

APPENDIX F – BORING LOGS



100 YEARS

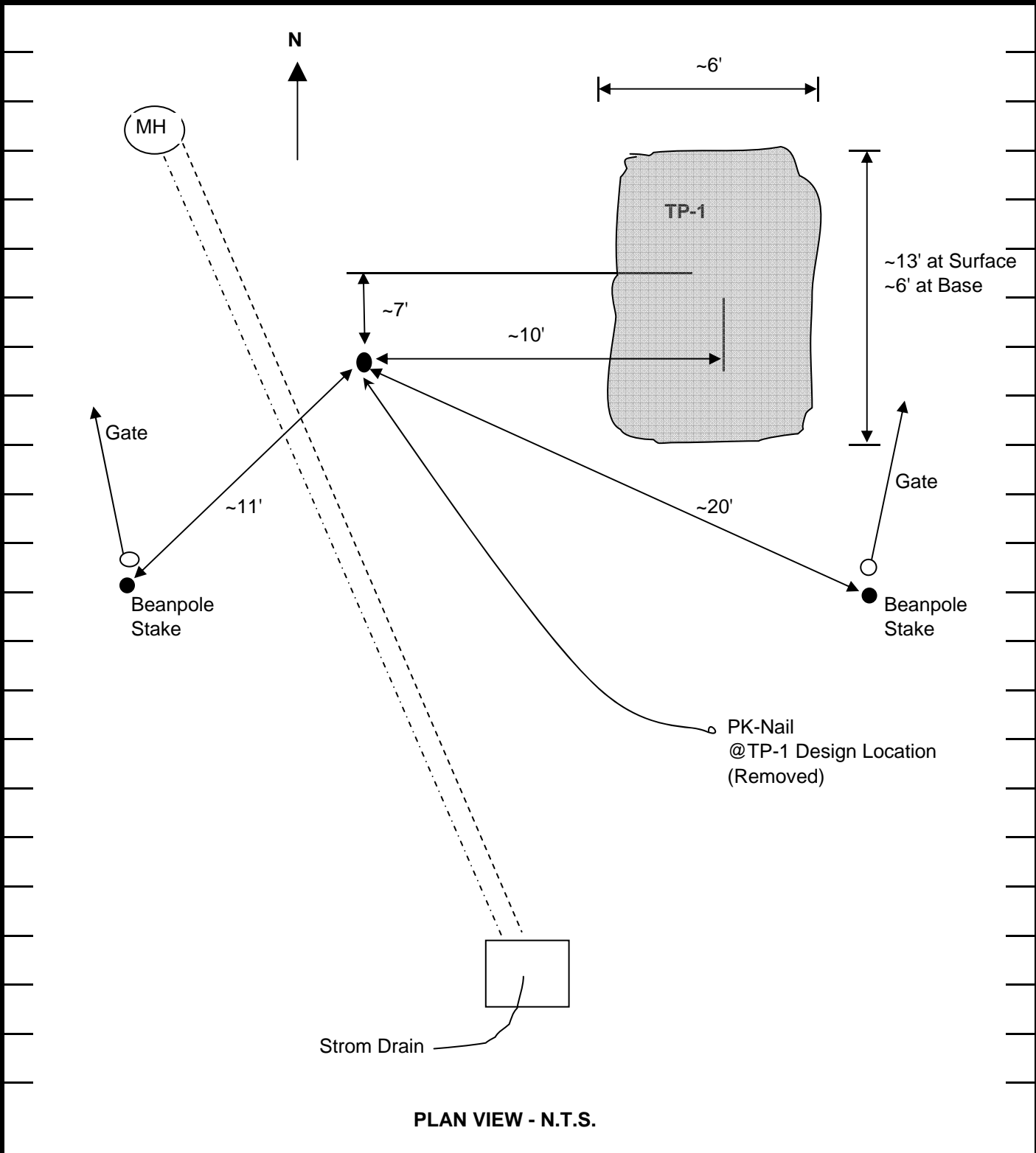
TEST PIT LOG

TEST PIT NUMBER: TP - 1

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~10' E & ~7' N of Design Location
As-Built Coordinates: N: 3128936 E: 813617
Station: Offset:
Grd. Surface Elevation (Project Datum): 55.5
Date: 12-15-09 **Time:** 07:30-09:45
Completion Depth: 10.5'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 1

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~10' E & ~7' N of Design Location
As-Built Coordinates: N: 3128936 E: 813617
Station: Offset:
Grd. Surface Elevation (Project Datum): 55.5
Date: 12-15-09 **Time:** 07:30-09:45
Completion Depth: 11'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	
	Grd. Surface			
0'	0'-0.5' See Below	G-1	sand S	B
1'	0.5'-5.5' Light brown F-C sand trace F-M-C gravel trace cobble trace cobble-size asphalt (FILL)	G-2	sand (artifactual) S-ART	A
2'				
3'				
4'				
5'	5.5' - 6' See Below	G-3	sand S	A
6'	6' - 7' Light orange/brown F sand little silt	G-4	sand S	A
7'	7' - 8' Light yellow/brown F sand trace-little silt	G-5	sand S	A
8'	8' - 11' Light yellow/brown F sand some silt	G-6	sandy loam SL	C
9'				

12'

13' 0'-0.5' Dark gray/brown F-M-C gravel some F-C sand trace silt (FILL)

14' 5.5' - 6' Dark brown F sand some silt trace roots

15' At 8' 6-inch dark reddish-brown stained transition zone with ~40% (F-M-C gravel and cobbles)

16'

17'

18' NOTES:

1. All soils moist with no seeping, flowing or standing water.
 Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.

19' 2. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

20' **PROFILE VIEW**



100 YEARS

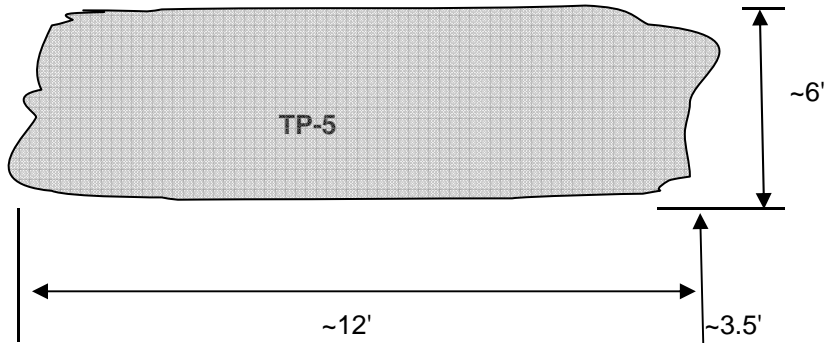
TEST PIT LOG

TEST PIT NUMBER: TP - 5

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~6' W & ~6.5' N of Design Location
As-Built Coordinates: N: 3131837 E: 815472
Station: Offset:
Grd. Surface Elevation (Project Datum): 44.3
Date: 12-15-09 **Time:** 09:45-12:00
Completion Depth: 10.5'



TP-5 Staked-Design Location
(Stake Left In Place)

PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 5

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~6' W & ~6.5' N of Design Location
As-Built Coordinates: N: 3131837 E: 815472
Station: **Offset:**
Grd. Surface Elevation (Project Datum): 43.3
Date: 12-15-09 **Time:** 09:45-12:00
Completion Depth: 10.5'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0'-1' Dark brown silt some F sand little detritus, little roots	G-1	silt loam - herbaceous, woody SIL-HB-WD	B
1'	1' - 1.5' See Below	G-2	loamy sand LS	B
2'	1.5'-5' Light brown F sand trace silt	G-3	sand S	B
3'				
4'	5' - 5.5' See Below	G-4	silt loam SIL	C
5'				
6'	5.5' - 10' Light brown C-F sand and C-M-F gravel trace silt trace cobbles	G-5	sand (very artificial) very paragravelly S-ARTV-PGRV	A
7'				
8'	8.5' - 10.5' 40% cobbles, 20 % boulders, (40% light brown C-F sand and C-M-F gravel trace silt - same as G-5)		sand (extremely artificial) very paracobbly, parabouldery, paragravelly S-ARTX-PCBV-PBY-PGR	
9'				
10'	1'-1.5' Light orange/brown F sand little silt			
11'	5' - 5.5' Mottled light gray/brown silt little-some F sand little clay			

NOTES:

- All soils very moist upon excavation.
- Seeping at 5 feet (above cohesive G-4 layer) and seeping/flowing through sand and gravel (below G-4 layer) (mostly from about 7.5 to 8.5 feet at SW corner). Seepage/flow allowed to fill excavation up to ~9 feet. Level appeared to become relatively stable at around 9 feet although had appearance to possible rise as high at 8.5 to 8 feet if seepage allowed to continued for an extended interval.
- Estimated depth to Seasonal High Groundwater at 8 feet.
- Below 10.5 feet is hard - possibly bedrock or heavy boulder content.
- Top of ground surface approx. 1 foot below surface at design-staked location.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

