Pelton, Jason M (DEC)

From: Stern, David <David.Stern@arcadis.com>
Sent: Monday, February 03, 2020 1:29 PM
To: Richard W. Lenz, P.E. (RLenz@oysterbay-ny.gov)
Cc: Edward Hannon (Edward.Hannon@ngc.com); Gregory Carman; mrusso@OYSTERBAY-NY.gov; Pelton, Jason M (DEC); Sullivan, James (HEALTH); Bethoney, Charlotte M (HEALTH); Karpinski, Steven (HEALTH); San Giovanni, Carlo; Engler, Christopher; Martorano, Paul
Subject: DELIVERABLE - RW-21 Project Plans
Attachments: ARCADIS_COI.pdf; CAMP.pdf; Northrop Grumman R21 RW22 TSP.pdf; Northrop Grumman RW21 RW22 HASP.pdf; S_BASIN-OU3-RW-21- ISSUED FOR PERMIT - 2020.01.28.pdf; TOB Vault Cover Letter_01292020.pdf; Northrop Grumman Systems Corporation.pdf

Importance: High

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Good afternoon Commissioner Lenz:

Following our meeting this morning, please find Arcadis' cover letter and project plans referenced therein pertaining to the upcoming work at the RW-21/RW-22 vaults and at the South Recharge Basins.

Regards,

Dave

David E. Stern | Certified Project Manager | David.stern@arcadis.com
Arcadis | Arcadis U.S., Inc.
Two Huntington Quadrangle, Suite 1S10, Melville, NY | 11747 | USA
T. +1 631 391 5284 | M. + 1 516 369 7440

Licensed Environmental Professional / CT-LEP, #440

reasonable precautions have been taken to ensure that no software or viruses are present in our emails, we cannot guarantee that this email or any attachment is virus free or has not been intercepted or changed. Any opinions or other information in this email that do not relate to the official business of Arcadis are neither given nor endorsed by it.

ARCADIS Design & Consultancy for natural and built assets

Mr. Richard W. Lenz, P.E.
Commissioner
Department of Public Works/Highway
Town of Oyster Bay
150 Miller Place, Syosset, New York 11791

Arcadis of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610
www.arcadis.com

ENVIRONMENT

Subject:
Access Agreement Package,
RW-21 Area South Basin Influent Pipeline and Vault Installations,
Operable 3, Bethpage, New York.

Date:
January 31, 2020

Contact:
David Stern

Phone:
631-391-5284

Email:
David.stern@arcadis.com

Our ref:
30040677.PERE3

Dear Commissioner:

On behalf of Northrop Grumman Systems Corporation (Northrop Grumman), Arcadis of New York, Inc. (Arcadis) is providing the Town of Oyster Bay (Town) with supporting documents as part of the Access Agreement Package (Agreement) between the Town and Northrop Grumman for the above-referenced project. Each of these documents has been reviewed by the Town prior to this submission and discussed during our routine bi-weekly meetings. This Agreement is being submitted to the Town following Northrop Grumman's conduct of a public meeting (held on January 23, 2020) for approval by the Town Board. We understand that the Town Board vote on this Agreement is scheduled to occur during the next Board meeting, scheduled on February 11, 2020. As stated in the Access Agreement, the following project plans and other supporting documents are specifically enclosed:

1. Issued for Permit (IFP) 95% Design for the RW-21 Area South Basin Influent Pipeline and Vault Installations, dated January 2020. The IFP Design serves as the Work Plan and reflects revisions based on review by the Town and the New York State Department of Environmental Conservation (NYSDEC). Arcadis responded to comments provided by the Town and NYSDEC in separate correspondence, dated January 9, 2020.
2. Health and Safety Plan (HASP)
3. Community Air Monitoring Plan (CAMP)
4. Traffic Safety Plan (TSP)
5. Arcadis' compliant Certificates of Insurance

Additional documents will be provided upon the Town's request.

Please contact us should you have questions,

Sincerely,

Arcadis of New York, Inc.

David E. Stern
Project Manager

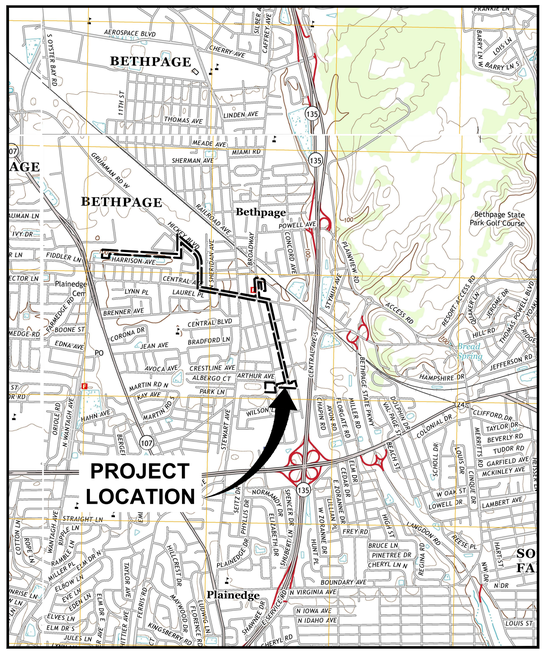
Copies:
Ed Hannon, Northrop Grumman
Matt Russo, Town of Oyster Bay
Greg Carman, Town of Oyster Bay
Jason Pelton, NYSDEC
James Sullivan, NYSDOH
Carlo San Giovanni, Arcadis
Chris Engler, Arcadis
Paul Martorano, Arcadis

Enclosures

ISSUED FOR PERMIT

SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

OPERABLE UNIT 3



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., (QUADNAME), (ST)., (DATE)

LOCATION MAP

0 2000' 4000'

GRAPHIC SCALE

AREA LOCATION

NEW YORK

DATE ISSUED

JANUARY 2020

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK

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C-03	SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 10+00 - NG 15+00)
C-04	SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 15+00 - NG 20+00)
C-05	SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 20+00 - NG 21+20)
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ARCADIS OF NEW YORK, INC.

GENERAL NOTES:

1. BASEMAP INFORMATION PROVIDED BY GALLAS SURVEYING GROUP, 2865 U.S. ROUTE 1 NORTH BRUNSWICK, NJ 08902, DRAWINGS TITLED "TOPOGRAPHIC AND LOCATION SURVEY - GRUMMAN LOT (SOUTH BASIN AREA) (09-14-19), RW-21 AREA PARKING LOT - SEAMAN AVENUE AND BROADWAY (08-20-19), CENTRAL AVENUE (08-02-19); AND - GRUMMAN ROAD EAST (08-23-19)", AT A SCALE OF 1" = 20', RESPECTIVELY. ADDITIONAL PROPERTY AND PARCEL LINE INFORMATION OBTAINED FROM NASSAU COUNTY GIS DEPARTMENT.
2. LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES ARE OBTAINED FROM GIS SOURCES, UTILITY DRAWINGS, AND FIELD MEASUREMENTS WHERE POSSIBLE. ALL UTILITY LOCATIONS ARE APPROXIMATE AND OTHER UNDERGROUND UTILITIES AND STRUCTURES MAY EXIST, THE LOCATION OF WHICH ARE PRESENTLY UNKNOWN.
3. ACTUAL SITE FEATURES AT THE TIME OF CONSTRUCTION MAY DIFFER FROM THOSE SHOWN ON THE DESIGN DRAWINGS. THE CONTRACTOR SHALL IDENTIFY AND PROMPTLY NOTIFY THE OWNER AND ENGINEER (IN WRITING) OF ANY SUCH DIFFERENCES THAT MAY AFFECT THE PERFORMANCE OF THE WORK.
4. CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL PROVISIONS OF THE OWNER'S PERMIT/ACCESS AGREEMENT, TO BE PROVIDED TO CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY OTHER FEDERAL, STATE, COUNTY, AND/OR CITY-SPECIFIC PERMITS THAT MAY BE REQUIRED TO PERFORM THE WORK.
5. THE TECHNICAL WORK AND CONTRACTOR REQUIREMENTS ARE DESCRIBED IN SEVERAL DOCUMENTS THAT COLLECTIVELY REPRESENT THE REMEDIAL DESIGN. THESE DOCUMENTS INCLUDE THE DESIGN DRAWINGS, TECHNICAL SPECIFICATIONS, TRAFFIC CONTROL PLAN, HEALTH AND SAFETY PLAN, CAMP, CQAP, CERP, AND CONTINGENCY PLAN. THESE DOCUMENTS SHOULD BE THOROUGHLY REVIEWED BY THE CONTRACTOR. ANY DISCREPANCIES IDENTIFIED BY THE CONTRACTOR BETWEEN THE INFORMATION PRESENTED IN THE ABOVE-LISTED DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER (IN WRITING) FOR CLARIFICATION.
6. GRAY SHADED ITEMS REPRESENT EXISTING CONDITIONS/INFRASTRUCTURE AND ARE NOT INCLUDED IN THIS CONTRACT.
7. HORIZONTAL DATUM IS NEW YORK STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE 3104. ELEVATIONS ARE IN U.S. SURVEY FEET RELATIVE TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
8. ELEVATIONS ARE BASED UPON NASSAU COUNTY GIS, REFERENCE GPS MONUMENT NO. 15E13NAZ, ELEVATION 105.05 FEET.
9. PROPERTY AND RIGHT OF WAY LINES SHOWN HEREIN ARE APPROXIMATE AND SHOWN FOR ORIENTATION PURPOSES ONLY.
10. THE NEW PIPELINE WILL BE INSTALLED AT A DEPTH OF MINIMUM 4.5-FEET BELOW LAND SURFACE (TOP OF PIPE). PIPELINE BENDING IS BASED ON MINIMUM BEND RADIUS OF 50 TIMES THE OUTSIDE DIAMETER OF PE4710 DR17 PIPE. ALL PIPE DIAMETER SIZES ARE IPS (IRON PIPE SIZES).
11. UNDERGROUND UTILITIES WILL BE EXPOSED PRIOR TO PIPELINE INSTALLATION. APPROXIMATE UTILITY CROSSING DETAIL WILL BE DEVELOPED AFTER UTILITY DEPTH HAS BEEN DETERMINED.
12. ALL DISTURBED AREAS ARE TO BE RESTORED TO PRE-CONSTRUCTION GRADES AND CONDITIONS.
13. ALL WORK AROUND EXISTING UTILITIES TO CONFIRM WITH THE CODE RULE 57 AND EXTRACTS OF THE LABOR LAW, SECTION 202-H, HIGH-VOLTAGE PROXIMITY ACT.
14. LOCATIONS OF ANNULAR CLOSURE FITTINGS MAY BE ADJUSTED IN THE FIELD BASED ON THE TERMINAL END OF THE PIPE LENGTH AND CONIDTIONS ENCOUNTERED AT TIME OF CONSTRUCTION.
15. CONTRACTOR SHALL UTILIZE APPROPRIATE STAGING AND STORAGE LOCATIONS FOR ALL EQUIPMENT AND MATERIALS THROUGHOUT PROJECT DURATION. NO EQUIPMENT OR MATERIALS SHALL BE LEFT ON ANY PUBLIC ROADWAY OR PATH (I.E., SIDEWALKS) WHEN NO WORK IS BEING PERFORMED. CONTRACTOR SHALL FACTOR IN DAILY MOBILIZATION/DEMOBILIZATION FROM STAGING AND STORAGE AREA AS PART OF THE WORK. LAYDOWN AREAS WEST OF THE RECHARGE BASINS SHALL BE ACCESSED ONLY FROM HICKSVILLE ROAD. ENTRANCE INTO STAGING AREA SHALL BE KEPT FREE OF DIRT AND DEBRIS AND LAYDOWN AREAS SHALL BE MAINTAINED IN A NEAT CONDITION AT ALL TIMES.
16. RESIDENTIAL AND COMMERCIAL DRIVEWAY ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY TEMPORARY ACCESS FEATURES (I.E. STEEL PLATING) TO FACILITATE VEHICLE OR PEDESTRIAN TRAFFIC.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING TEMPORARY EROSION AND SEDIMENT CONTROLS IN ACCORDANCE WITH THE DRAWINGS. INSTALLATION SHALL OCCUR PRIOR TO START OF CONSTRUCTION OR ANY EARTH DISTURBANCE ACTIVITIES. ADDITIONAL EROSION AND SEDIMENT CONTROLS NOT SHOWN ON THE DRAWINGS MAY BE REQUIRED DUE TO SITE CONDITIONS ENCOUNTERED AT TIME OF CONSTRUCTION. CONTRACTOR SHALL NOT REMOVE ANY TEMPORARY EROSION AND SEDIMENT CONTROLS UNTIL FINAL RESTORATION ACTIVITIES HAVE BEEN SATISFACTORILY COMPLETED.

UTILITY NOTES:

1. THE LOCATIONS, ALIGNMENTS, AND CONSTRUCTION OF UTILITIES SHOWN ON THE DESIGN DRAWINGS ARE APPROXIMATE AND BASED ON INFORMATION READILY AVAILABLE TO THE OWNER/ENGINEER. THE CONTRACTOR SHALL VERIFY THE PRESENCE AND LOCATION OF ALL OVERHEAD/UNDERGROUND SITE FEATURES AND UTILITIES RELEVANT TO AND POTENTIALLY TO BE ENCOUNTERED DURING THE WORK. ADDITIONAL SITE FEATURES AND UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE DESIGN DRAWINGS.
2. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING/COORDINATING WITH DIG SAFELY NEW YORK TO LOCATE AND IDENTIFY UNDERGROUND UTILITIES. THE DIG SAFELY NEW YORK PHONE NUMBER IS 811; THE WEBSITE IS WWW.DIGSAFELYNEWYORK.COM.
3. THE CONTRACTOR IS RESPONSIBLE FOR SUBCONTRACTING/COORDINATING WITH AN APPROPRIATE PRIVATE UTILITY LOCATOR TO LOCATE AND IDENTIFY UNDERGROUND UTILITIES WITHIN PROPERTY LIMITS. OVERHEAD UTILITY LOCATIONS SHALL BE MARKED OUT ON THE GROUND SURFACE WHERE CLEARANCE BETWEEN EQUIPMENT AND OVERHEAD LINES IS REQUIRED.
4. EXCEPT WHERE NOTED OR AS OTHERWISE INDICATED IN THE REMEDIAL DESIGN, THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF ALL OVERHEAD/UNDERGROUND SITE FEATURES AND UTILITIES THAT MAY BE AFFECTED BY THE WORK. ALL UTILITIES, UNLESS STATED OTHERWISE, SHALL REMAIN IN OPERATION FOR THE DURATION OF THE WORK.
5. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING/COORDINATING WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY BRACING, REMOVAL, RELOCATION, AND/OR REPLACEMENT OF ANY UTILITIES, UTILITY POLES, OR GUY WIRES.
6. THE CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANIES TO OBTAIN TEMPORARY UTILITY SERVICES TO SUPPORT REMEDIAL CONSTRUCTION ACTIVITIES IF NECESSARY.
7. IF THE CONTRACTOR DAMAGES EXISTING UTILITY EQUIPMENT OR STRUCTURES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY COMPANY OR MUNICIPALITY AND FULLY REPAIRING DAMAGES IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY / MUNICIPALITY.
8. ALL WORK AROUND EXISTING UTILITIES TO CONFIRM WITH THE CODE RULE 57 AND EXTRACTS OF THE LABOR LAW, SECTION 202-H, HIGH-VOLTAGE PROXIMITY ACT.
9. IN THE EVENT OF A UTILITY STRIKE THAT CAUSES DAMAGE TO AN EXISTING UTILITY, CONTRACTOR MUST IMMEDIATELY STOP WORK UNTIL A FULL SOLUTION IS AGREED ON BY CONTRACTOR, ENGINEER AND APPLICABLE UTILITY COMPANY. ANY SCHEDULE DELAYS RELATED TO THE UTILITY STRIKE MAY NOT BE CONSIDERED PART OF A LOST TIME CLAIM AND CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS TO DAMAGED UTILITY AT NO ADDITIONAL COST TO THE OWNER AND ENGINEER. NO EXTENSIONS OF SCHEDULE SHALL BE GRANTED TO THE CONTRACTOR FOR LOST TIME DUE TO A UTILITY STRIKE AND CONTRACTOR SHALL BE RESPONSIBLE TO MAKE UP ANY SCHEDULE DELAYS AT THEIR OWN COST.

