
		Drilled Shaft Installation Plan	

DRILLED SHAFT SOIL FIELD RECORD

Project Name _____	Page _____ of _____
FIN Project No. _____	Pier No. _____
Contractor _____	Shaft No. _____

Date Excavation Started	Finished	
Date Bottom Observed		
Date Concrete Placed		
	DESIGN	AS-BUILT
Station		
Offset		
Top Elevation		
Bottom Elevation		
Shaft Diameter		
Shaft Length		
Bell Diameter, B _D		
Bell Height, B _H		
Plumbness		
Design Capacity		
Observed Groundwater Elevation		
Remarks:		



Date	Time	Depth	Soil or Rock Description	Tool	Observations

SUMMARY OF DRILLED SHAFT INSTALLATION PLAN

a. Name of Drilled Shaft Superintendent _____ Experience _____ _____			FHWA Pub. IF-99-025 xxx.12 (a)
b. EQUIPMENT	MANUFACTURER	MODEL	SIZE
Drill Rig			
Crane			
Augers			
Casing			
Bailing Bucket			
Final Cleaning Equipment			
Desanding			
Slurry Pump			
Core Sampling Equipment			
Concrete Pump			
c. Sequence of construction: How many crew _____ How many shafts _____ How many bents or shaft groups _____			
d. Details of shaft excavation methods:			
e. Details of slurry: Type _____ Method to mix/circulate _____ Desand _____ Testing _____ Name of lab _____			
f. Details of method to clean shafts after initial excavation:			
g. Details of shaft reinforcement:			
h. Details of concrete placement procedures: Concrete or pump tremie _____ Initial placement _____ Raising during placement _____ Overfilling shaft _____ Provisions to ensure final shaft cutoff elevations:			
i. Details of casing removal:			
1. Required submittals: Shaft drawings _____ Concrete mix design _____			
2. Details of Load Test: Equipment _____ Procedure _____ Calibration _____			
3. Prevention of displacement of casing/shaft during placement Compaction of fill _____ Method _____ Equipment _____			
4. Environmental control procedures to prevent loss of slurry or concrete into waterways:			
5. Other information:			