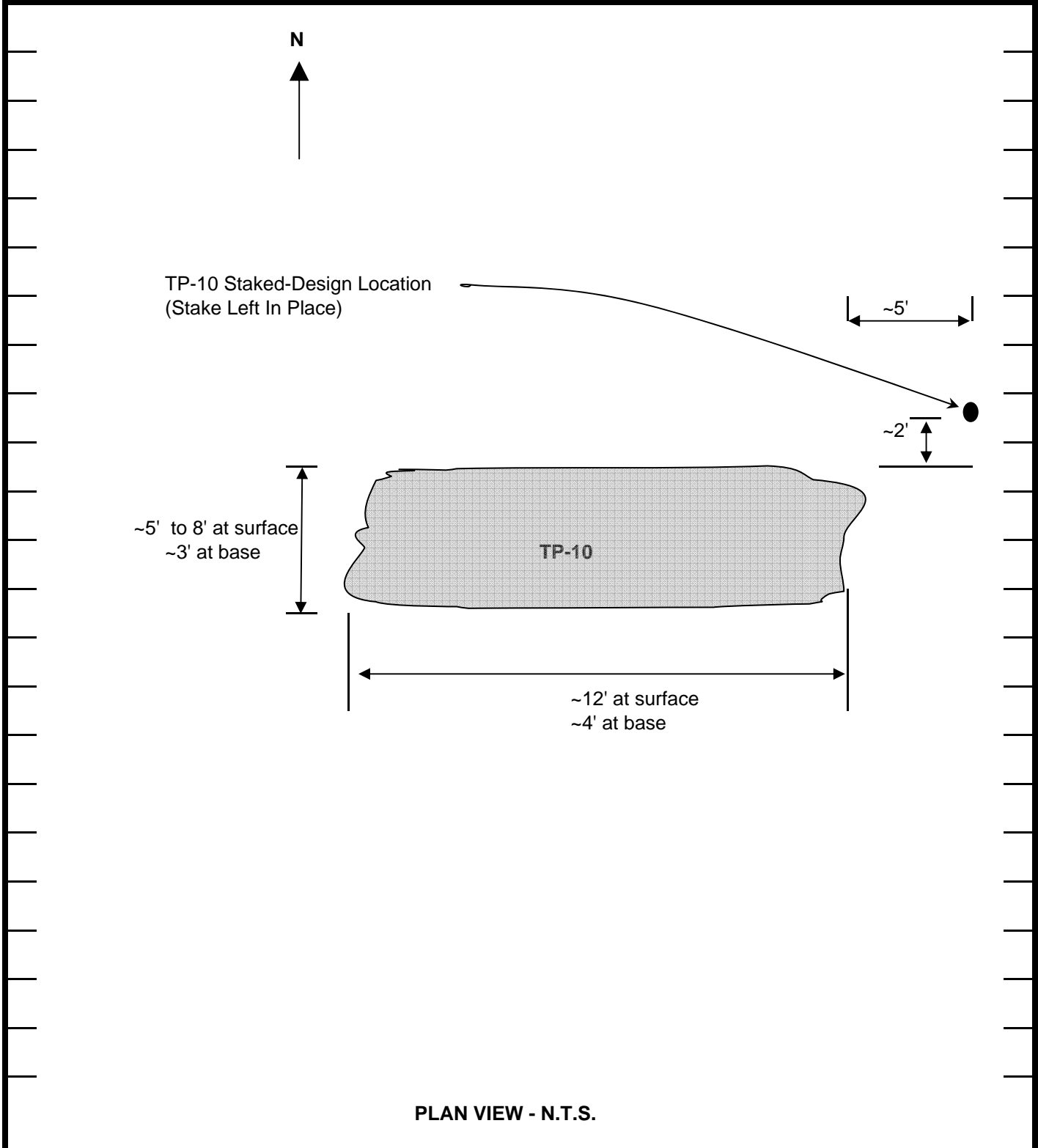
TEST PIT LOG

TEST PIT NUMBER: TP - 10

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~11' W & ~5' N of Design Location
As-Built Coordinates: N: 3133610 E: 816589
Station: Offset:
Grd. Surface Elevation (Project Datum): 47.9
Date: 12-15-09 **Time:** 12:00 - 14:00
Completion Depth: 11'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 10

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~11' W & ~5' N of Design Location
As-Built Coordinates: N: 3133610 E: 816589
Station: Offset:
Grd. Surface Elevation (Project Datum): 47.9
Date: 12-15-09 **Time:** 12:00 - 14:00
Completion Depth: 11'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	
	Grd. Surface			
0'	Grd. Surface			
0'-1'	Dark brown moist silt little F-C sand little detritus, little roots	G-1	silt loam - grassy SIL-GS	B
1'	1' - 1.5'	G-2	sand S	A
2'	1.5'-5.5' Light brown moist C-F sand trace silt	G-3	sand S	A
3'				
4'				
5'	5.5' - 7.5' Light olive-gray clay and silt trace F-C sand, trace F-M-C gravel	G-4	silty clay SIC	D
6'				
7'	7.5' - 11' Light gray silt and F sand	G-5	sandy loam SL	C
8'				
9'				
10'				

11'
12'

13' 1'-1.5' Light brown F-C sand

14'

15'

16' NOTES:

17' 1. All soils very moist upon excavation.

18' 2. Seeping/flowing at 5.5 feet causing excavation to fill up to 5.5 feet while piping G-3 material and causing cave-in of the excavation walls.

19' Estimated depth to Seasonal High Groundwater at 5.5 feet.

20' 3. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

TEST PIT LOG

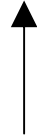
TEST PIT NUMBER: TP - 3

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

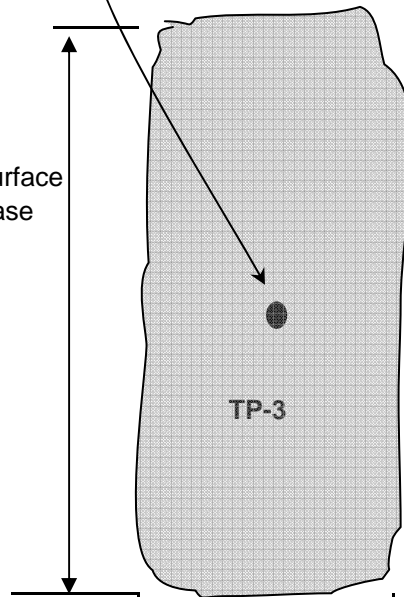
Location: ~0' E & ~0' N of Design Location
As-Built Coordinates: N: 3130668 E: 814717
Station: Offset:
Grd. Surface Elevation (Project Datum): 37.0
Date: 12-15-09 **Time:** 14:00 - 15:00
Completion Depth: 4'

N



TP-3 Staked-Design Location
(Stake Returned to Approx. Design Location)

~14' at surface
~10' at base



TP-3

~5' at surface
~3' at base

PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 3

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~0' N of Design Location
As-Built Coordinates: N: 3130668 E: 814717
Station: Offset:
Grd. Surface Elevation (Project Datum): 37.0
Date: 12-15-09 **Time:** 14:00 - 15:00
Completion Depth: 4'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	
	Grd. Surface			
0'	0' - 0.5' See Below	G-1	silt loam, herbaceous SIL-HB	B
1'	0.5' - 2' Light brown moist F-C sand, some F-M-C gravel, trace cobbles	G-2	sand (artifactual) paragravelly S-ART-PGR	A
2'	2' - 4' Rock fragments (cobble/boulder size), some soil matrix (light olive-gray silt and F sand trace, little C-M-F gravel, trace C sand) (moist)	G-3	sand (ext. artifactual) very paracobbly, very parabouldery, paragravelly S-ARTX-PCBV-PBYV-PGR	A

Refusal - Rock surface sloping ~1 foot over 10 feet (down to North)
 Probable top of bedrock

0' - 0.5' Dark brown moist silt, some F-C sand, little detritus, trace F-M gravel, trace roots

NOTES:

1. Ground surface and layer interfaces sloping at approximately 1 foot over 10 feet (down to North).
2. All soils moist with no seeping, flowing or standing water.
 Estimated depth to Seasonal High Groundwater is below the bottom of the excavation .
3. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