EXISTING SITE FEATURES

- PARCEL BOUNDARIES
- FENCE LINE
- MGR — METAL GUIDE RAIL
- 95 — EXISTING CONTOUR
- x 97.34 — EXISTING SPOT ELEVATION
- x TC 97.34 — EXIST. TOP OF CURB ELEVATION
- x BC 97.34 — EXIST. GUTTER ELEVATION
- x TW 97.34 — EXIST. TOP OF WALL ELEVATION
- x BW 97.34 — EXIST. BOTTOM OF WALL ELEVATION
- HYD — HYDRANT
- W — WATER VALVE
- G — GAS VALVE
- MW — MONITORING WELL
- UP — UTILITY POLE
- UP/LP — UTILITY POLE/LIGHT POLE
- GW — GUY WIRE
- LAMP
- MH — MANHOLE
- INLET
- SIGN
- 12" — DENOTES TREE AND TRUNK DIAMETER
- TRAFFIC LIGHT
- ROAD
- OH — OVERHEAD WIRES
- ST — APPROX. LOC. UNDERGROUND STORM DRAINAGE LINE
- SS — APPROX. LOC. UNDERGROUND SANITARY SEWER LINE
- W — APPROX. LOC. UNDERGROUND WATER LINE
- G — APPROX. LOC. UNDERGROUND GAS LINE
- E — APPROX. LOC. UNDERGROUND ELECTRIC LINE
- C — APPROX. LOC. UNDERGROUND TELECOMMUNICATION
- UNK — APPROX. LOC. UNKNOWN UNDERGROUND UTILITY LINE
- 12" CIP--> — CAST IRON PIPE WITH DIAMETER & FLOW DIRECTION
- 8" CP--> — CONCRETE PIPE WITH DIAMETER & FLOW DIRECTION
- 24" RCP--> — REINFORCED CONCRETE PIPE WITH DIAMETER & FLOW DIRECTION

PROPOSED SITE FEATURES

- RW — NEW RECOVERY WELL CONVEYANCE WATER PIPELINE
- E — NEW ELECTRICAL CONDUIT
- NEW LEAK DETECTION ACCESS PORT
- AIR RELEASE AND VACUUM BREAK VALVE MANHOLE

ABBREVIATIONS

ASPH	ASPHALT
BBC	BELGIAN BLOCK CURB
BOT	BOTTOM OF STRUCTURE
BRK	BRICK
CC	CONCRETE CURB
CLF	CHAIN LINK FENCE
CHG	FENCE/CURB CHANGE
CONC	CONCRETE
COND	CONDUIT
DBL	DOUBLE YELLOW LINE
DWL	DASHED WHITE LINE
DC	DEPRESSED CURB
EOP	EDGE OF PAVEMENT
FWD	STRUCTURE FILLED WITH DEBRIS
GRT	GRATE
GTR	CONCRETE GUTTER
INV	INVERT
LSA	LANDSCAPED AREA
MC	METAL COVER
MF	METAL FENCE
PVR	PAVERS
TRANS	TRANSFORMER
UTIL	UTILITY
WL	WHITE LINE
WS	WHITE STRIPING
YL	YELLOW LINE
YS	YELLOW STRIPING

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

GENERAL NOTES AND ABBREVIATIONS

GENERAL

ARCADIS Project No. 30038258.RDWE1
Date JANUARY 2020
ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

G-02

CITY: SYRACUSE, NY DIV/GROUP: IMDV DB: A.SANCHEZ, K.DAVIS LD: A.SANCHEZ PIC: D.JOHNSTON PM: C.SANGIOVANNI TM: J.MORGAN LYR: ON=*;OFF=*REF*
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IMAGES:

MATCH LINE (SEE SHEET G-04)

BRENNER AVE
HICKSVILLE ROAD
EMMA STREET
JOHN STREET
PARK AVE
N. HERMAN AVE
JASP CT
RW-20
WILLIAM STREET
BROADWAY
NORTH WINDHORST AVE
SOPHIA STREET
RUSSELL AVE
HELENA AVE
LEROY AVE
ARTHUR AVE
STEWART AVE
SEAFORD–OYSTER BAY EXPRESSWAY
RW-22
(SHEET C-07)
STABILIZED CONSTRUCTION ENTRANCE (AS NECESSARY) 1 C-09
PROPOSED CONTRACTOR STAGING/ LAY-DOWN AREA (SEE GENERAL NOTE 15 ON DRAWING G-02)

NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP, AND LEGEND INFORMATION.

200' 0 200' 400'
1"=200'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748
State: NY | Date Signed: | Project Mgr.: PM
Designed by: SS/KMG | Drawn by: MW | Checked by: JM

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

OVERALL SITE PLAN - 1

GENERAL

ARCADIS Project No.: 30038258.RDWE1
Date: JANUARY 2020
ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

G-03

CITY: SYRACUSE, NY DIV/GROUP: IMDV DB: A.SANCHEZ, K.DAVIS LD: A.SANCHEZ PIC: D.JOHNSTON PM: C.SANGIOVANNI TM: J.MORGAN LYR: ON=*;OFF=*REF*
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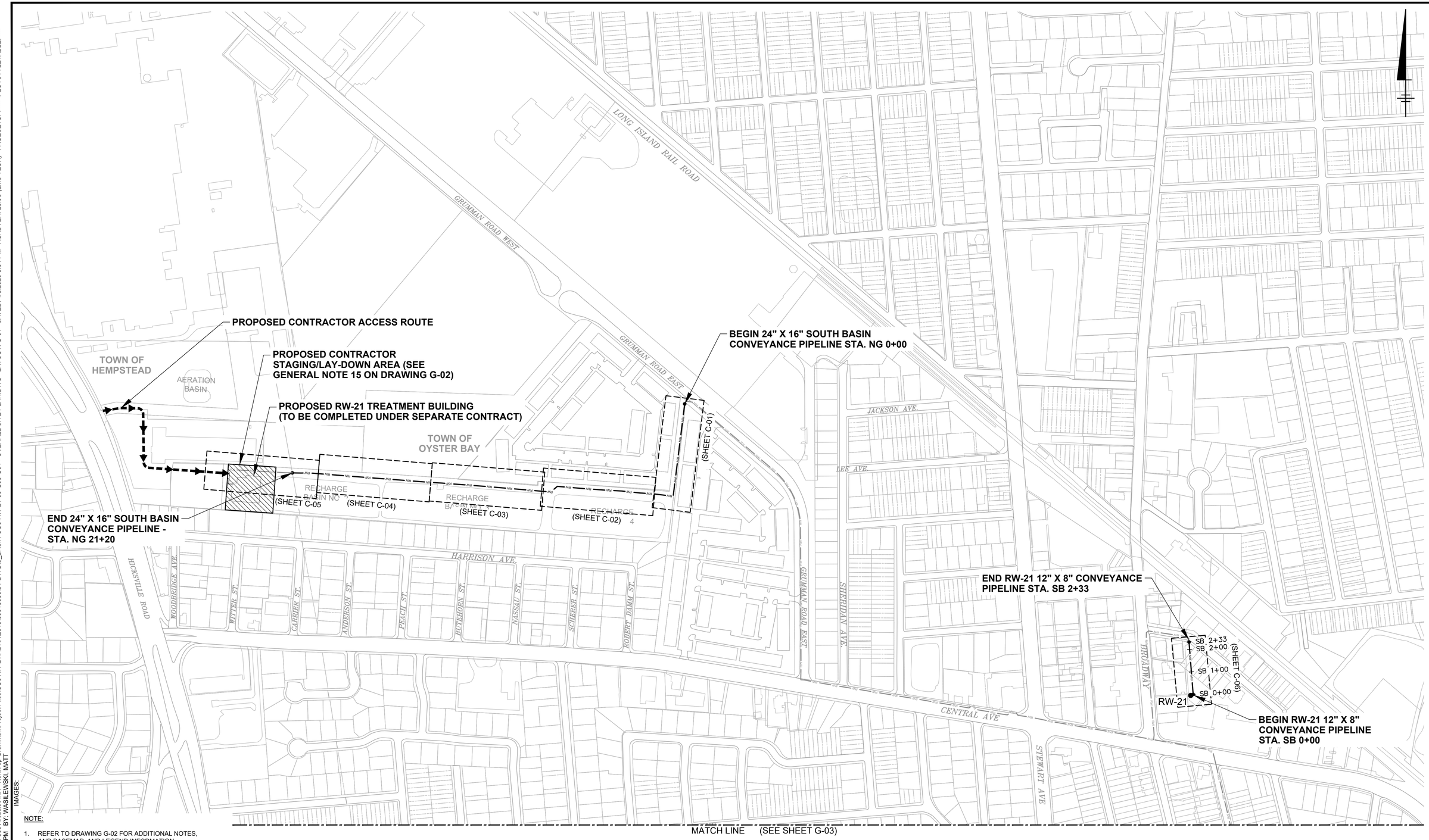


NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP, AND LEGEND INFORMATION.

200' 0 200' 400'
1"=200'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
CHRISTOPHER ENGLER		
Professional Engineer's No.		
069748		
State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK

RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

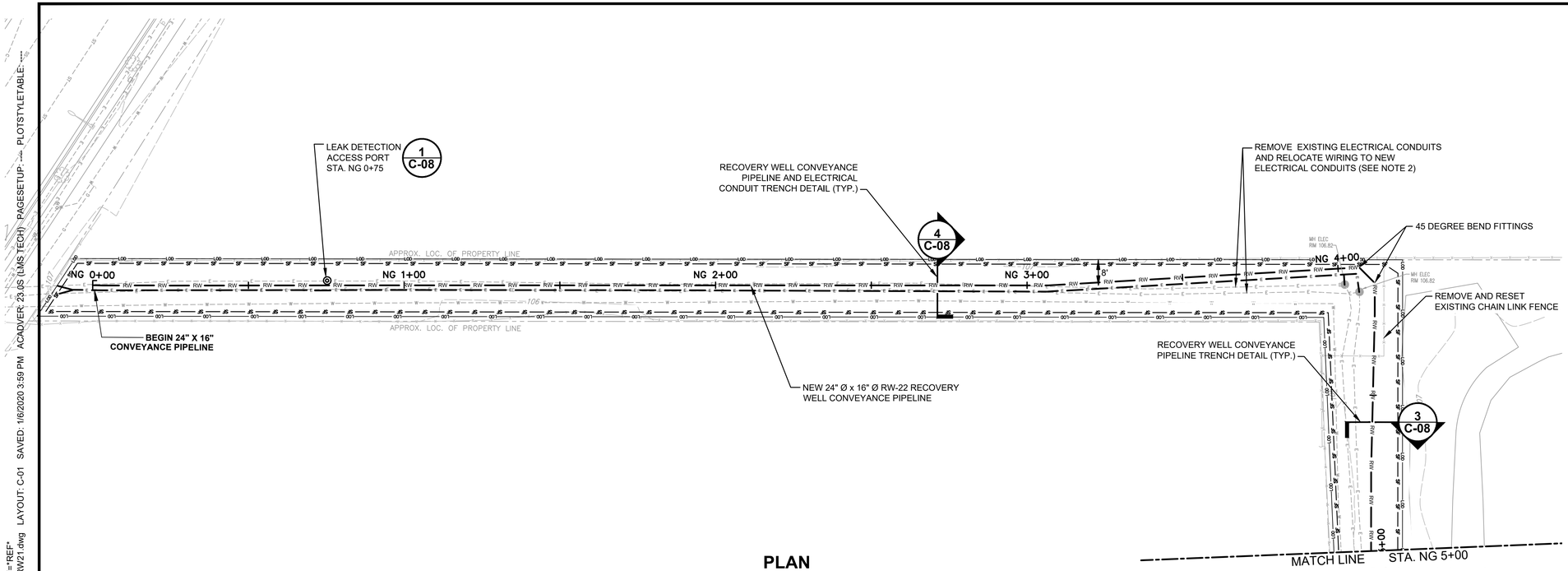
OVERALL SITE PLAN - 2

GENERAL

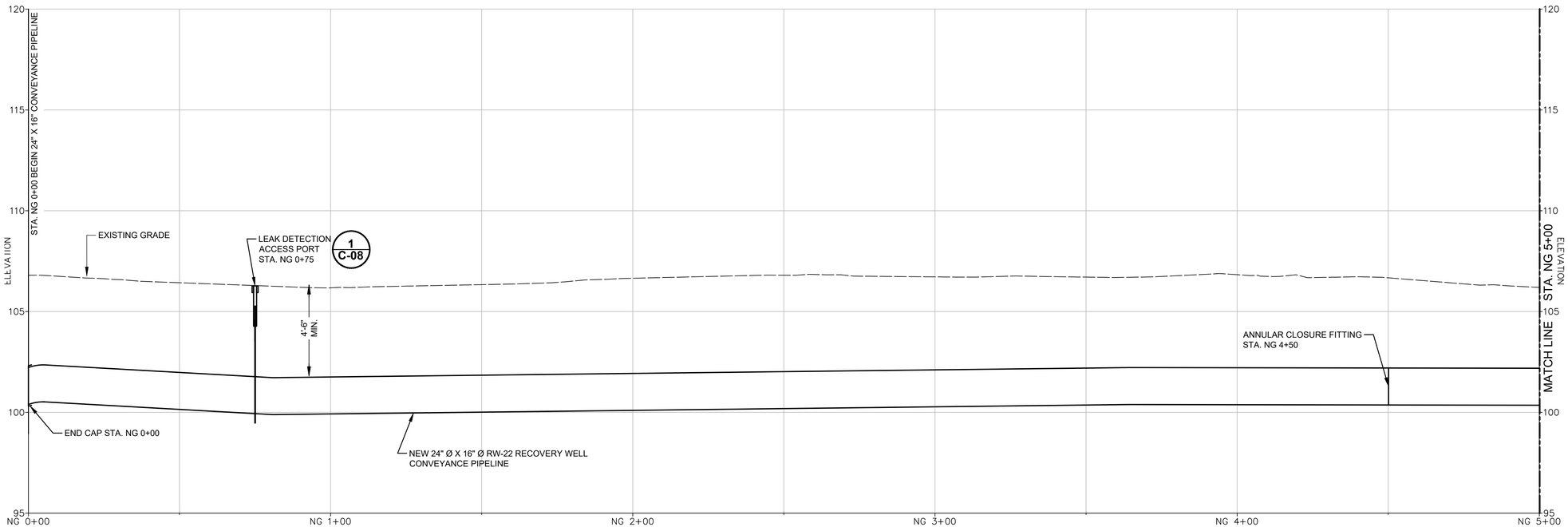
ARCADIS Project No.	30038258.RDWE1
Date	JANUARY 2020

ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

G-04



PLAN



PROFILE

PROPOSED SITE FEATURES

- 8+00 RW — NEW RECOVERY WELL CONVEYANCE PIPELINE
- LEAK DETECTION ACCESS PORT — 1 C-08
- E — NEW ELECTRICAL CONDUIT
- LOD — LIMIT OF DISTURBANCE
- SF — SF — SILT FENCE — 3 C-09

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.
2. EXISTING ELECTRICAL CONDUIT AND WIRING TO BE REMOVED PRIOR TO INSTALLATION OF CONVEYANCE PIPELINE. COORDINATE SHUTDOWN, LOCK OUT AND TAG OUT OF EXISTING ELECTRICAL LINES, AND TRANSFER OF WIRING TO NEW CONDUITS WITH NORTHRUP GRUMMAN PRIOR TO START OF CONSTRUCTION.