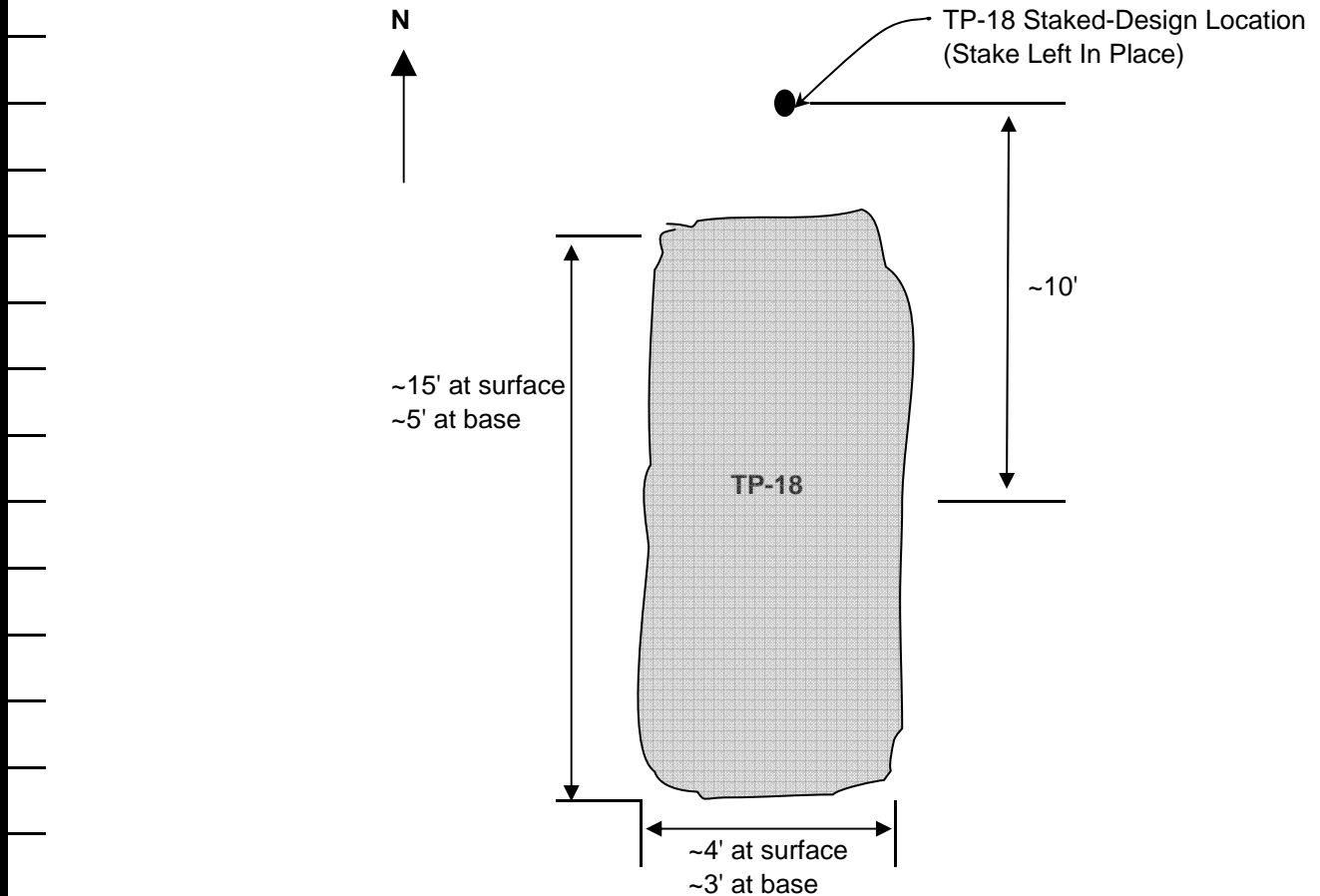
TEST PIT LOG

TEST PIT NUMBER: TP - 18

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
 Location: Stormwater Infiltration Sites
 Client: MassD.O.T.
 Contractor: Geologic-Earth Explor. Inc.
 Inspector: David D'Angelo
 Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~10' S of Design Location
 As-Built Coordinates: N: 3143497 E: 820373
 Station: Offset:
 Grd. Surface Elevation (Project Datum): 77.7
 Date: 12-16-09 Time: 07:00 - 09:30
 Completion Depth: 11'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 18

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~10' S of Design Location
As-Built Coordinates: N: 3143497 E: 820373
Station: Offset:
Grd. Surface Elevation (Project Datum): 77.7
Date: 12-16-09 **Time:** 07:00 - 09:30
Completion Depth: 11'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'				
1'	0'-1' Dark brown moist silt, some F sand little detritus, little roots, trace C sand	G-1	silt loam - herbaceous, woody SIL-HB-WD	B
2'	1' - 2' Light orange-brown moist C-F sand, some F-M-C gravel, little silt	G-2	sand (artifactual) paragravelly S-ART-PGR	A
3'	2'-4' Light orange-brown moist F sand, some silt (slightly cemented)	G-3	sandy loam, slightly cemented SL-CEM	C
4'				
5'				
6'				
7'	4' - 11' Light brown, moist F sand, some silt (slightly cemented)	G-4	sandy loam, slightly cemented SL-CEM	C
8'				
9'				
10'				
11'				

NOTES:

- All soils moist with no seeping, flowing or standing water.
- Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

TEST PIT LOG

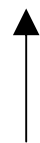
TEST PIT NUMBER: TP - 17

SHEET 1 OF 2

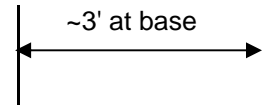
Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~9' N of Design Location
As-Built Coordinates: N: 3141420 E: 819223
Station: Offset:
Grd. Surface Elevation (Project Datum): 77.7
Date: 12-16-09 **Time:** 09:30 - 11:00
Completion Depth: 11.5'

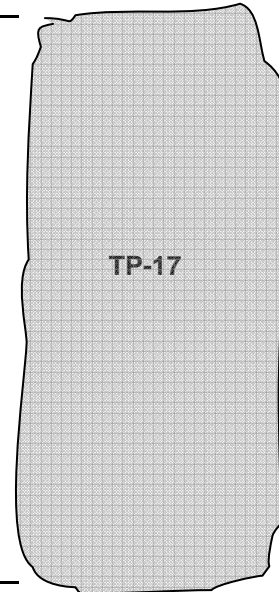
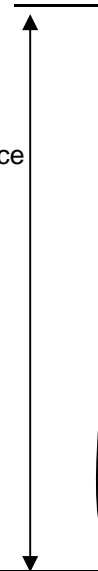
N



~4' at surface
~3' at base

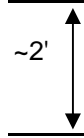


~14' at surface
~5' at base



TP-17

~2'



TP-17 Staked-Design Location
(Stake Left In Place)

PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 17

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
 Location: Stormwater Infiltration Sites
 Client: MassD.O.T.
 Contractor: Geologic-Earth Explor. Inc.
 Inspector: David D'Angelo
 Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~9' N of Design Location
 As-Built Coordinates: N: 3141420 E: 819223
 Station: Offset:
 Grd. Surface Elevation (Project Datum): 77.7
 Date: 12-16-09 Time: 09:30 - 11:00
 Completion Depth: 11.5'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0'-0.5' See Below	G-1	silt loam-woody, grassy	B
1'	0.5'-2.5' Light brown, moist F-C sand, little C-M-F gravel, trace cobbles, trace silt	G-2	SIL-WD-GS sand (artifactual) paragravelly S-ART-PGR	A
2'	2.5'-9' Light brown, moist C-M-F gravel, and C-F sand, trace silt, trace cobbles	G-3	sand (very artifactual) very paragravelly S-ARTV-PGRV	A
3'				
4'				
5'				
6'	9' - 11.5' Light brown, moist F-C sand, trace silt	G-4	sand S	B
7'				
8'				
9'				
10'				

13' 0'-0.5' Dark brown, moist silt, some F-C sand, little detritus, little roots, trace F-C gravel, trace cobble

14'

15'

16' NOTES:

1. Seeping at ~11 feet and water level stabilizing at ~11 feet
Estimated depth to Seasonal High Groundwater at 11 feet.
2. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

18'

19'

20'

PROFILE VIEW



100 YEARS

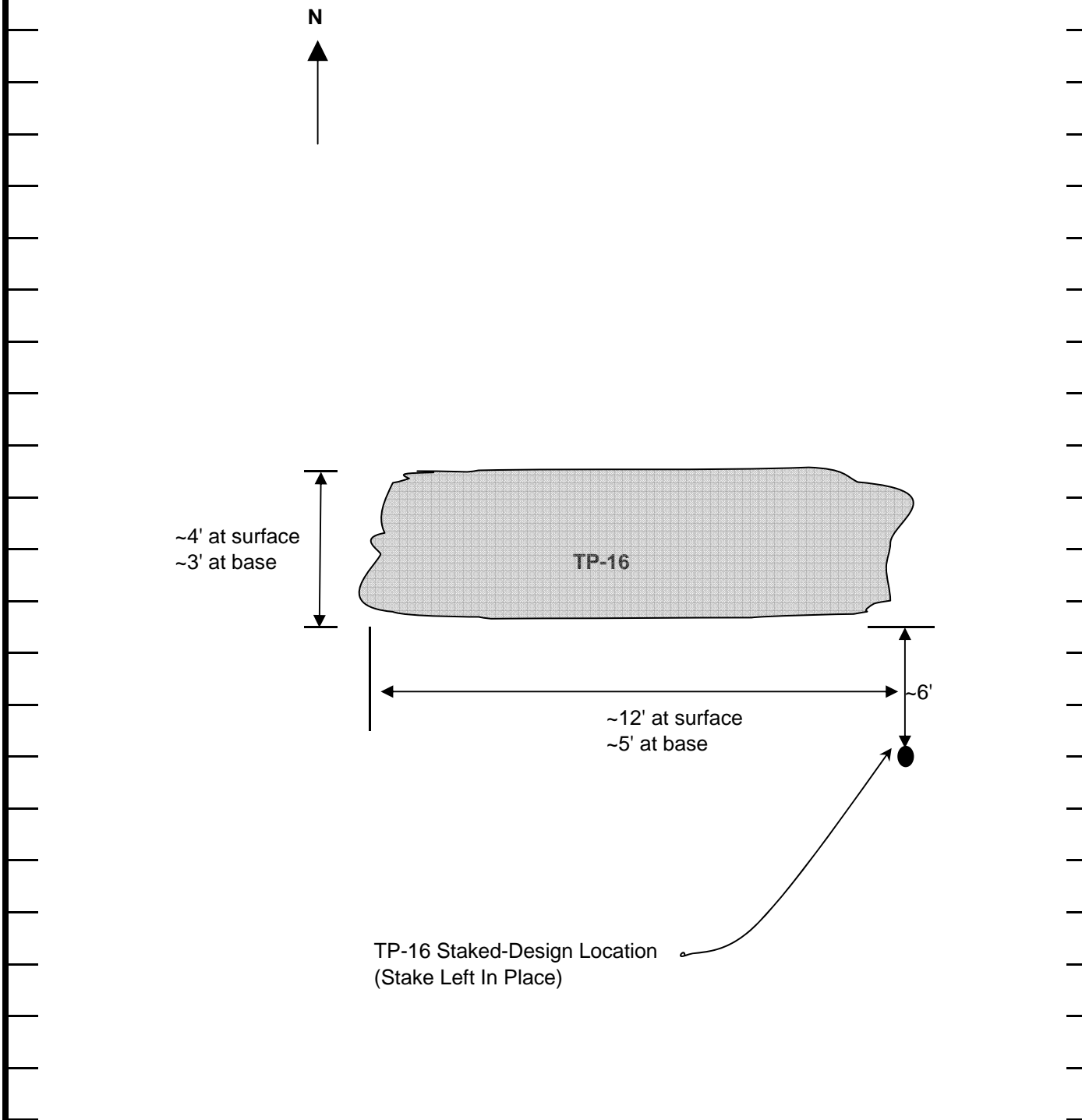
TEST PIT LOG

TEST PIT NUMBER: TP - 16

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~6' W & ~8' S of Design Location
As-Built Coordinates: N: 3140945 E: 819059
Station: Offset:
Grd. Surface Elevation (Project Datum): 71.4
Date: 12-16-09 **Time:** 11:00 - 12:30
Completion Depth: 11'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 16

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~6' W & ~8' S of Design Location
As-Built Coordinates: N: 3140945 E: 819059
Station: Offset:
Grd. Surface Elevation (Project Datum): 71.4
Date: 12-16-09 **Time:** 11:00 - 12:30
Completion Depth: 11'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0'-1' Dark brown, moist silt, some F-C sand	G-1	silt loam (artifactual)	B
1'	trace F-C gravel, trace cobble, trace roots		SIL-ART	
2'	1'-2' Light brown F-C sand trace silt	G-2	sand	B
3'				
4'				
5'	2'-9' Light brown, moist F-C sand, and	G-3	sand (very artifactual)	B
6'	F-M-C gravel, little cobbles. Trace silt		very paragravelly,	
7'			paraparacobbly	
8'			S-ARTV-PGRV-PCB	
9'				
10'	9'-11' Light brown, moist F-M-C gravel	G-4	sand (very artifactual)	A
11'	and F-C sand, little cobbles. Trace silt		very paragravelly, paracobbly	
12'			S-ARTV-PGRV-PCB	

NOTES:

- Seeping at ~10.5 feet and water level stabilizing at ~10.5 feet
Estimated depth to Seasonal High Groundwater at 10.5 feet.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

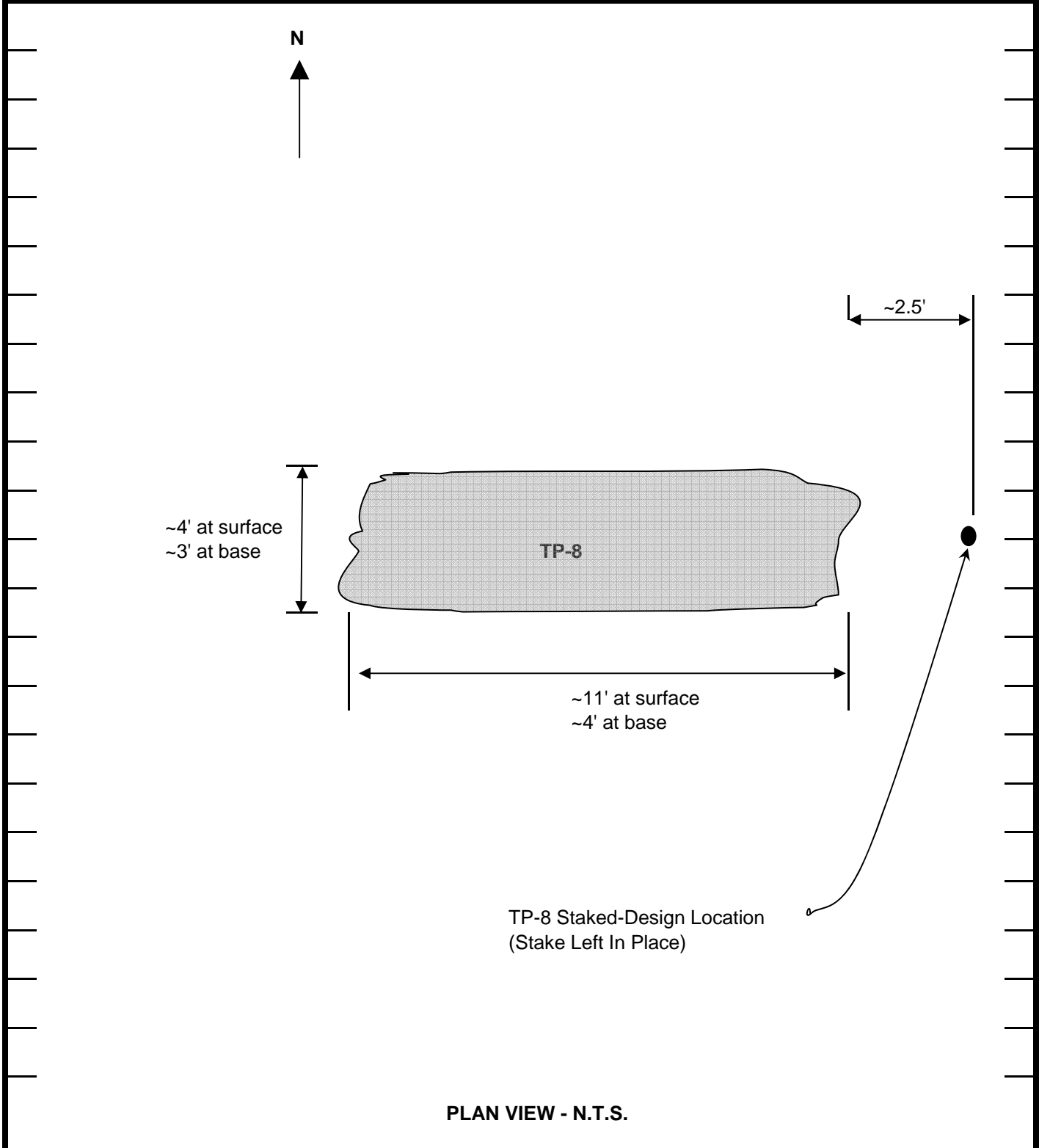
TEST PIT LOG

TEST PIT NUMBER: TP - 8

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~8' W & ~0' N of Design Location
As-Built Coordinates: N: 3133069 E: 815865
Station: Offset:
Grd. Surface Elevation (Project Datum): 49.4
Date: 12-15-09 **Time:** 12:30 - 14:30
Completion Depth: 11.5'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 8

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.	Location: ~8' W & ~0' N of Design Location
Location: Stormwater Infiltration Sites	As-Built Coordinates: N: 3133069 E: 815865
Client: MassD.O.T.	Station: Offset:
Contractor: Geologic-Earth Explor. Inc.	Grd. Surface Elevation (Project Datum): 49.4
Inspector: David D'Angelo	Date: 12-15-09 Time: 12:30 - 14:30
Excav. Equip.: Case CX160-Track Mount	Completion Depth: 11.5'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0'-0.5' See Below	G-1	silt loam - herbaceous	B
1'	0.5'-3.5' Light brown, moist F sand trace silt (FILL)	G-2	SIL-HB	B
2'			sand	
3'			S	
4'	3.5'-4' See Below	G-3	sand S	B
5'	4'-9' Light brown, moist F-C sand, trace F-M-C gravel, trace silt, trace brick, trace concrete (FILL)	G-4	sand (artifactual) S-ART	B
6'				
7'				
8'				
9'				
10'	9'-11.5' Light brown, moist C-F sand	G-5	sand S	A

13' 0'-0.5' Dark brown, moist silt, some F-C sand, little detritus, little roots, trace F-C gravel, trace cobble

14' 3.5'-4' Dark brown-orange/brown, slightly cemented, moist F-C sand, trace silt, trace F-M-C gravel (FILL)

16' **NOTES:**

1. Seepage evident at base of excavation (excavation caving in preventing further excavation without trench box)

Estimated depth to Seasonal High Groundwater at 11.5 feet.