0 20' 40'
HORIZONTAL SCALE IN FEET
0 3' 6'
VERTICAL SCALE IN FEET

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.
NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

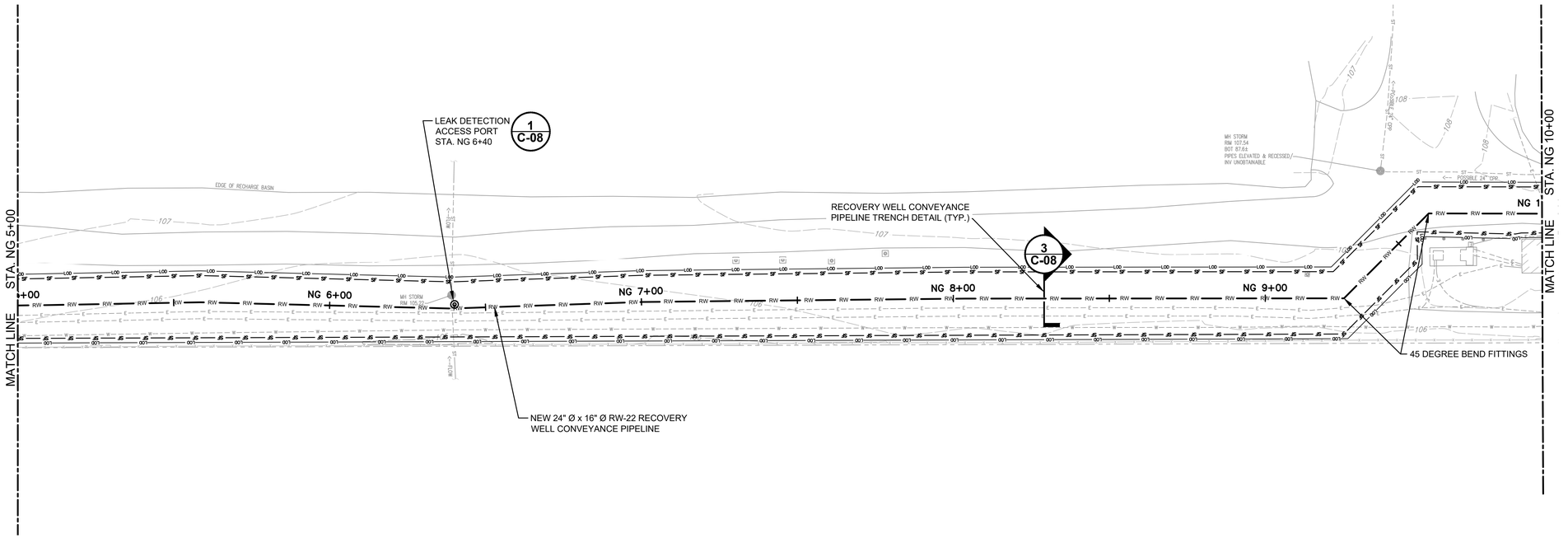
NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 0+00 - NG 5+00)

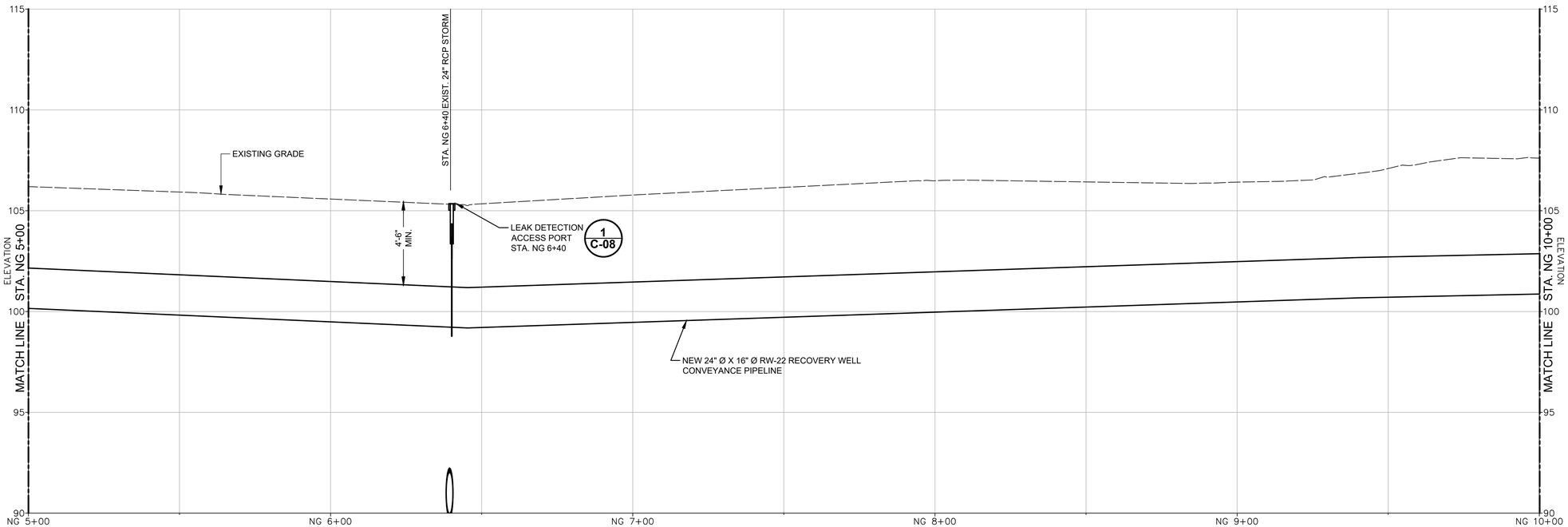
CIVIL

ARCADIS Project No. 30038258.RDWE1
Date JANUARY 2020
ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

C-01



PLAN



PROFILE

PROPOSED SITE FEATURES

- NEW RECOVERY WELL CONVEYANCE PIPELINE
- LEAK DETECTION ACCESS PORT — 1 C-08
- LIMIT OF DISTURBANCE
- SILT FENCE — 3 C-09

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

0 20' 40'
HORIZONTAL SCALE IN FEET
0 3' 6'
VERTICAL SCALE IN FEET

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.
NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

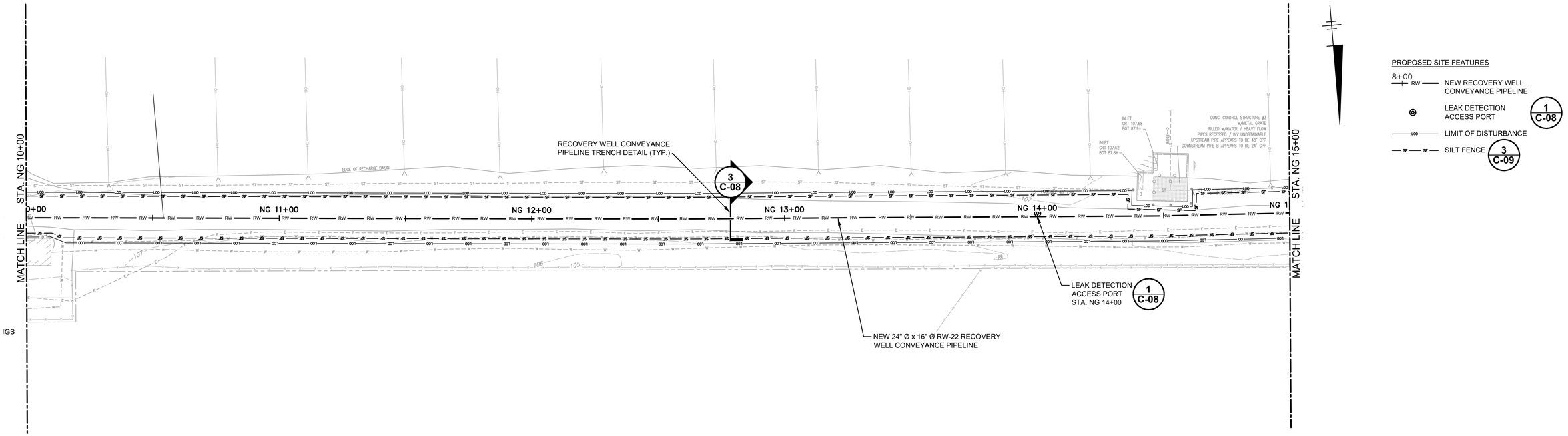
NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 5+00 - NG 10+00)

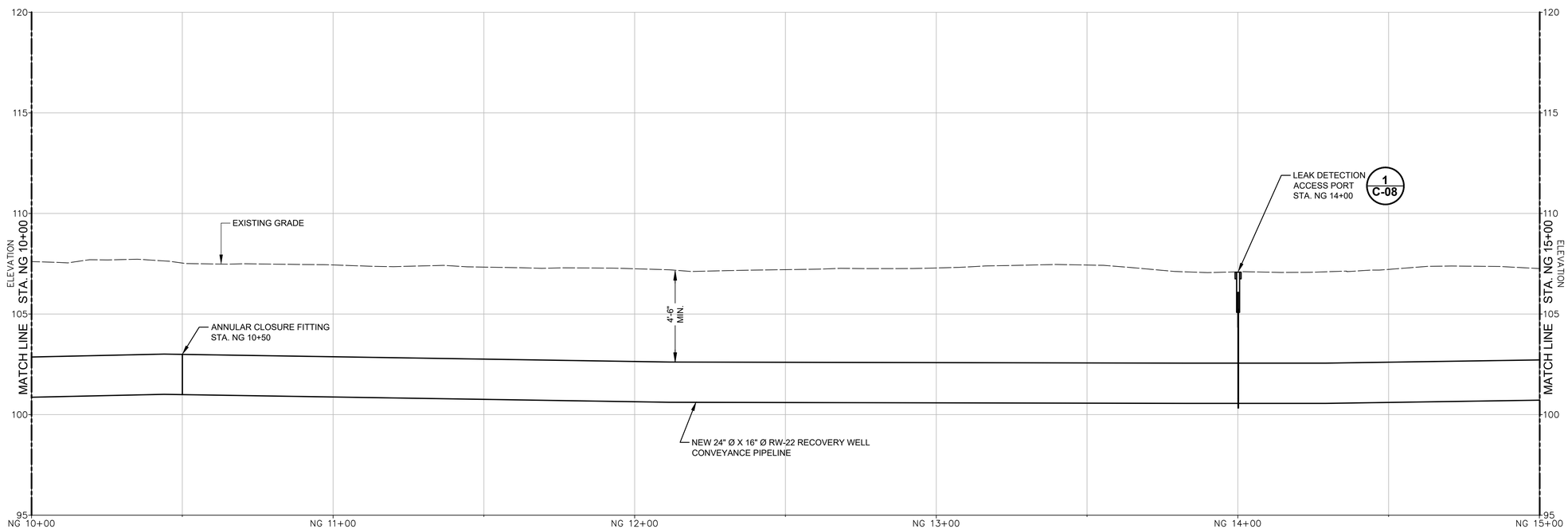
CIVIL

ARCADIS Project No. 30038258.RDWE1
Date JANUARY 2020
ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

C-02



PLAN



PROFILE

PROPOSED SITE FEATURES

- 8+00 RW — NEW RECOVERY WELL CONVEYANCE PIPELINE
- LEAK DETECTION ACCESS PORT — 1/C-08
- LOD — LIMIT OF DISTURBANCE
- SF — SF — SILT FENCE — 3/C-09

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

0 20' 40'
HORIZONTAL SCALE IN FEET
0 3' 6'
VERTICAL SCALE IN FEET

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No.	Date	Revisions	By	Ckd

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Professional Engineer's No.: 069748

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NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

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NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 10+00 - NG 15+00)

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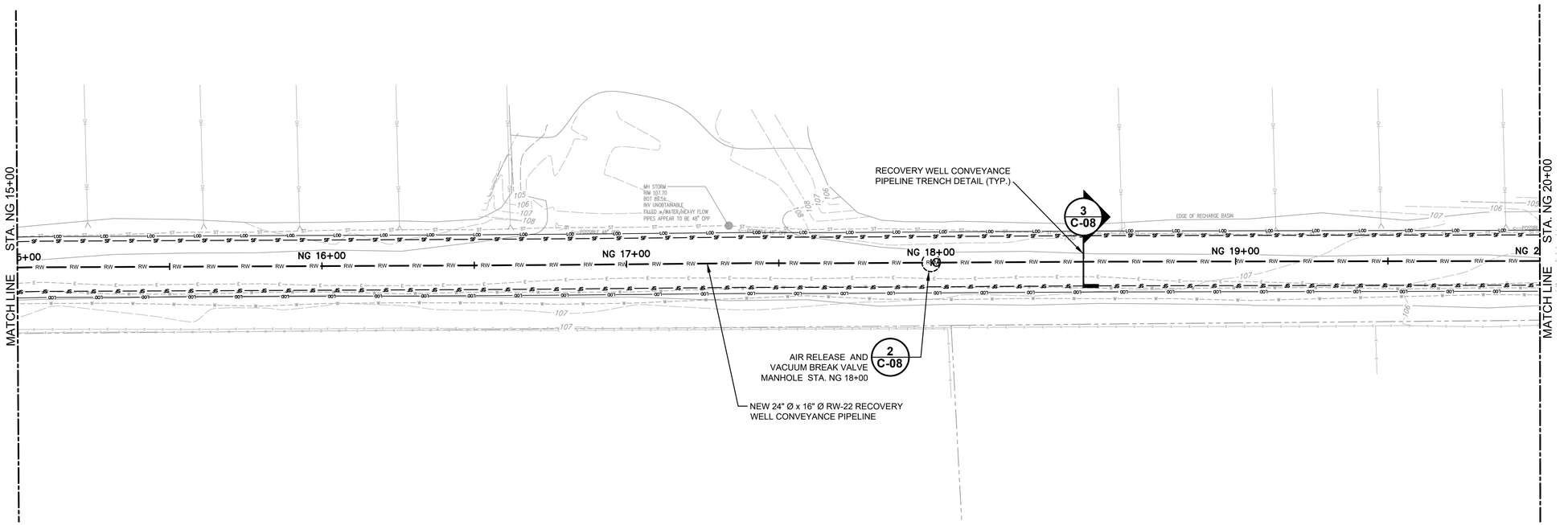
C-03



PLAN

PROFILE

PROPOSED SITE FEATURES

- NEW RECOVERY WELL CONVEYANCE PIPELINE
- LEAK DETECTION ACCESS PORT — 1 / C-08
- LIMIT OF DISTURBANCE
- SILT FENCE — 3 / C-09

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

0 20' 40'
HORIZONTAL SCALE IN FEET
0 3' 6'
VERTICAL SCALE IN FEET

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

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RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 15+00 - NG 20+00)