18' 2. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

19'

20'

PROFILE VIEW



100 YEARS

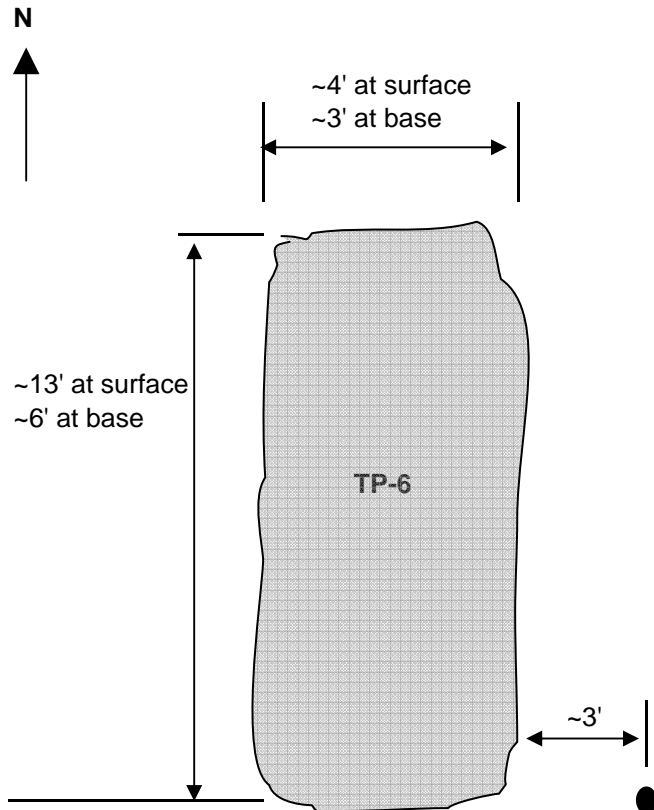
TEST PIT LOG

TEST PIT NUMBER: TP - 6

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~5' W & ~7' N of Design Location
As-Built Coordinates: N: 3132193 E: 815536
Station: Offset:
Grd. Surface Elevation (Project Datum): 37.8
Date: 12-17-09 **Time:** 07:00 - 10:00
Completion Depth: 9.5'



TP-6 Staked-Design Location
(Stake Left In Place)

PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 6

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~5' W & ~7' N of Design Location
As-Built Coordinates: N: 3132193 E: 815536
Station: Offset:
Grd. Surface Elevation (Project Datum): 37.8
Date: 12-17-09 **Time:** 07:00 - 10:00
Completion Depth: 9.5'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	
	Grd. Surface			
0'	0'-0.5' Dk brown, moist silt, some F-C sand trace F-C gravel, trace cobble, trace roots	G-1	silt loam SIL	B
1'	1' - 2.5' Light brown moist C-F sand, trace F-M-C gravel, trace silt (FILL)	G-2	sand S	A
2'				
3'	2.5'-5' Light brown moist silt and F sand, (transitioning to F sand and silt) little F-M-C gravel, little C sand, trace cobble, trace boulders (FILL)	G-3	sand (artifactual) paragravelly S-ART-PGR	B
4'				
5'				
6'	5'-9.5' Angular cobbles and boulders and C-M-F gravel, some C-F sand trace silt (FILL) (evidence of core holes in a couple of boulders)	G-4	sand (extremely artifactual) paracobbly, parabouldery, paragravelly S-ARTX-PCY-PBY-PGR	A
7'				
8'				
9'				

Refusal @ 9.5 feet (probable top of bedrock)

NOTES:

- All soils moist with no seeping, flowing or standing water
Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

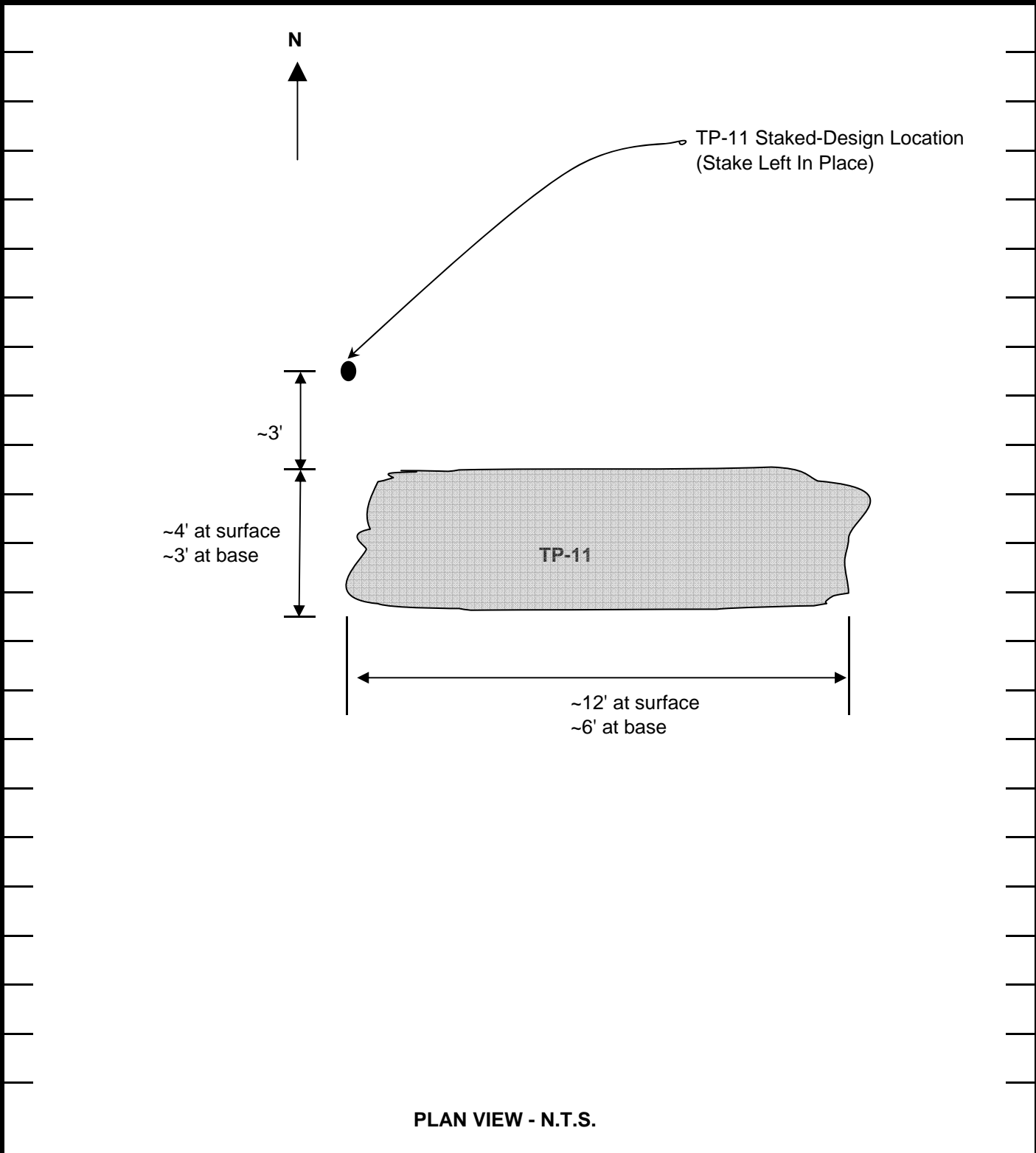
TEST PIT LOG

TEST PIT NUMBER: TP - 11

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~6' E & ~5' S of Design Location
As-Built Coordinates: N: 3135385 E: 816913
Station: Offset:
Grd. Surface Elevation (Project Datum): 55.3
Date: 12-17-09 **Time:** 10:00 - 11:30
Completion Depth: 7'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 11

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~6' E & ~5' S of Design Location
As-Built Coordinates: N: 3135385 E: 816913
Station: Offset:
Grd. Surface Elevation (Project Datum): 55.3
Date: 12-17-09 **Time:** 10:00 - 11:30
Completion Depth: 7'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'				
1'	0'- 0.5' Dark brown, moist silt, little F sand little detritus, little roots, trace C sand	G-1	silt loam - woody, herbaceous SIL-WD-HB	B
2'	1' - 5' Light orange-brown, wet F sand, trace silt	G-2	sand S	A
3'				
4'				
5'	5' - 7' Light brown, wet F-C sand (reddish staining from ~3.5 to ~4')	G-3	sand S	A
6'				
7'				

8'
 9'
 10'
 11'
 12'
 13'
 14'
 15'
 16'
 17'
 18'
 19'
 20'

NOTES:

- Seeping/flowing at ~4 feet and below and water level stabilizing at ~4 feet. Estimated depth to Seasonal High Groundwater at 3.5 feet.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

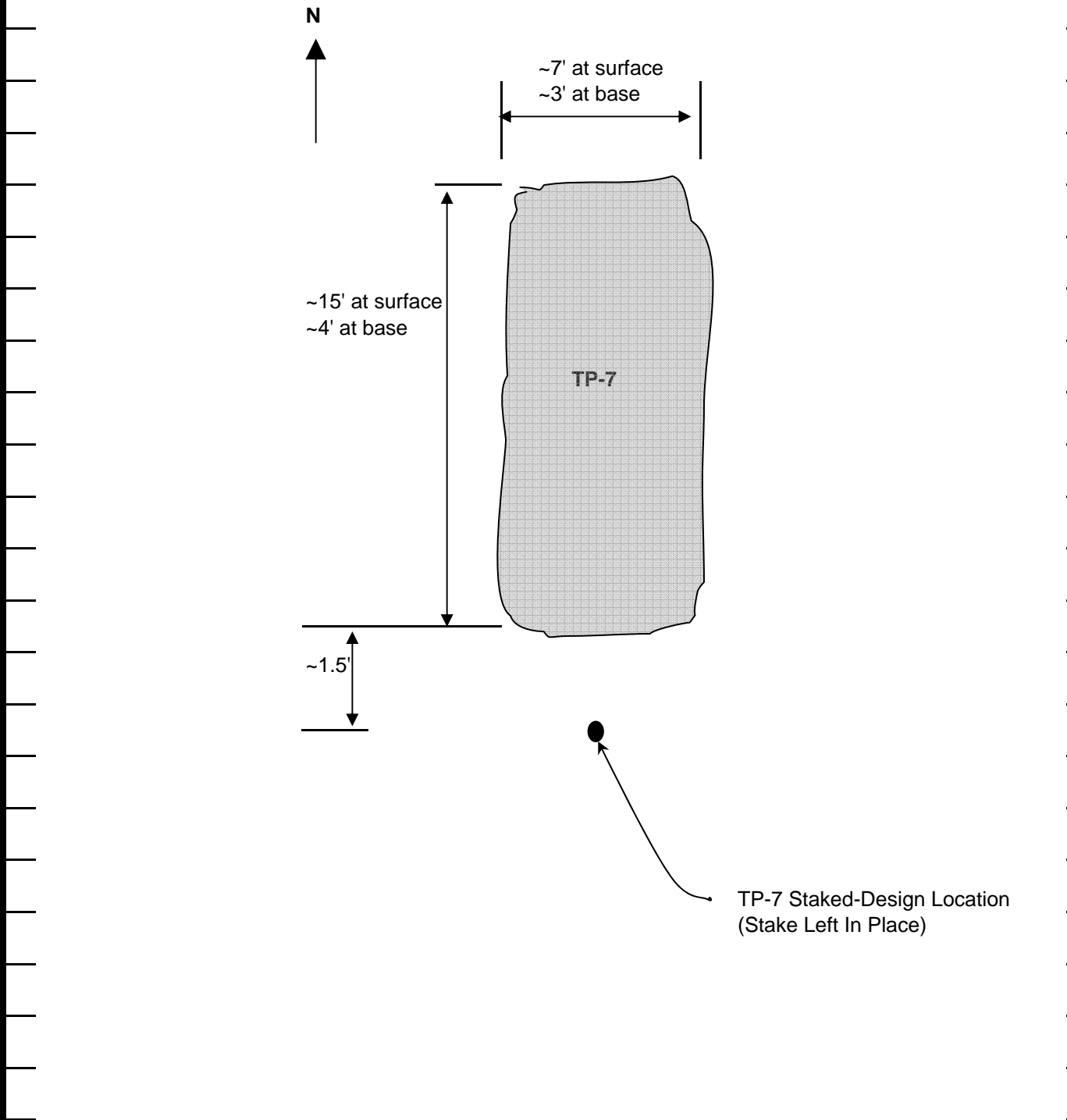
TEST PIT LOG

TEST PIT NUMBER: TP - 7

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
 Location: Stormwater Infiltration Sites
 Client: MassD.O.T.
 Contractor: Geologic-Earth Explor. Inc.
 Inspector: David D'Angelo
 Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~9' N of Design Location
 As-Built Coordinates: N: 3132815 E: 815737
 Station: Offset:
 Grd. Surface Elevation (Project Datum): 51.6
 Date: 12-17-09 Time: 11:30 - 13:30
 Completion Depth: 11'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 7

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
 Location: Stormwater Infiltration Sites
 Client: MassD.O.T.
 Contractor: Geologic-Earth Explor. Inc.
 Inspector: David D'Angelo
 Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~9' N of Design Location
 As-Built Coordinates: N: 3132815 E: 815737
 Station: Offset:
 Grd. Surface Elevation (Project Datum): 51.6
 Date: 12-17-09 Time: 11:30 - 13:30
 Completion Depth: 11'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	NRCS - Texture	Grab/Jar Sample
	Grd. Surface		
0'	0'-0.5' Dark brown, moist silt and F-C sand	silt loam SIL	G-1
1'	trace roots		
2'			
3'			
4'			
5'			
6'	0.5' - 11' Brown, moist F-C sand, some F-M-C gravel, little cobbles/boulders/concrete (up to 1'x1.5'x3'), trace rebar (FILL)	sand (very artifactual) paragravelly, paracobbly, parabouldery	G-2
7'		S-ARTV-PGR-PCB-PBY	
8'			
9'	With depth cobble/boulder/concrete content increase from "some" to "and" (very difficult to excavate)		
10'			
11'			

NOTES

- All soils moist with no seeping, flowing or standing water
Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

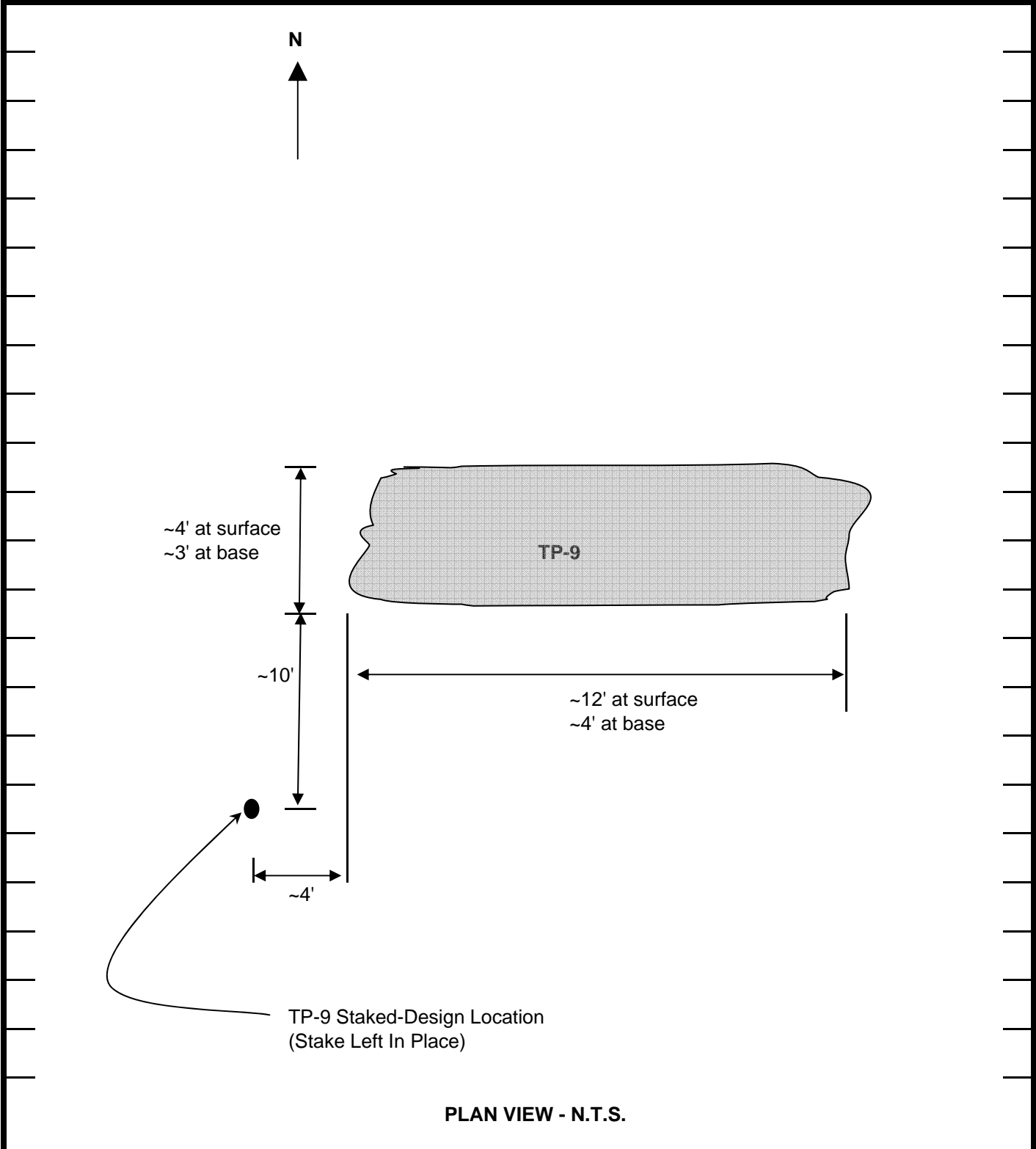
TEST PIT LOG

TEST PIT NUMBER: TP - 9

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~10' E & ~12' S of Design Location
As-Built Coordinates: N: 3133175 E: 816308
Station: Offset:
Grd. Surface Elevation (Project Datum): 44.5
Date: 12-18-09 **Time:** 07:00 - 09:00
Completion Depth: 11.5'