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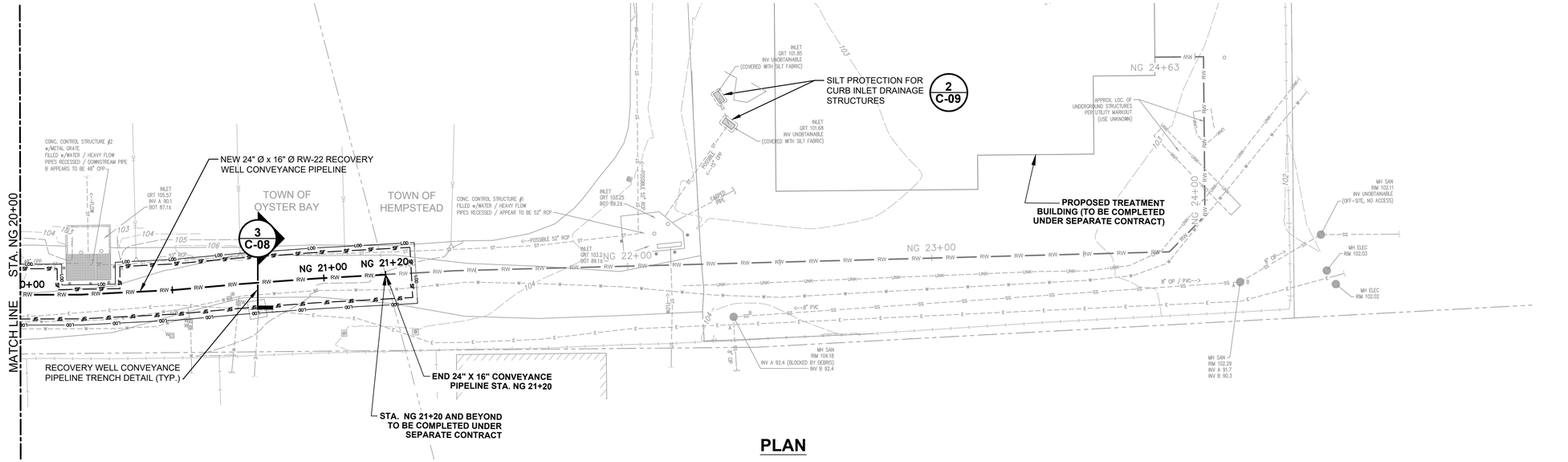
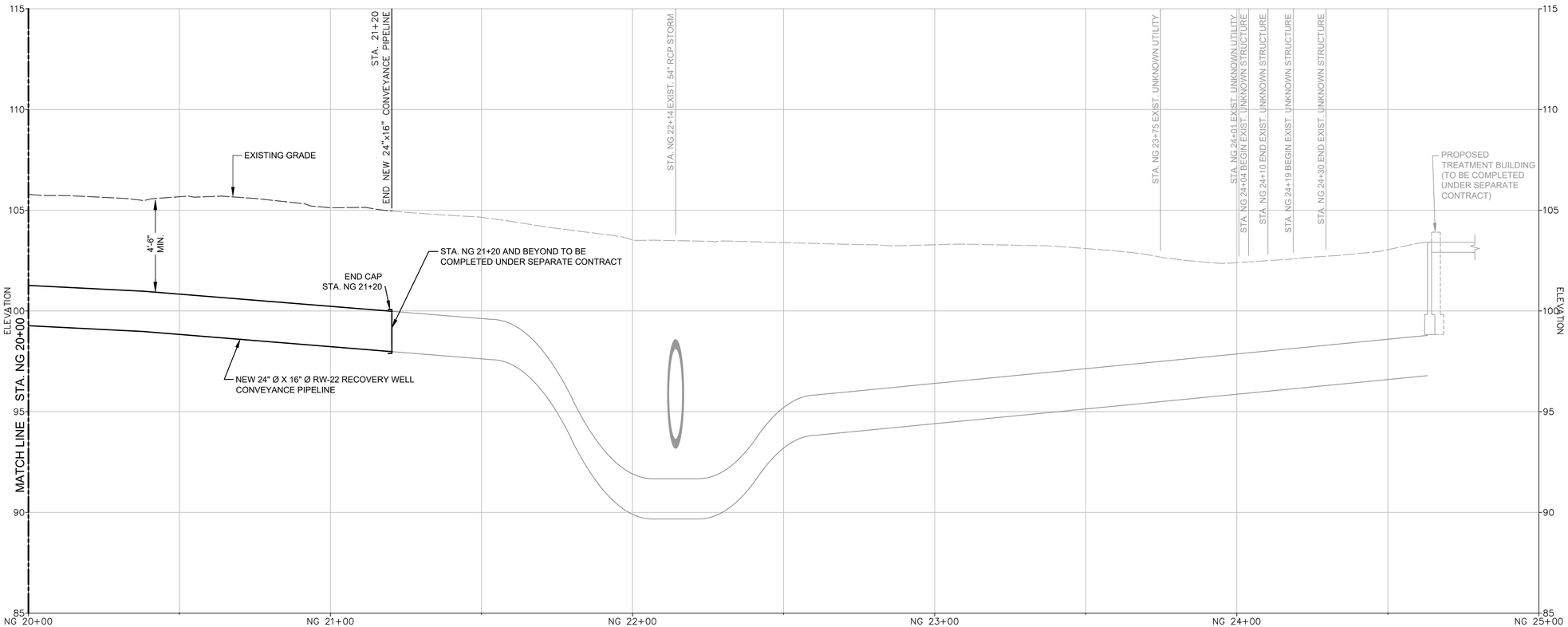
TEL. 631.249.7600

C-04



PLAN



PROFILE

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

0 20' 40'
HORIZONTAL SCALE IN FEET
0 3' 6'
VERTICAL SCALE IN FEET

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

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NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

SOUTH BASIN CONVEYANCE PIPELINE PLAN/PROFILE (STA. NG 20+00 - NG 21+20)

CIVIL

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Date JANUARY 2020
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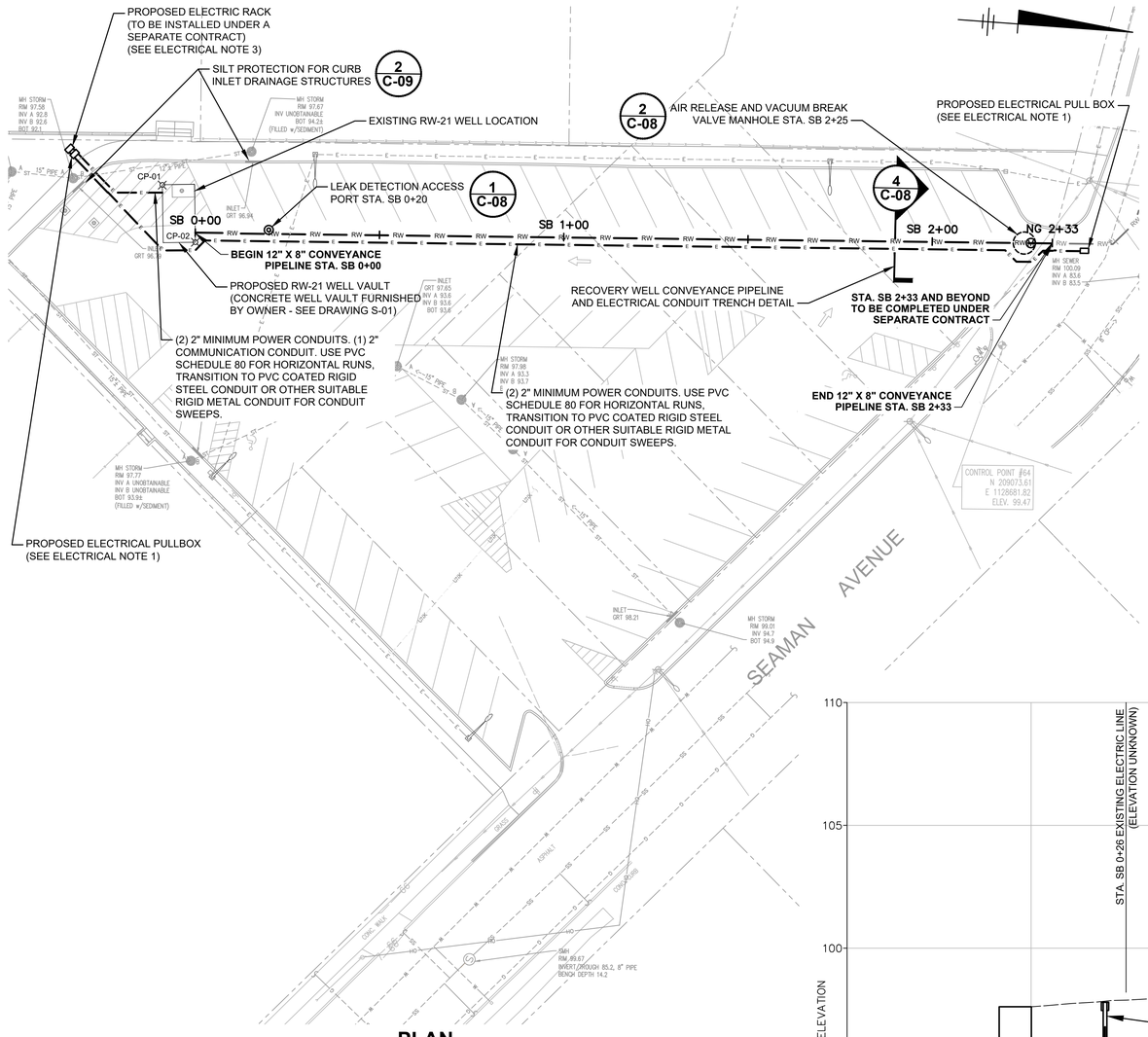
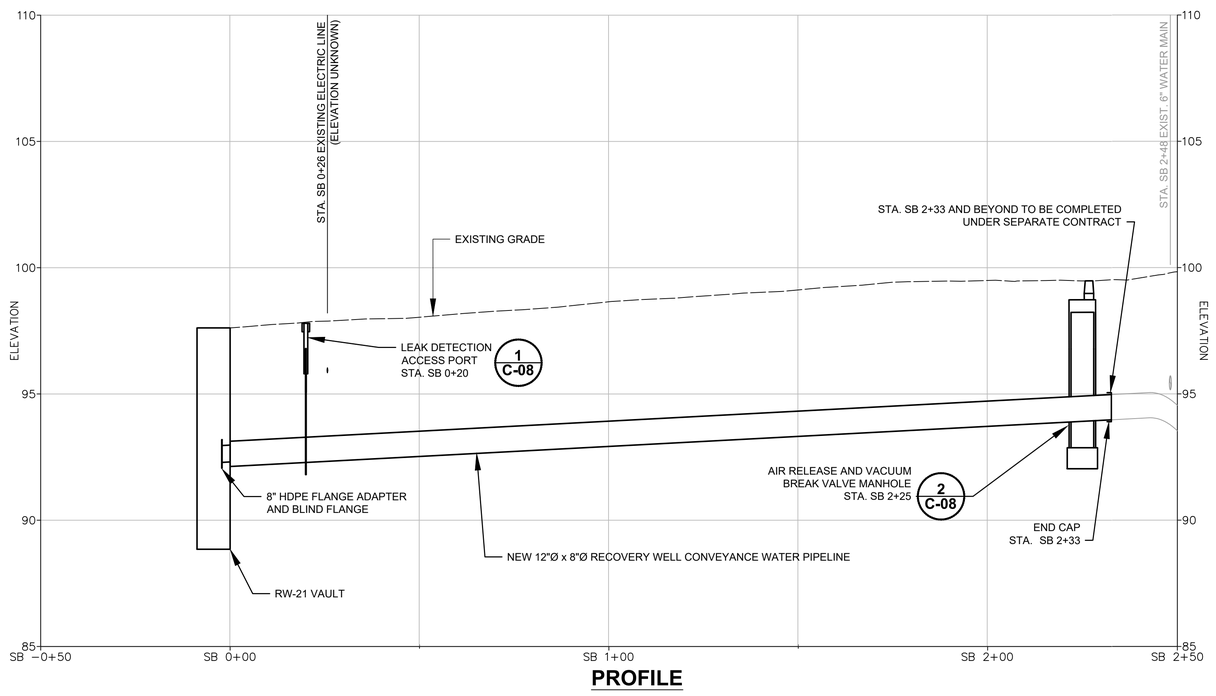
C-05



PLAN



PROFILE

PROPOSED SITE FEATURES

- 8+00 RW — NEW RECOVERY WELL CONVEYANCE PIPELINE
- E — NEW ELECTRICAL CONDUIT
- LEAK DETECTION ACCESS PORT — 1 C-08
- AIR RELEASE AND VACUUM BREAK VALVE MANHOLE — 2 C-08

VAULT LOCATION COORDINATES		
ID	NORTHING	EASTING
CP-01	208842.67	1128659.12
CP-02	208853.01	1128673.86

ELECTRICAL NOTES:

1. PULL/SPLICE BOXES SHALL BE INSTALLED AND SELECTED ACCORDING TO PSEGLI RED BOOK SPECIFICATIONS. SELECTION WILL BE DETERMINED BY CONDUIT SIZES AND QUANTITIES AS WELL AS LOCATION OF THE BOXES.
2. SUMMATION OF BENDS IN CONDUIT SHALL NOT EXCEED 360 DEGREES BETWEEN CABLE PULL POINTS PER NEC. ADDITIONAL PULL BOXES SHALL BE ADDED IF ROUTING OF CONDUIT EXCEEDS THE SUMMATION OF THE BEND LIMIT.
3. INSTALL CONDUIT UNDERGROUND WITH PULL ROPE/CORD FOR FUTURE CABLE INSTALLATION. INSTALL CONDUIT SWEEPS INTO PULL BOXES, AT THE METER RACK LOCATION, AND AT THE UTILTY POLE. CAP OFF CONDUIT AND LEAVE BELOW GRADE.
4. 600V CABLE CONDUIT AND BELOW, SHALL BE BURIED MINIMUM OF 24" BELOW AND A MAXIMUM OF 30" BELOW FINISHED GRADE. ELECTRICAL WARNING TAPE SHALL BE PLACE 12" BELOW GRADE PER SPECIFICATIONS. ELECTRICAL CONDUIT SHARING TRENCHES WITH OTHER UTILITIES SHOULD BE A MINIMUM OF 12" FROM THOSE OTHER UTILITIES.
5. REFER TO ARCADIS SPECIFICATION SECTIONS 16131 (RIGID AND FLEXIBLE CONDUITS) AND 16138 (HANDHOLES FOR ELECTRICAL SYSTEMS) AND PSEGLI RED BOOK (SPECIFICATIONS & REQUIREMENTS FOR ELECTRIC INSTALLATIONS).