100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 9

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~10' E & ~12' S of Design Location
As-Built Coordinates: N: 3133175 E: 816308
Station: Offset:
Grd. Surface Elevation (Project Datum): 44.5
Date: 12-18-09 **Time:** 07:00 - 09:00
Completion Depth: 11.5'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0'-1' Dark brown, moist silt, little F-M-C sand, little detritus, little roots	G-1	silt loam - grassy SIL-GR	B
1'	1'-2.5' Light brown, wet F-C sand, little F-M-C gravel (probable FILL)	G-2	sand S	A
2'	2.5'-3.5' Light gray/brown wet, F sand, trace C sand, trace F-M-C gravel	G-3	sand S	A
3'	3.5' to 4.5'(@W)/6.5'(@E) Light brown, wet F sand, trace C sand, trace F-M-C gravel	G-4	sand S	A
4'	4.5'(@W)/6.5'(@E) to 7' Gray, moist silt, some clay, little F sand	G-5	silty clay loam SICL	C
5'	7'-8' Light graybrown, wet F sand, some silt	G-6	loamy sand LS	C
6'	8'-11' Light gray, moist F sand, trace silt	G-7	sand S	B

NOTES:

- Seepage evident from 0.5 to 6.5 foot depths. Water seeping after excavation continuously with excavation walls periodically collapsing and sloughing. Approximately 30 minutes after excavation water level in trench up to approximately 9 feet (with cave-ins and sloughing difficult to ascertain to what extent water is draining or rising). At time of backfill, 30 minutes after excavation seepage continued from 0.5 to 6.5 foot depths (and possibly lower).
- No clear indicators were present of an estimated depth to Seasonal High Groundwater. Based on the above noted seepage conditions and observed water levels a possible depth range could be between approximately 1 and 9 feet. With the location being at the high end of an off-ramp and within 15 feet of a drainage ditch with open stormwater pipe drains a more narrowed Rough Estimated Depth Range to Seasonal High Groundwater would be approximately 5 to 6 feet.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

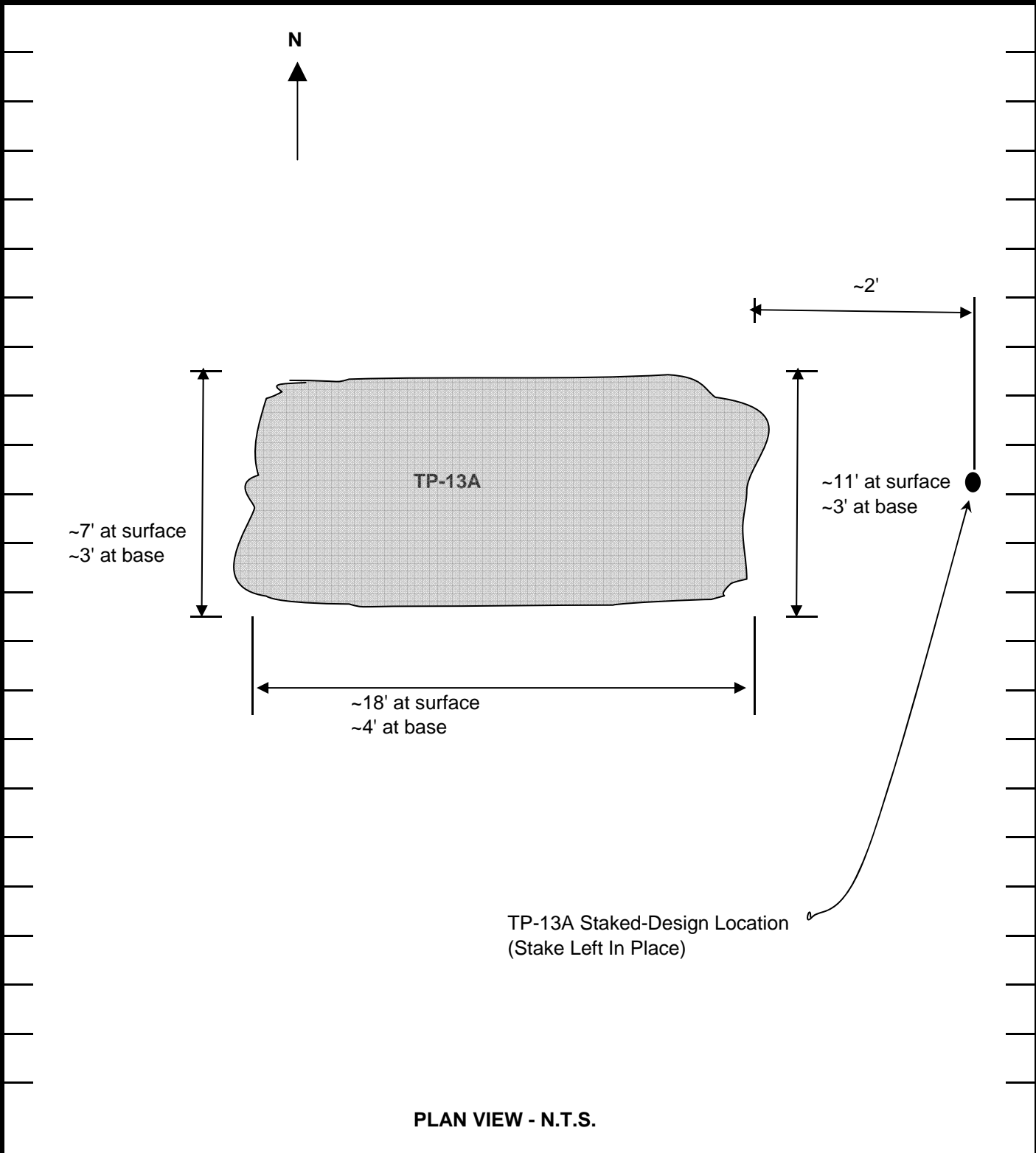
TEST PIT LOG

TEST PIT NUMBER: TP - 13A

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~5' W & ~0' N of Design Location
As-Built Coordinates: N: 3137317 E: 817924
Station: Offset:
Grd. Surface Elevation (Proj. Datum): 50.5 @ E
Date: 12-18-09 **Time:** 09:00 - 12:00
Completion Depth: 19' @ E



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 13A

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.	Location: ~5' W & ~0' N of Design Location
Location: Stormwater Infiltration Sites	As-Built Coordinates: N: 3137317 E: 817924
Client: MassD.O.T.	Station: Offset:
Contractor: Geologic-Earth Explor. Inc.	Grd. Surface Elevation (Proj. Datum): 50.5 @ E
Inspector: David D'Angelo	Date: 12-18-09 Time: 09:00 - 12:00
Excav. Equip.: Case CX160-Track Mount	Completion Depth: 19' @ E

Depth	NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)			
	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	
0'	Grd. Surface			
0'-1'	Brown-gray moist silt and F-C sand, little roots, trace F-M-C gravel	G-1	silt loam - woody, herbaceous SIL-WD-HB	B
1' to 2.5'(@S)/4'(@N)	Light yellow-brown, moist silt and F sand	G-2	sandy loam SL	C
2.5'(@S)/4'(@N) to 12'	Light gray, moist silt, little F sand, little clay (very stiff)	G-3	silt loam SL	D
12' - 19'	Light gray silt, trace clay (very stiff)	G-5	silt loam SL	D
		G-4		
		G-6		

- NOTES: 1. All recorded depths are in relation to ground surface at the east end of the excavation. Ground surface at west end of trench is approximately 5 feet lower than the east end.
2. All soils moist with no seeping, flowing or standing water.
Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.
3. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

TEST PIT LOG

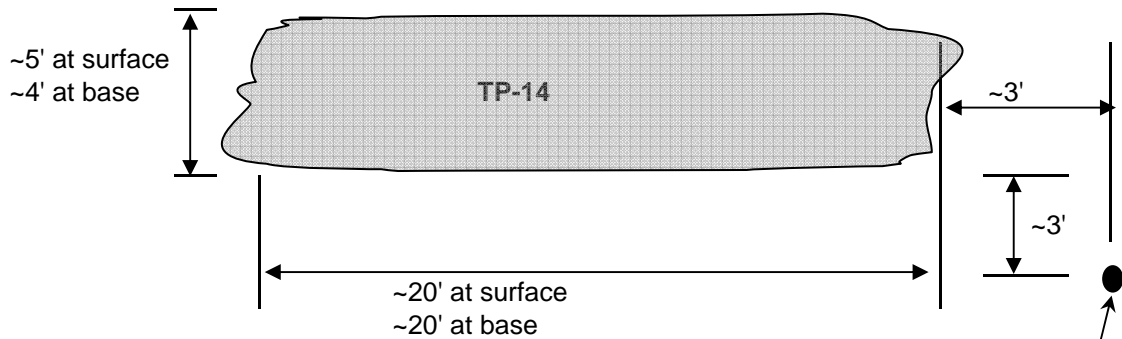
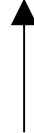
TEST PIT NUMBER: TP - 14

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~13' W & ~5' N of Design Location
As-Built Coordinates: N: 3138003 E: 818228
Station: Offset:
Grd. Surface Elevation (Proj. Datum): 40.4
Date: 12-18-09 **Time:** 12:00 - 14:30
Completion Depth: See Notes Below

N



TP-14 Staked-Design Location
(Stake Left In Place)

NOTES:

1. Completion depth equals 1.5' @ E end sloped down to 6/6.5' at 8 feet from E end remaining at 6/6.5' between 8 and 20 feet from E end

PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 14

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
 Location: Stormwater Infiltration Sites
 Client: MassD.O.T.
 Contractor: Geologic-Earth Explor. Inc.
 Inspector: David D'Angelo
 Excav. Equip.: Case CX160-Track Mount

Location: ~13' W & ~5' N of Design Location
 As-Built Coordinates: N: 3138003 E: 818228
 Station: Offset:
 Grd. Surface Elevation (Proj. Datum): 40.4
 Date: 12-18-09 Time: 12:00 - 14:30
 Completion Depth: See Notes Below

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	
	Grd. Surface			
0'	0' - 0.3' Detritus and leaves			
1'	1' - 1.5' See Below	G-1	Moderately decomposed plant material MPM silt SI	C
2'	West 12 feet of Trench: 1.5' - 6/6.5' Light brown, wet silt, some cobble/boulders, little F-C sand (below 6/6.5 ft is refusal - boulders of rock) East 8 feet of Trench: Bottom is solid flat rock or boulder full width of trench at 1.5 ft depth at the E end sloping down to 6 ft depth at 8 ft W of the E end (soil below 1.5 ft is same as W end)	G-2	silt (vey artifactual) bouldery, cobbly SI-ARTV-BY-CB	C
3'				
4'				
5'				
6'	1' - 1.5' Light brown, wet silt, some cobbles, some boulders, trace F-M-C gravel, trace F-C sand			
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				
15'				
16'				
17'				
18'				
19'				
20'				

NOTES:

1. Completion depth equals 1.5' @ E end sloped down to 6/6.5' at 8 feet from E end remaining at 6/6.5' between 8 and 20 feet from E end
2. Slow seepage at top surface of rock at E end and at NW corner ~3 to 5 feet depth. Seepage appears to drain below bottom of the excavation. Estimated depth to Seasonal High Groundwater at ~3 feet.
3. Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

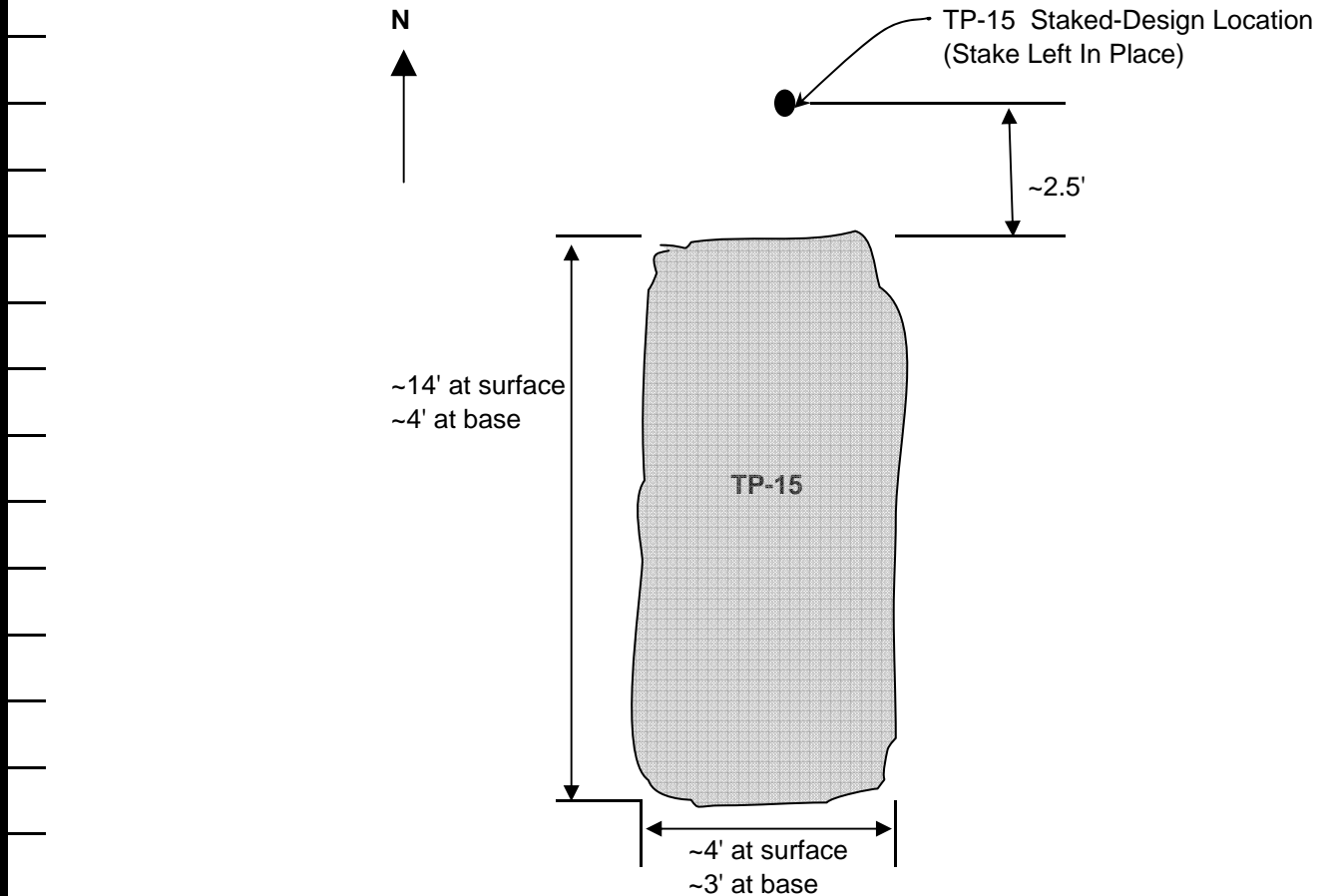
TEST PIT LOG

TEST PIT NUMBER: TP - 15

SHEET 1 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~9.5' S of Design Location
As-Built Coordinates: N: 3138987 E: 818614
Station: Offset:
Grd. Surface Elevation (Project Datum): 43.7
Date: 12-22-09 **Time:** 07:00 - 09:30
Completion Depth: 16'



PLAN VIEW - N.T.S.



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 15

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
Location: Stormwater Infiltration Sites
Client: MassD.O.T.
Contractor: Geologic-Earth Explor. Inc.
Inspector: David D'Angelo
Excav. Equip.: Case CX160-Track Mount

Location: ~0' E & ~9.5' S of Design Location
As-Built Coordinates: N: 3138987 E: 818614
Station: Offset:
Grd. Surface Elevation (Project Datum): 43.7
Date: 12-22-09 **Time:** 07:00 - 09:30
Completion Depth: 16'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0'-0.3' See Below	G-1	silt loam - herbaceous, woody	B
1'	0.3' - 2' Light olive-brown moist silt, little F sand, little clay	G-2	SIL-HB-WD sandy loam SL	C
2'				
3'	2'-6.5' Light brown moist F sand, little silt (slightly cemented)	G-3	loamy sand, slightly cemented LS-CEM	C
4'				
5'				
6'				
7'				
8'	6.6' - 9' Light olive-gray moist silt, little clay (stiff)	G-4	silt loam SIL	D
9'				
10'	9' -13.5' Light olive-gray moist clay, some silt (stiff). Change at 9' is gradual.	G-5	clay C	D
11'				
12'				
13'				
14'	13.5' -16' Light blue-gray clay	G-6	clay C	D
15'				
16'				

0' - 0.3' Dark brown, moist silt, little F-C sand, little detritus, little roots

NOTES:

- Bottom of excavation at 16 feet is hard (boulder and or bedrock)
- No seepage or flow into excavation.
- Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW



100 YEARS

TEST PIT LOG

TEST PIT NUMBER: TP - 12

SHEET 2 OF 2

Project: Whittier / I95 Improvement Proj.
 Location: Stormwater Infiltration Sites
 Client: MassD.O.T.
 Contractor: Geologic-Earth Explor. Inc.
 Inspector: David D'Angelo
 Excav. Equip.: Case CX160-Track Mount

Location: ~9.5' E & ~0' N of Design Location
 As-Built Coordinates: N: 3136754 E: 817449
 Station: Offset:
 Grd. Surface Elevation (Project Datum): 55.8
 Date: 12-22-09 Time: 09:30 - 12:00
 Completion Depth: 15'

NRCS - Hydrologic Group (Independent of water level or depth to impermeable layers)

Depth	AASHTO-Classification	Grab/Jar Sample	NRCS - Texture	NRCS - Hydrologic Group
	Grd. Surface			
0'	0' - 1' Dark brown, moist silt, little F-C sand, little detritus, little roots	G-1	silt loam - herbaceous, woody SIL-HB-WD	B
1'				
2'				
3'	2'-5' Light brown moist silt, and F sand, trace C sand	G-2	sandy loam SL	C
4'				
5'				
6'				
7'	5' - 15' Light brown-gray (mottled), moist silt, some F sand, trace clay (very stiff / hard)	G-3	sandy loam SL	D
8'				
9'				
10'				
11'				
12'				
13'				
14'		G-4		
15'				

NOTES:

- No seepage or flow into excavation.
- Estimated depth to Seasonal High Groundwater is below the bottom of the excavation.
- Classification above uses "trace" at 1-10%, "little" at 10-20%, "some" at 20-35%, "and" at 35-50%

PROFILE VIEW