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

CITY: SYRACUSE, NY DIV/GROUP: IMDV DB: A.SANCHEZ, K.DAVIS LD: A.SANCHEZ PIC: D.JOHNSTON PM: C.SANGIOVANNI TM: J.MORGAN LYR: ON=*;OFF=*REF*
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IMAGES:

0 20' 40' HORIZONTAL SCALE IN FEET
0 3' 6' VERTICAL SCALE IN FEET
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Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

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NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

RW-21 WELL VAULT SITE PLAN AND CONVEYANCE PIPELINE PLAN/PROFILE (STA. SB 0+00 - SB 2+33)

CIVIL

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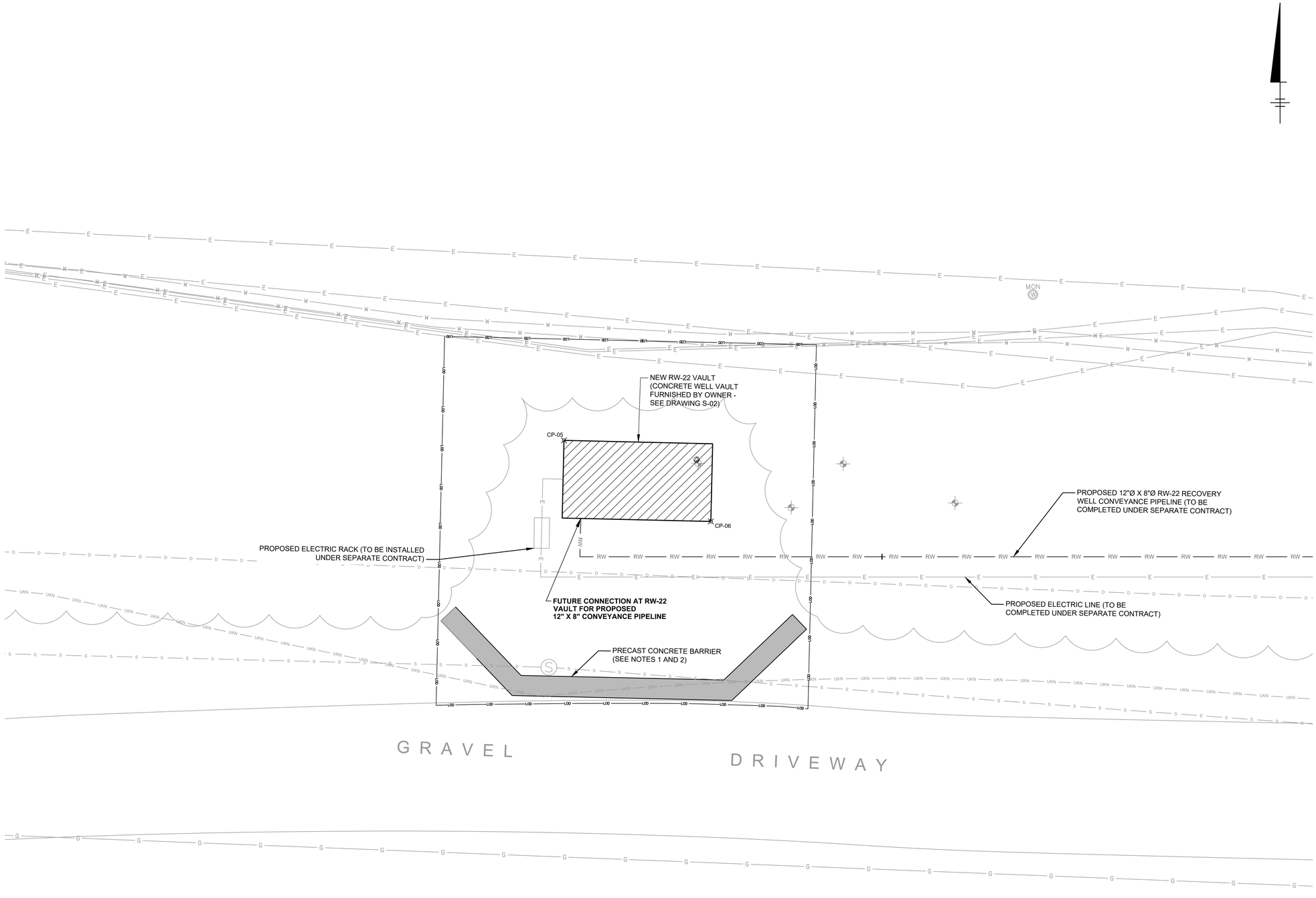
C-06



VAULT LOCATION COORDINATES		
ID	NORTHING	EASTING
CP-05	206370.02	1129132.83
CP-06	206362.17	1129147.39

NOTES:

1. CONCRETE BARRIER TO BE PLACED FOLLOWING VAULT INSTALLATION TO PREVENT TRAFFIC FROM ENTERING THE AREA. THE CONCRETE BARRIER WILL BE REMOVED FOLLOWING COMPLETION OF THE VAULT AND PIPELINE WORK BY OTHERS.
2. PRECAST CONCRETE BARRIERS SHALL CONFORM TO DETAILS SHOWN ON NYSDOT STANDARD SHEET 619-01.

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

1"=5' (5' 0 5' 10')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name		
CHRISTOPHER ENGLER		
Professional Engineer's No.		
069748		
State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

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ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK

RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

RW-22 WELL VAULT SITE PLAN

CIVIL

ARCADIS Project No. 30038258.RDWE1

Date JANUARY 2020

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2 HUNTINGTON QUADRANGLE
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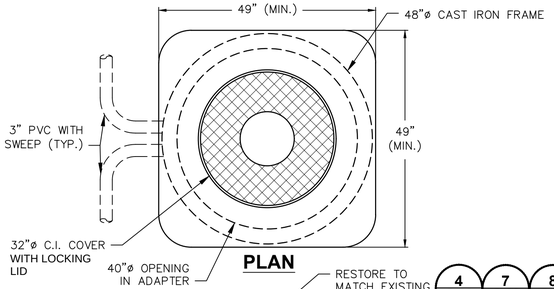
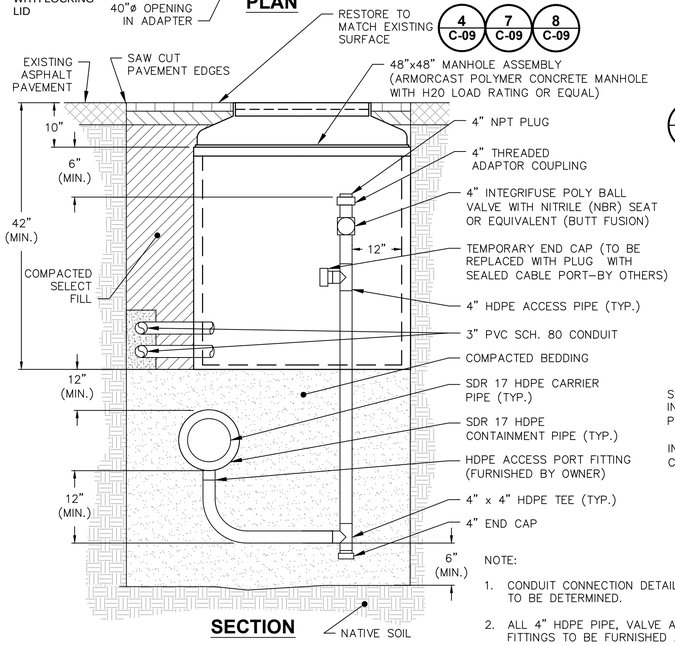
C-07



PLAN



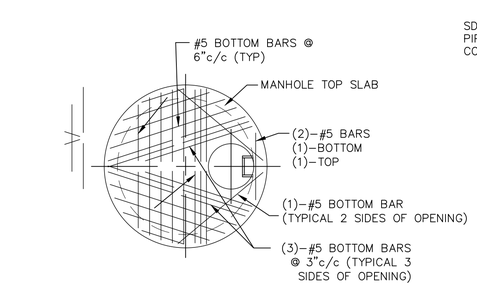
SECTION

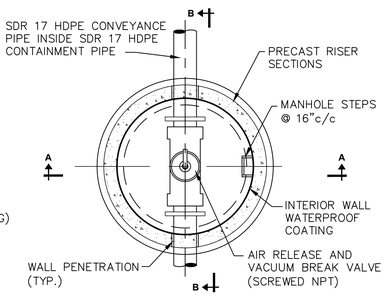
NOTE:

1. CONDUIT CONNECTION DETAILS TO BE DETERMINED.
2. ALL 4" HDPE PIPE, VALVE AND FITTINGS TO BE FURNISHED AND INSTALLED BY CONTRACTOR

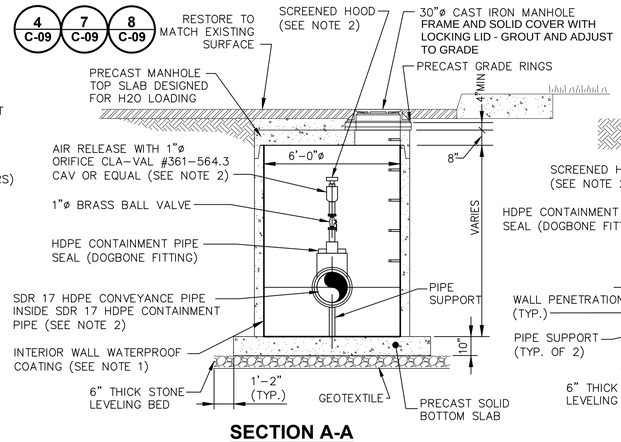
LEAK DETECTION ACCESS PORT 1

NOT TO SCALE

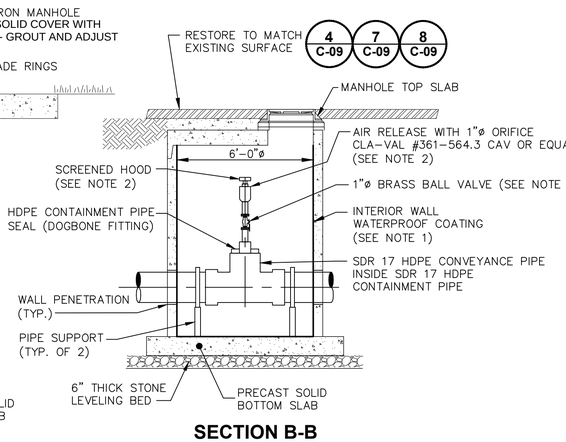




PLAN



SECTION A-A



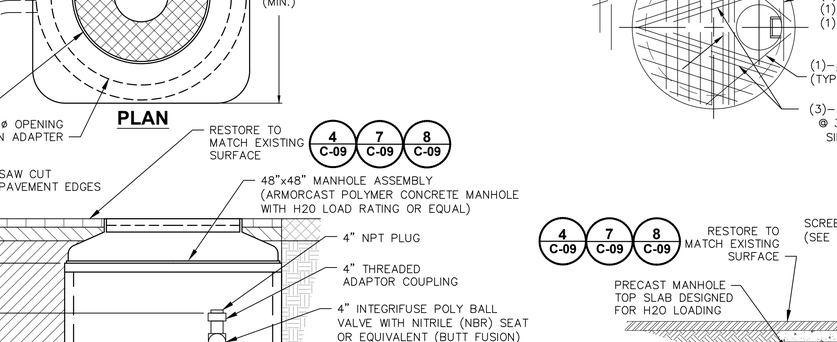
SECTION B-B

NOTE:

1. WATERPROOF COATING SHALL BE CPP SPRAYLINER AS MANUFACTURED BY EPOXYTEC OR APPROVED EQUAL.
2. AIR RELEASE PIPING, VALVE AND FITTINGS TO BE FURNISHED AND INSTALLED BY CONTRACTOR.

AIR RELEASE AND VACUUM BREAK VALVE MANHOLE DETAILS 2

NOT TO SCALE

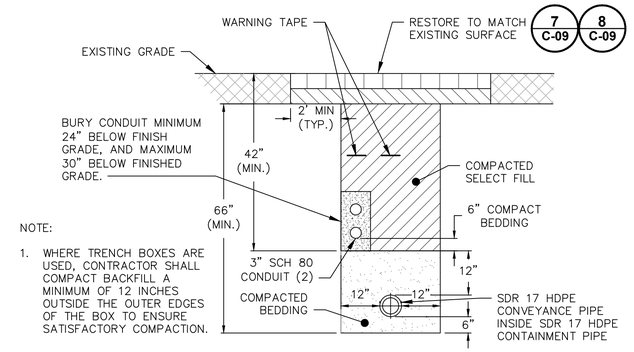


TYPICAL UTILITY CROSSING 5

NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL DETERMINE IF PIPE BEND CAN BE COMPLETED USING MAXIMUM PIPE BEND RADIUS OR IF STANDARD PIPE BEND FITTING IS REQUIRED BASED ON FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. MAXIMUM BEND RADIUS SHALL BE 50 TIMES THE OUTSIDE DIAMETER OF THE PIPE. ALL STANDARD PIPE BEND FITTINGS SHALL BE INSTALLED BASED ON MANUFACTURER SPECIFICATIONS AND RECOMMENDATIONS. CONTRACTOR TO PROVIDE PRODUCT DATA SHEETS FOR ANY PROPOSED PIPE BEND FITTINGS FOR APPROVAL PRIOR TO USE.

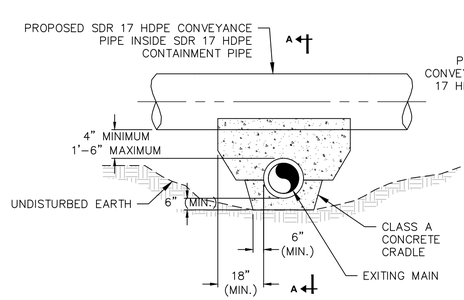


NOTE:

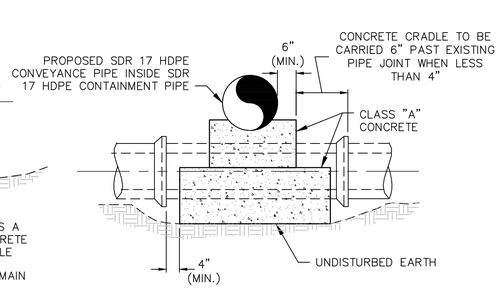
1. WHERE TRENCH BOXES ARE USED, CONTRACTOR SHALL COMPACT BACKFILL A MINIMUM OF 12 INCHES OUTSIDE THE OUTER EDGES OF THE BOX TO ENSURE SATISFACTORY COMPACTION.

RECOVERY WELL CONVEYANCE PIPELINE TRENCH DETAIL 3

NOT TO SCALE



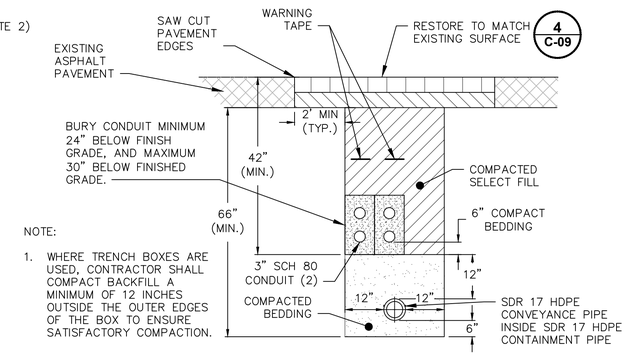
ELEVATION



SECTION A-A

TYPICAL UTILITY CROSSING LACKING REQUIRED VERTICAL OFFSET 6

NOT TO SCALE



NOTE:

1. WHERE TRENCH BOXES ARE USED, CONTRACTOR SHALL COMPACT BACKFILL A MINIMUM OF 12 INCHES OUTSIDE THE OUTER EDGES OF THE BOX TO ENSURE SATISFACTORY COMPACTION.

RECOVERY WELL CONVEYANCE PIPELINE AND ELECTRICAL CONDUIT TRENCH DETAIL 4

NOT TO SCALE

GENERAL NOTE:

1. REFER TO DRAWING G–02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

IMAGES:
Conc.CurbDetail.jpg
Conc.SidewalkDetail.jpg
InletProtectionDetail.jpg

DRAWING NOT TO SCALE

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State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
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NORTHROP GRUMMAN SYSTEMS CORPORATION • OPERABLE UNIT 3 • BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

PIPELINE DETAILS

CIVIL

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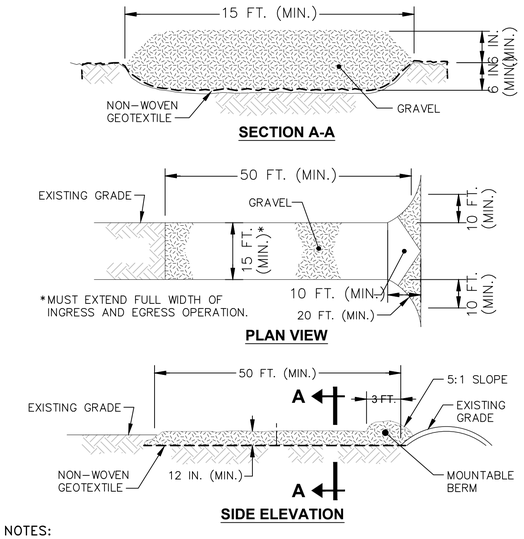
TEL. 631.249.7600

C-08

CITY: SYRACUSE, NY DIV/GROUP: IMDV DB: A.SANCHEZ, K.DAVIS LD: A.SANCHEZ PIC: D.JOHNSTON PM: C.SANGIOVANNI TM: J.MORGAN LYR: ON=*;OFF=*REF*
C:\Users\mwaslewski\BIM 360\Arcadis\ANA - Northrop Grumman\Project Files\OU3 RW-21\RDRA\2019\3001805001-DWGS_BASIN-OU3-RW-21-95-C08-C09-MISC DETAILS.dwg LAYOUT: C-08 SAVED: 1/3/2020 5:44 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/3/2020 5:49 PM BY: WASILEWSKI, MATT

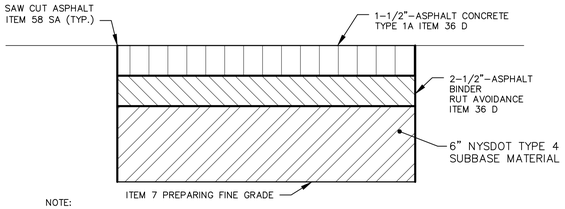


NOTES:

1. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT ANY POINT OF ACCESS TO WORK AREAS, NOT ALREADY STABILIZED OR ACCESSIBLE (E.G. EXISTING ROADS).
2. PLAN DIMENSIONS OF CONSTRUCTION ENTRANCE ARE MINIMUMS.
3. PROVIDE HDPE CULVERT PIPES WHERE CONSTRUCTION ENTRANCE WOULD IMPEDE SURFACE DRAINAGE.

STABILIZED CONSTRUCTION ENTRANCE (1)

NOT TO SCALE

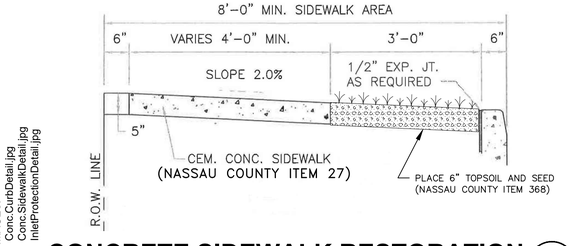


NOTE:

1. ITEM NUMBERS ABOVE REFER TO NASSAU COUNTY 2009 STANDARD SPECIFICATIONS.

ASPHALT PAVEMENT RESTORATION (4)

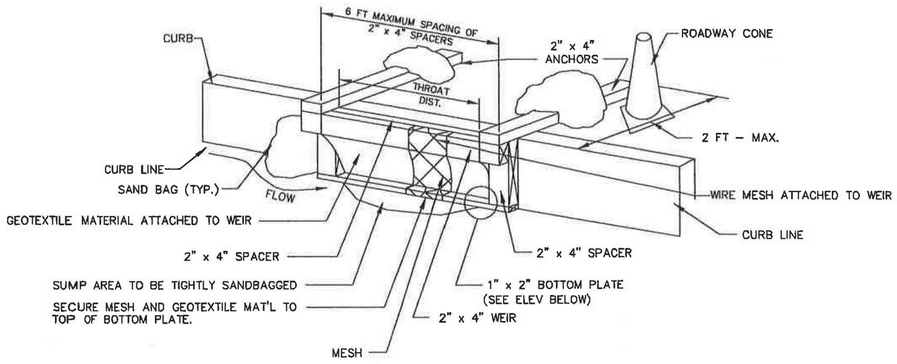
NOT TO SCALE



IMAGES:
Conc.CurbDetail.jpg
Conc.SidewalkDetail.jpg
InletProtectionDetail.jpg

CONCRETE SIDEWALK RESTORATION (5)

NOT TO SCALE

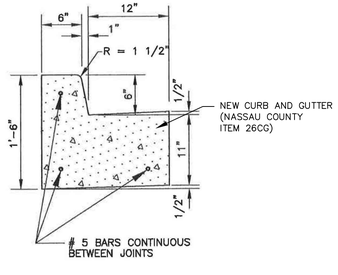


NOTES:

1. THE CONTRACTOR SHALL PLACE THE GEOTEXTILE MATERIAL AS SHOWN IN THE DETAILS.
2. THE GEOTEXTILE MATERIAL SHALL BE TIED TO THE 6" x 6" MESH WIRE WITH THE APPROPRIATE FASTENERS. THE WIRE MESH SHALL BE FASTENED BY NAILING, STAPLING, OR OTHER SATISFACTORY MEANS TO THE WOOD FRAME THAT WILL SUPPORT THE FABRIC AND WIRE. BOTH SHALL BE PLACED BETWEEN THE FRAME AND GRATE, ON THE STREET SIDE OF THE STRUCTURE AS DIRECTED BY THE ENGINEER.
3. THE WOODEN FRAME SHALL BE CONSTRUCTED WITH THE INTENT THAT IT WILL SUPPORT THE MATERIAL THAT WILL ACCUMULATE DURING THE LIFE OF THE CONTRACT OR AS DIRECTED BY THE ENGINEER.
4. THE WIRE MESH SHALL BE CONTINUOUS 4 FT MINIMUM WIDTH AND A LENGTH SUFFICIENT TO BE CONSTRUCTED AS SHOWN IN THE DETAIL. IT SHALL BE SECURE AND ATTACHED TO THE WOOD WEIR AS NOTED OR AS DIRECTED BY THE ENGINEER.
5. THE PROTECTION DEVICE SHALL BE PLACED AGAINST THE CURB INLET AND SECURED BY 2" x 4" ANCHORS 2 FT IN LENGTH, EXTENDING ACROSS THE TOP OF THE INLET, AND HELD IN PLACE BY THE SANDBAGS. ADDITIONAL SANDBAGS, AS SHOWN IN THE DETAIL, SHALL BE PLACED ON BOTH SIDES OF THE BASIN AND SHALL BE PLACED UP AGAINST THE CURB LINE ON EITHER EDGE OF THE SURFACE INLET.
6. THE INSTALLATION OF THIS FILTERING SYSTEM SHALL BE DONE PRIOR TO ANY EXCAVATION ON THE JOB THAT HAS THE POTENTIAL TO PRODUCE SEDIMENT RUNOFF, OR AS DIRECTED BY THE ENGINEER.

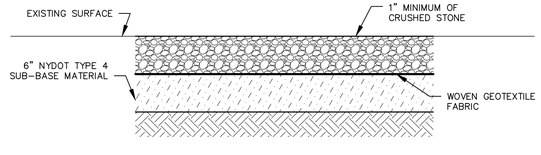
SILT PROTECTION FOR CURB INLET DRAINAGE STRUCTURES (2)

NOT TO SCALE



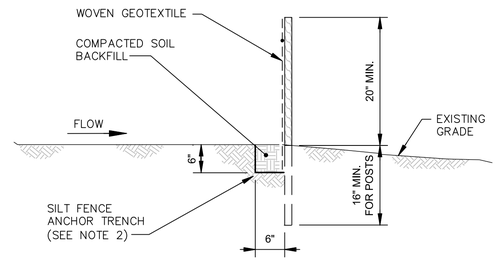
CONCRETE CURB AND GUTTER RESTORATION (6)

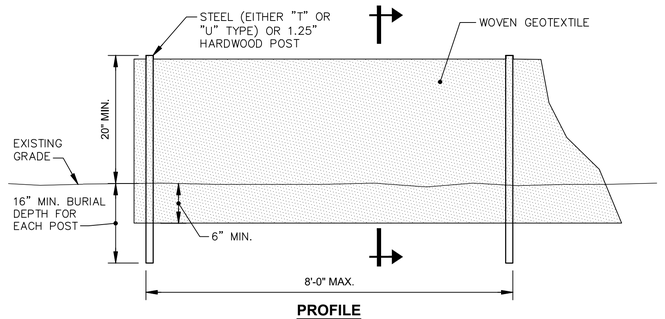
NOT TO SCALE



GRAVEL AREA RESTORATION DETAIL (7)

NOT TO SCALE



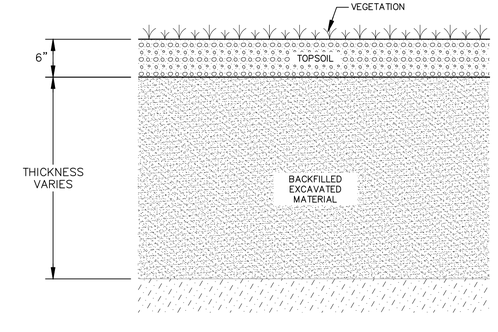


NOTES:

1. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE OR AS DIRECTED BY ENGINEER.
2. THE SILT FENCE SHALL BE FOLDED INTO A TRENCH AND BACKFILLED.
3. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.

SILT FENCE (3)

NOT TO SCALE



VEGETATED RESTORATION AREA DETAIL (8)

NOT TO SCALE

GENERAL NOTE:

1. REFER TO DRAWING G-02 FOR ADDITIONAL NOTES, AND BASEMAP AND LEGEND INFORMATION.

DRAWING NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: _____ USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
SS/KMG	MW	JM

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

MISCELLANEOUS SITE DETAILS

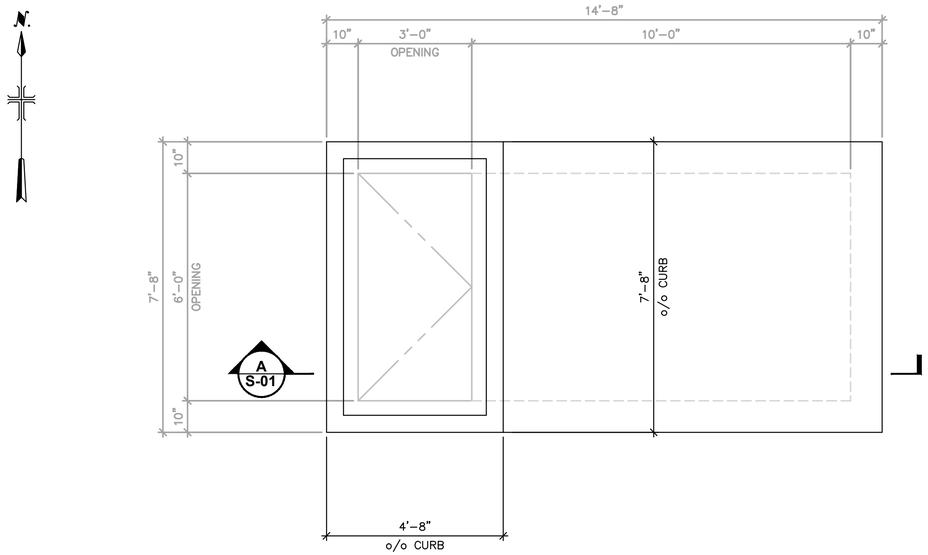
CIVIL

ARCADIS Project No.: 30038258.RDWE1
Date: JANUARY 2020

ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

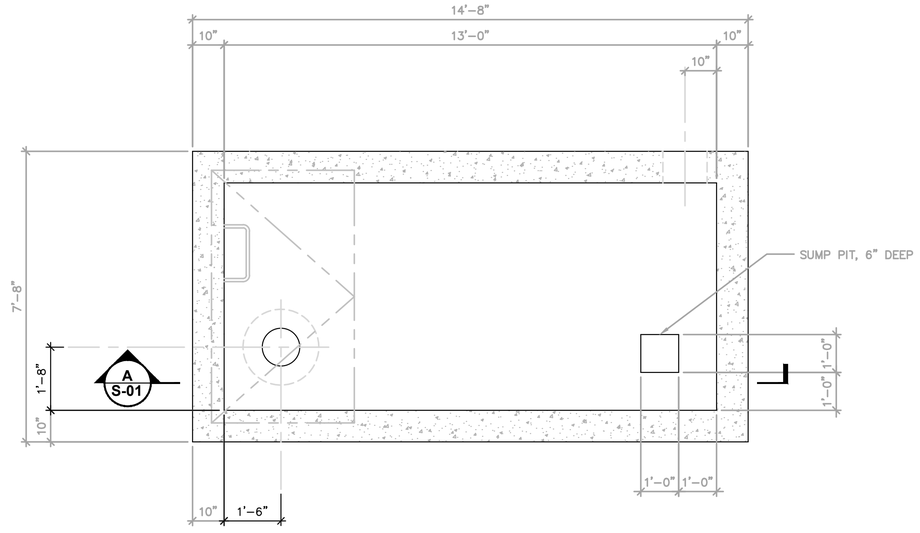
C-09

CITY: SYRACUSE, NY DIV/GROUP: IMDV DB: A.SANCHEZ, K.DAVIS LD: A.SANCHEZ PIC: D.JOHNSTON PM: C.SANGIOVANNI TM: J.MORGAN LYR: ON=*;OFF=*REF*
C:\Users\mwasilewski\BIM 360\Arcadis\ANA - Northrop Grumman\Project Files\OU3 RW-21\RDRA\2019\30018050\01-DWG\S_BASIN-OU3-RW-21-95-C08-C09-MISC DETAILS.dwg LAYOUT: C-09 SAVED: 1/3/2020 5:44 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/3/2020 6:02 PM BY: WASILEWSKI, MATT



TOP SLAB PLAN VIEW - RW-21

SCALE 1/2" = 1'-0"

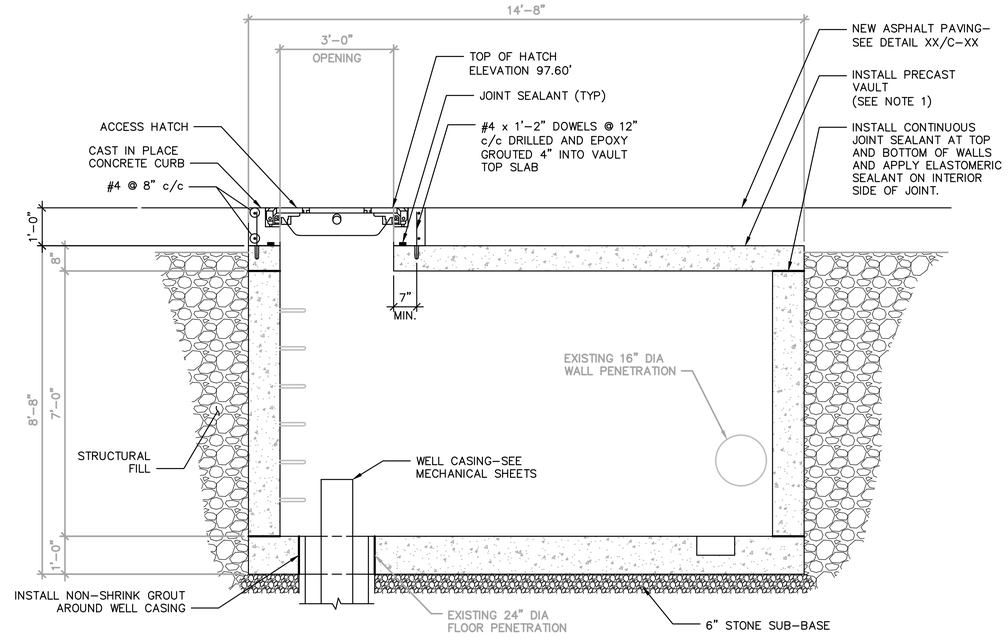


SECTIONAL PLAN VIEW - RW-21

SCALE 1/2" = 1'-0"

NOTES:

1. VAULT HAS BEEN PURCHASED BY OWNER UNDER A SEPARATE CONTRACT. IT IS LOCATED AT NORTHROP GRUMMAN, BUILDING 14, 925 S OSYTER BAY RD. BETHPAGE NY 11714. COORDINATE WITH ENGINEER AND OWNER FOR ACCESS. CONTRACTOR TO COORDINATE AND IS RESPONSIBLE FOR LOADING, TRANSPORTING, AND INSTALLING PRECAST VAULT SECTIONS. CONTRACTOR SHALL INSTALL HATCH COVER AND CONCRETE CURB AS SHOWN.
2. PIPING AND EQUIPMENT NOT SHOWN, SEE SHEET M-01.
3. CONCRETE CURB SHALL BE CLASS C OR F (HIGH EARLY STRENGTH) IN ACCORDANCE WITH NYDOT SECTION 501, PLACED IN ACCORDANCE WITH SECTION 555.
4. REINFORCING STEEL SHALL BE GRADE 60 IN ACCORDANCE WITH NYDOT SPECIFICATION ITEM 709-01.
5. EPOXY GROUT FOR REINFORCING BAR DOWELS SHALL BE HILTI HIT-RE 500 V3 EPOXY ADHESIVE.
6. JOINT SEALANT SHALL BE CONSEAL CS-202 BUTYL RUBBER SEALANT. ELASTOMERIC SEALANT SHALL BE CONSEAL CS-1500.
7. APPLY SHERWIN WILLIAMS COROBOND 100 EPOXY PRIMER/SEALER AND COR-COTE EN 7000 EPOXY FINISH COATING TO VAULT FLOOR AND INTERIOR SIDE OF WALLS.
8. ACCESS HATCH SHALL BE EJ MODEL 00819761B03 HEAVY DUTY DUCTILE IRON HINGED HATCH. INCLUDE LIFT ASSIST, SAFETY GRATE AND CAM LOCK. HATCH INSTALLATION SHALL BE WATERTIGHT.
9. NON-SHRINK GROUT SHALL BE EUCLID CHEMICAL NS GROUT.
10. APPLY ELASTOMETRIC SHEET MEMBRANE WATER-PROOFING WITH PROTECTIVE COVER TO EXTERIOR WALLS OF VAULT PRIOR TO BACKFILLING, SEE SPECIFICATION SECTION 071110.



A S-01 SECTION

SCALE 1/2" = 1'-0"

Professional Engineer's Name: CHRISTOPHER ENGLER
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
LB	TJM	BH

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN SYSTEMS CORPORATION • OPERABLE UNIT 3 • BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

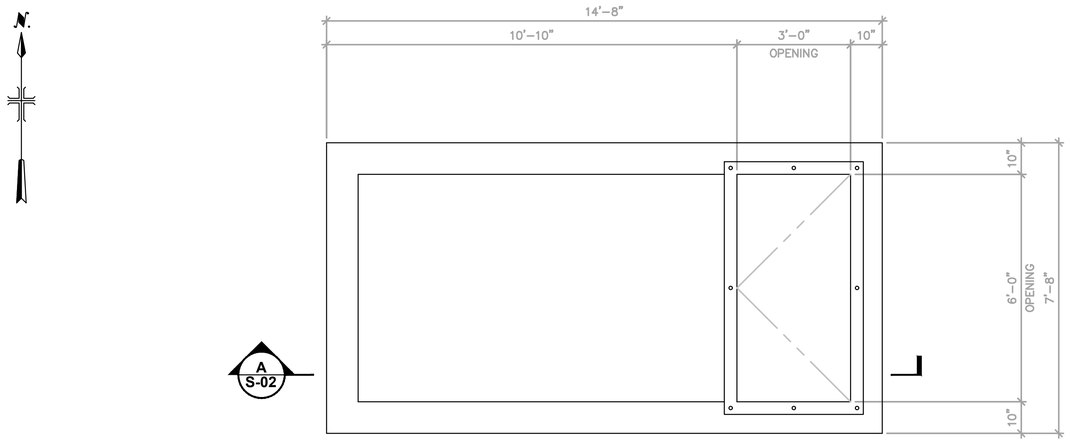
WELL VAULT RW-21 STRUCTURAL PLANS AND SECTIONS

STRUCTURAL

ARCADIS Project No. 30038258.RDWE1
Date JANUARY 2020

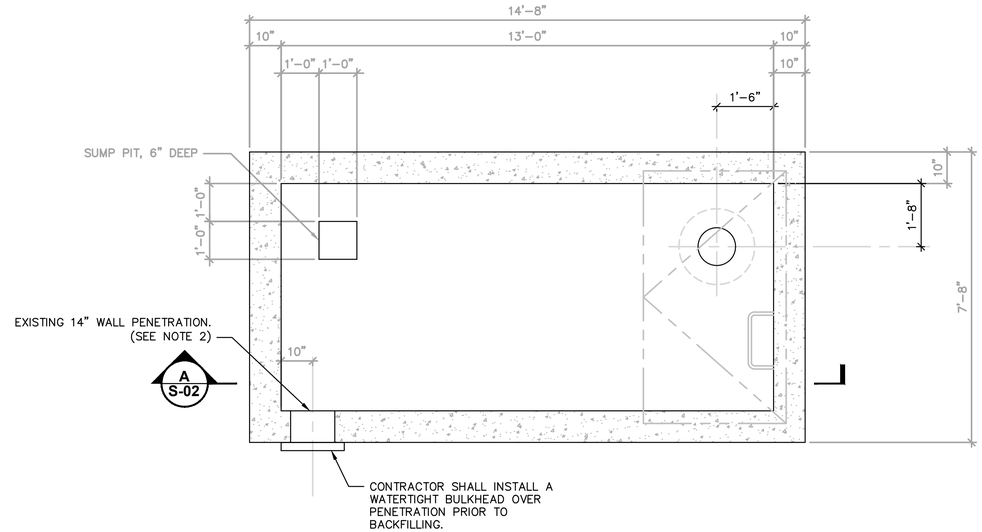
ARCADIS
2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

S-01



TOP SLAB PLAN VIEW RW-22

SCALE 1/2" = 1'–0"

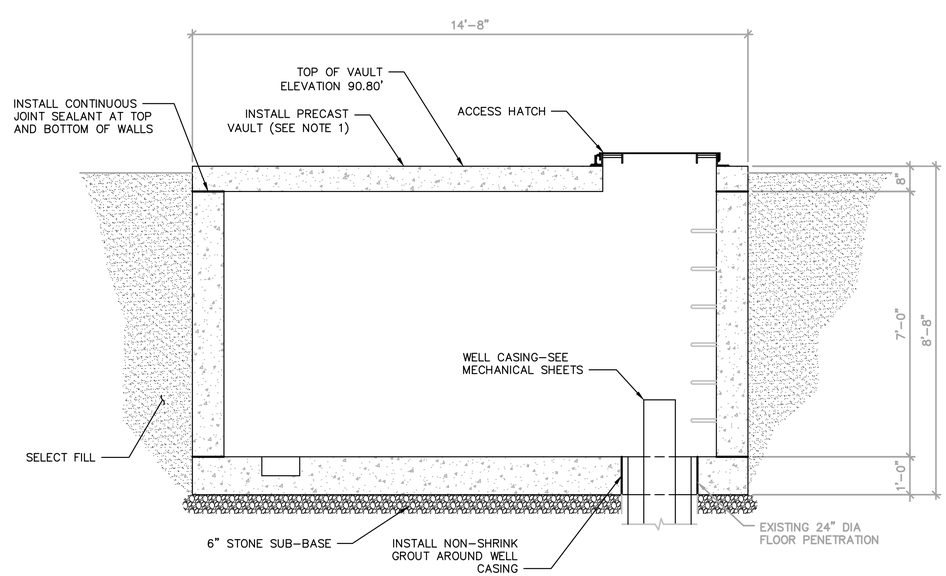


SECTIONAL PLAN VIEW RW-22

SCALE 1/2" = 1'–0"

NOTES:

1. VAULT HAS BEEN PURCHASED BY OWNER UNDER A SEPARATE CONTRACT. OWNER FURNISHED EQUIPMENT IS LOCATED AT NORTHROP GRUMMAN, BUILDING 14, 925 S OSYTER BAY RD. BETHPAGE NY 11714. COORDINATE WITH ENGINEER AND OWNER FOR ACCESS. CONTRACTOR TO COORDINATE AND IS RESPONSIBLE FOR LOADING, TRANSPORTING, AND INSTALLING PRECAST VAULT SECTIONS. CONTRACTOR SHALL INSTALL HATCH COVER AS SHOWN.
2. PRIOR TO INSTALLATION CONTRACTOR SHALL ENLARGE EXISTING 14" DIAMETER WALL PENETRATION TO CREATE A 16" WALL PENETRATION AT THE SAME CENTERLINE.
3. PIPING AND EQUIPMENT NOT SHOWN, SEE SHEET M–02.
4. JOINT SEALANT SHALL BE CONSEAL CS–202 BUTYL RUBBER SEALANT. CONSEAL ELASTOMERIC SEALANT SHALL BE CS–1500.
5. APPLY SHERWIN WILLIAMS COROBOND 100 EPOXY PRIMER/SEALER AND COR–COTE EN 7000 EPOXY FINISH COATING TO VAULT FLOOR AND INTERIOR SIDE OF WALLS.
6. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS SERIES F1R ALUMINUM ACCESS DOOR. INCLUDE SAFETY GRATE. HATCH INSTALLATION SHALL BE WATERTIGHT.
7. NON–SHRINK GROUT SHALL BE EUCLID CHEMICAL NS GROUT.
8. APPLY ELASTOMERIC SHEET MEMBRANE WATER–PROOFING WITH PROTECTIVE COVER TO EXTERIOR WALLS OF VAULT PRIOR TO BACKFILLING, SEE SPECIFICATION SECTION 071110.



SECTION

A S-02 SCALE 1/2" = 1'–0"

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No.	Date	Revisions	By	Ckd
-	-			

Professional Engineer's Name: **CHRISTOPHER ENGLER**
Professional Engineer's No.: 069748
State: NY | Date Signed: | Project Mgr.: PM
Designed by: LB | Drawn by: TJM | Checked by: BH

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK
RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

WELL VAULT RW-22 STRUCTURAL PLANS AND SECTIONS

STRUCTURAL

ARCADIS Project No.: 30038258.RDWE1
Date: JANUARY 2020

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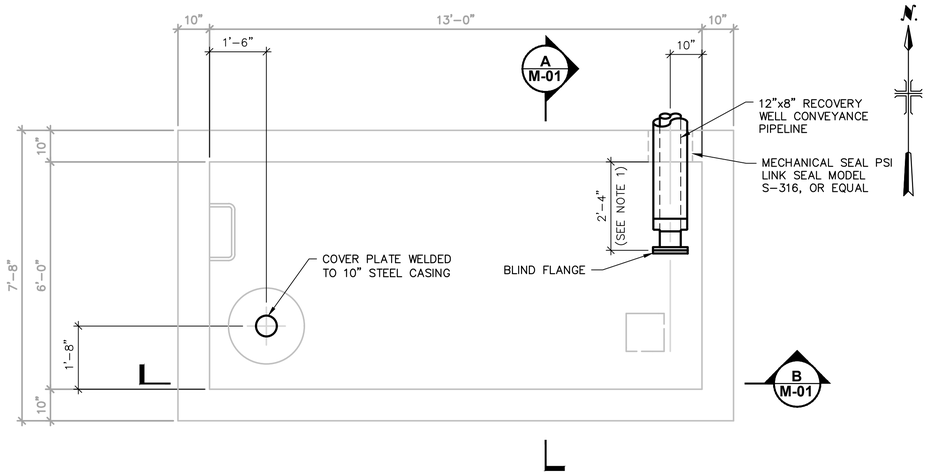
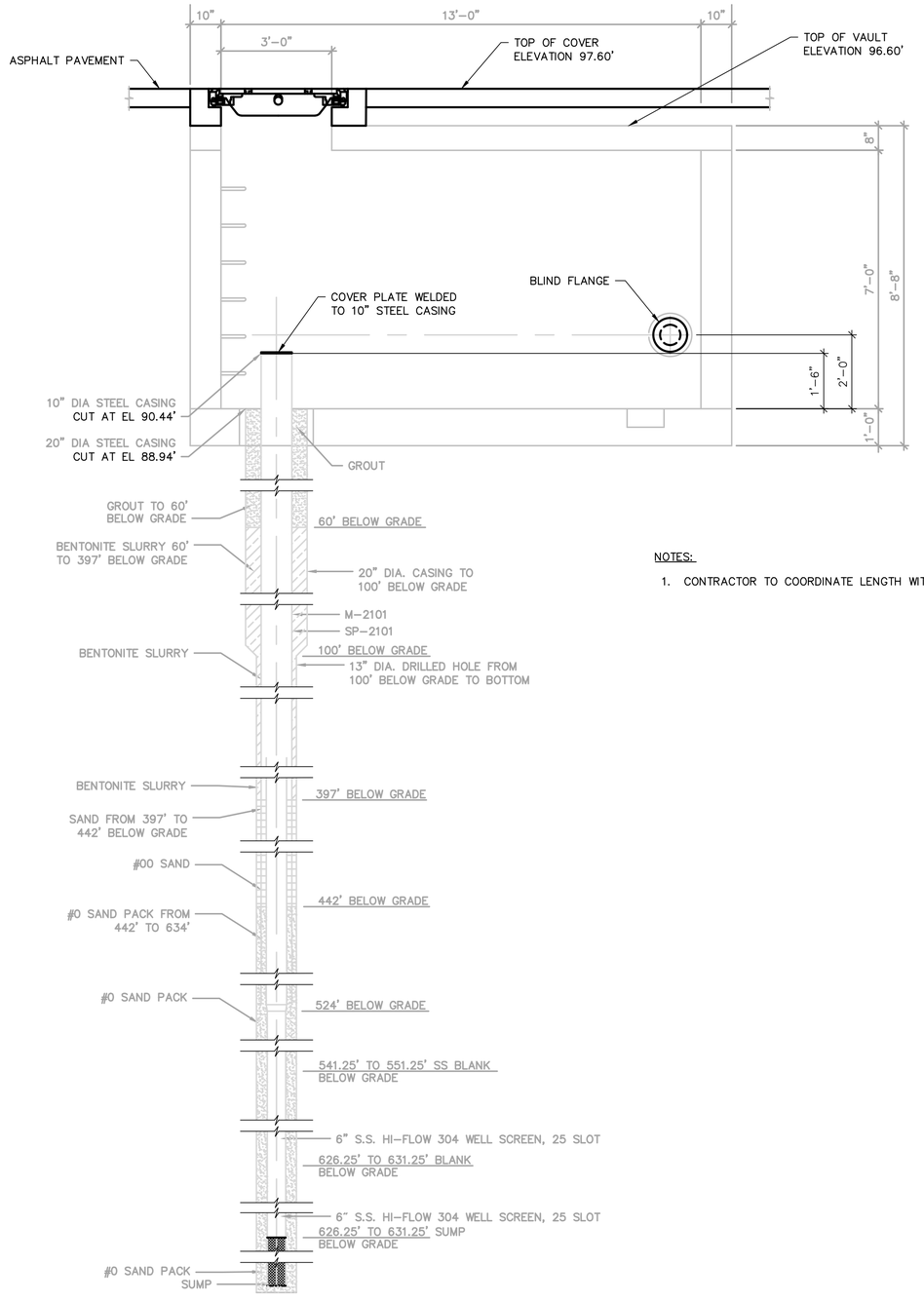
TEL. 631.249.7600

S-02



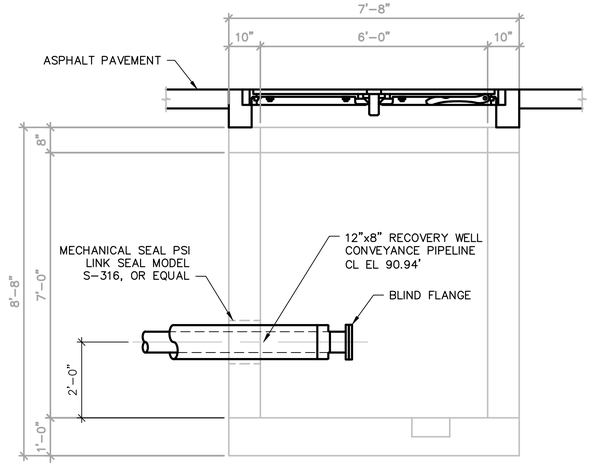
PLAN VIEW - RW-21

SCALE 1/2" = 1'-0" 0 1' 2' 4'



NOTES:

1. CONTRACTOR TO COORDINATE LENGTH WITH OWNER AND ENGINEER.



A M-01 SECTION

SCALE 1/2" = 1'-0" 0 1' 2' 4'

B M-01 SECTION

SCALE 1/2" = 1'-0" 0 1' 2' 4'

No.	Date	Revisions	By	Ckd
	-	-		

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THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

Professional Engineer's Name: **CHRISTOPHER ENGLER**
Professional Engineer's No.: 069748
State: NY | Date Signed: | Project Mgr.: PM
Designed by: LS | Drawn by: TJM | Checked by: BH

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NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

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RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

WELL VAULT RW-21
MECHANICAL PLAN AND SECTIONS

MECHANICAL

ARCADIS Project No.: 30038258.RDWE1
Date: JANUARY 2020

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2 HUNTINGTON QUADRANGLE
SUITE 1S10
MELVILLE, NEW YORK
TEL. 631.249.7600

M-01

CITY:SYR-NY DIV/GROUP:ENV/141 DB:GHS K. SARTORI LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF*
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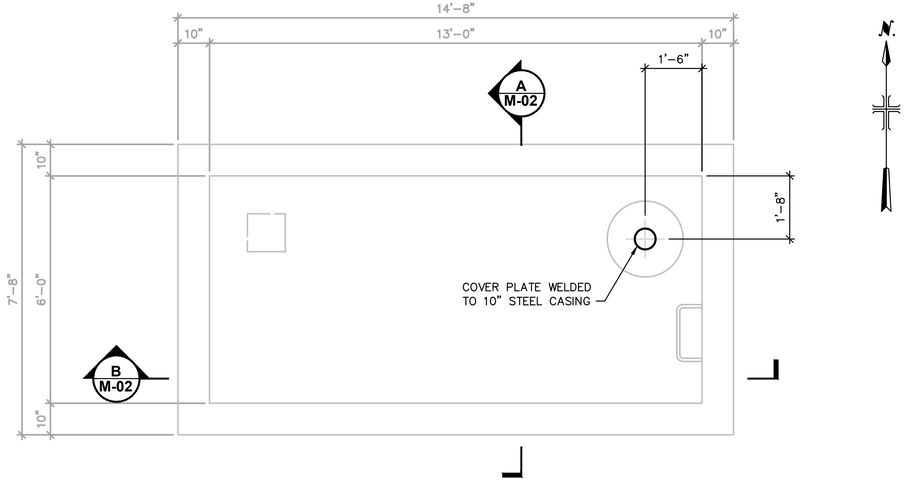
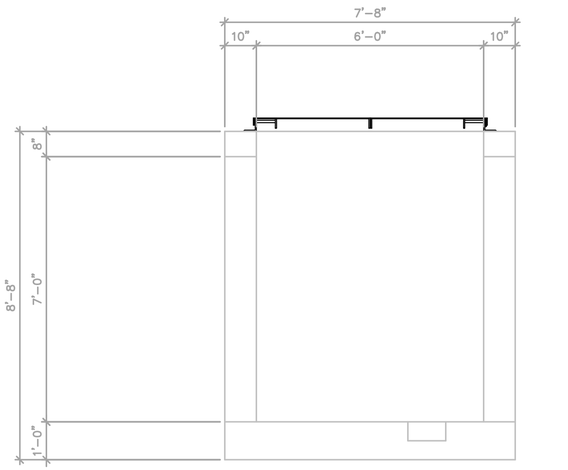


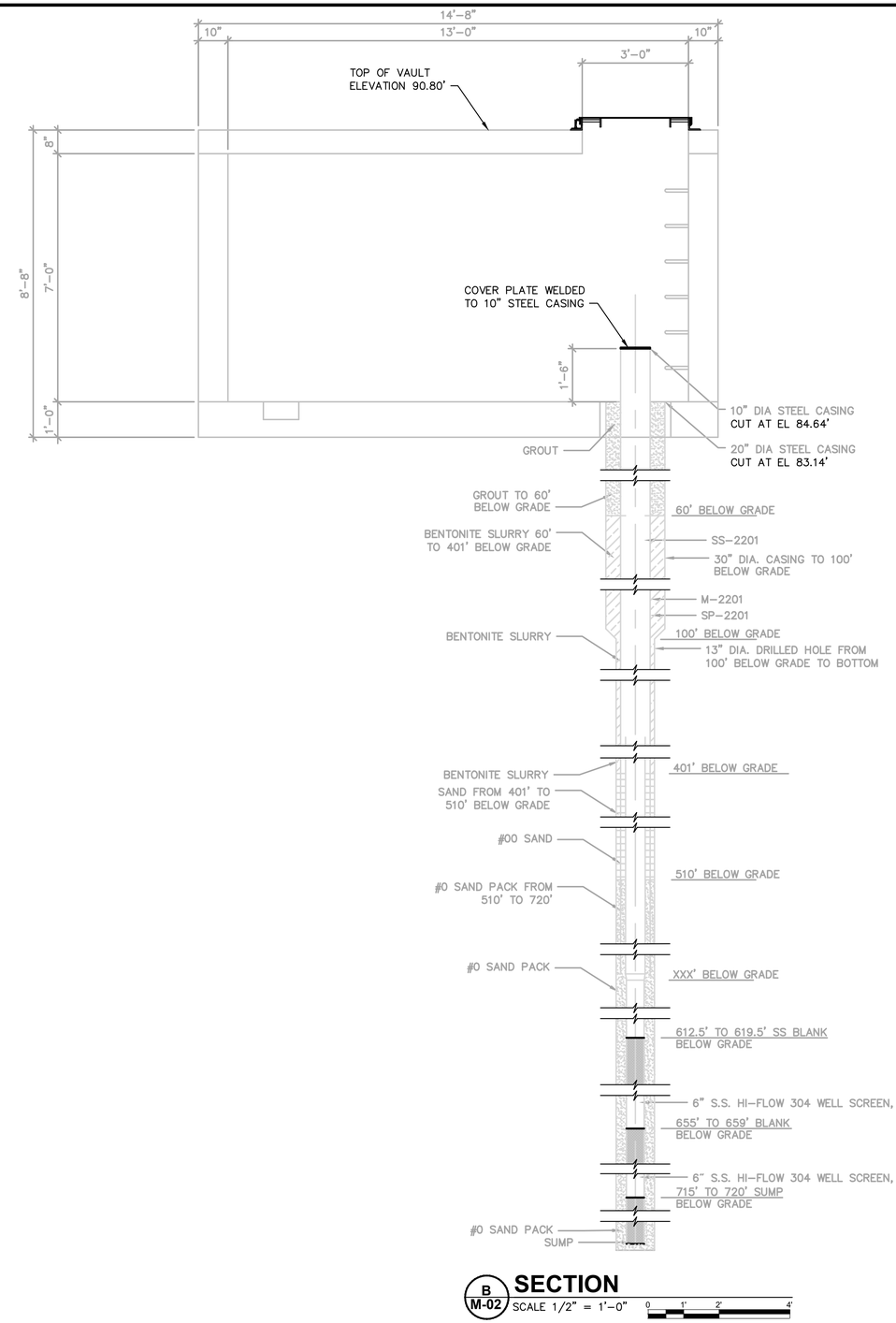
PLAN VIEW - RW-22

SCALE 1/2" = 1'-0"



SECTION

A M-02 SCALE 1/2" = 1'-0"



SECTION

B M-02 SCALE 1/2" = 1'-0"

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
-	-			

Professional Engineer's Name: **CHRISTOPHER ENGLER**
Professional Engineer's No.: 069748

State	Date Signed	Project Mgr.
NY		PM
Designed by	Drawn by	Checked by
LS	TJM	BH

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN SYSTEMS CORPORATION ● OPERABLE UNIT 3 ● BETHPAGE, NEW YORK

RW-21 PROJECT AREA SOUTH BASIN INFLUENT PIPELINE AND VAULT INSTALLATIONS

WELL VAULT RW-22
MECHANICAL PLAN AND SECTIONS

MECHANICAL

ARCADIS Project No. 30038258.RDWE1

Date JANUARY 2020

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TEL. 631.249.7600

M-02

Traffic Safety Plan (TSP)

Notes: ROW - Right of Way (Public) formerly known as "TCP"
Non-ROW - Not in the ROW (parking lots, etc.) formerly known as "STAR"

1.0 General

Plan type	ROW and Non-ROW
Project Name:	Northrop Grumman RW-21
Project Number:	30018023.STRA5
Developer Name:	Thomas Montz
Duration of Project (in hours or days):	1-2 Days
Time Restrictions (Y/N, if Y describe below):	Yes - 8a to 5p
Roadway Work Zone Start Point	See Drawing
Roadway Work Zone End Point	See Drawing
Posted Speed Limit (roadway in mph)	25
Number of Lanes (each direction)	1
Road Category Type (select)	Urban (≤40 mph)

[X] Working on multiple roads?

Projects with roadway work on multiple roadways must prepare a TSP for each roadway location. A map should be attached indicating which TSP applies to each roadway location.

Comments: Atypical traffic control plan developed
Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.0 Work Description

Provide a brief description of scope of work:

Work performed in accordance with this traffic control plan is associated with vault and pipeline instalation in a parking area and along a minor street. An atypical traffic control plan has been developed for this application. Coordination with the local municipality and private business owners is expected to take place prior to work being performed.

3.0 Type and Duration

Work locations on this project will be: Long term work (>8 hours per location)

Roadway work will be performed: Travel lane

Non-ROW work will be performed in:

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

Review by an EJE employee is mandatory

The following traffic control configuration in the Traffic Safety Handbook applies:

Section 6.13 Freeway Ramp or Lane Closure/Atypical Traffic Control (DOT Facts-301u)

The following Non-ROW requirements in the Traffic Safety Handbook applies:

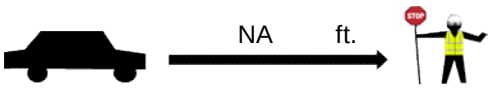
Section 7.3 Intermediate Duration Work in Parking Areas (1 to 8 Hours) (DOT Facts-302b)

The menu below will be blank and is not applicable.

Review by an EJE employee is mandatory

All Arcadis vehicles in a ROW will, at a minimum, have a functioning high intensity strobe or rotating orange light. All Arcadis employees in the ROW will wear, at a minimum, a retroreflective high visibility outer clothing meeting ANSI Class II or III requirements and other PPE required by JSA or HASP. Don't leave vehicle doors open. Park vehicles in ROW with front wheels turned to the right. Avoid work configurations requiring standing to rear of vehicles. Stage equipment in vehicles where it can be accessed from the right side of the vehicle to the extent practical. An example non-ROW traffic control configuration for this project is illustrated below. The actual type and number of devices required are specified below.

Intermediate Term (1-8 Hours)
Channelizing Cones with Caution Tape

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.		ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A	100 ft.	
B	100 ft.	
C	100 ft.	

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

	Active work area length (feet)	50
☐	Apply Optional Longitudinal Buffer (ft)?	0
	Lane width of offset (feet)	12
	Shoulder width of offset (feet)	10
	Posted speed limit	25

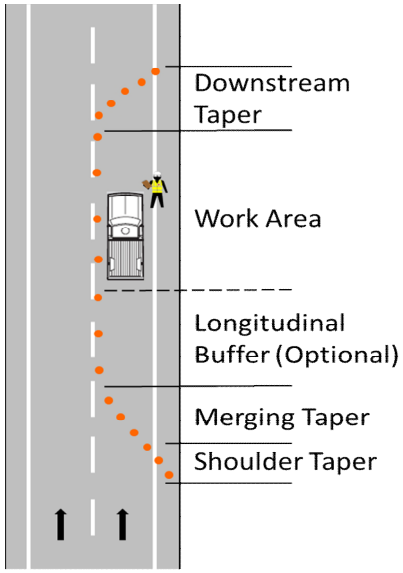
Contact EJE for assistance

☐ **Shoulder Taper**

Taper Length (feet)	NA
Cones Required	0
Cones Spacing (max., ft)	NA

☒ **Shifting/Merging Taper**

Taper Length (feet)	64.5
Cones Required	4
Cones Spacing (max., ft)	25



X	**Work Area**		
	Cone Spacing (max., ft)	35	
	Cones Required	10	Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.
X	**Downstream Taper**		
	Taper Length (feet)	125	
	Cones Required	8	
	Cone Spacing (max., ft)	35	
	Cones Required (minimum)	22	

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
X	Warning signs	Road Work Ahead	3
X	Warning signs	Road Closed	2
X	Warning signs	Detour	1
	Stop/Slow paddle		
	Red flag		
	Drums		
	Channelizer cone (42 inch height, 10 lb base)		
	Channelizer cone (42 inch height, 30 lb base)		
	Traffic cones (≥ 18 inches tall)		
X	Barricade: Type II		3
	Flags for cones		
	Lights (for night work)		
	Plastic fencing (rolls)		
	Caution tape (rolls)		
X	Other (specify):		
		Longitudinal Channelizing Device	35-40
		No Left Turn	1
		No Right Turn	1
		Road Closed to Thru Traffic	1

ROW Phasing:

1) Deploy warning signs at first approach, if required

2) Deploy subsequent approach warning signs, if required

3) Deploy channeling devices, if required, starting with first approach

4) Deploy "End Road Work" signs, if required

5) Position vehicle as shield to the extent practical

6) Commence work, SSO or designated contractor to maintain devices

7) Remove devices in reverse order

Non-ROW Phasing:

1) Position truck as shield, if practical

2) Deploy traffic control devices

3) Affix flags, caution tape or fencing

4) Unload project equipment

5) Commence work

6) SSO to maintain controls

7) Remove controls in reverse order

Reviewed By: Thomas Montz

HASP Reviewer:

Engineering Judgment Review By: Thomas Montz

Seaman Ave. Bethpage, NY

RW-21 Vault install and pipeline Traffic Control Plan

Comments:

All Plan Details According to New York MUTCD

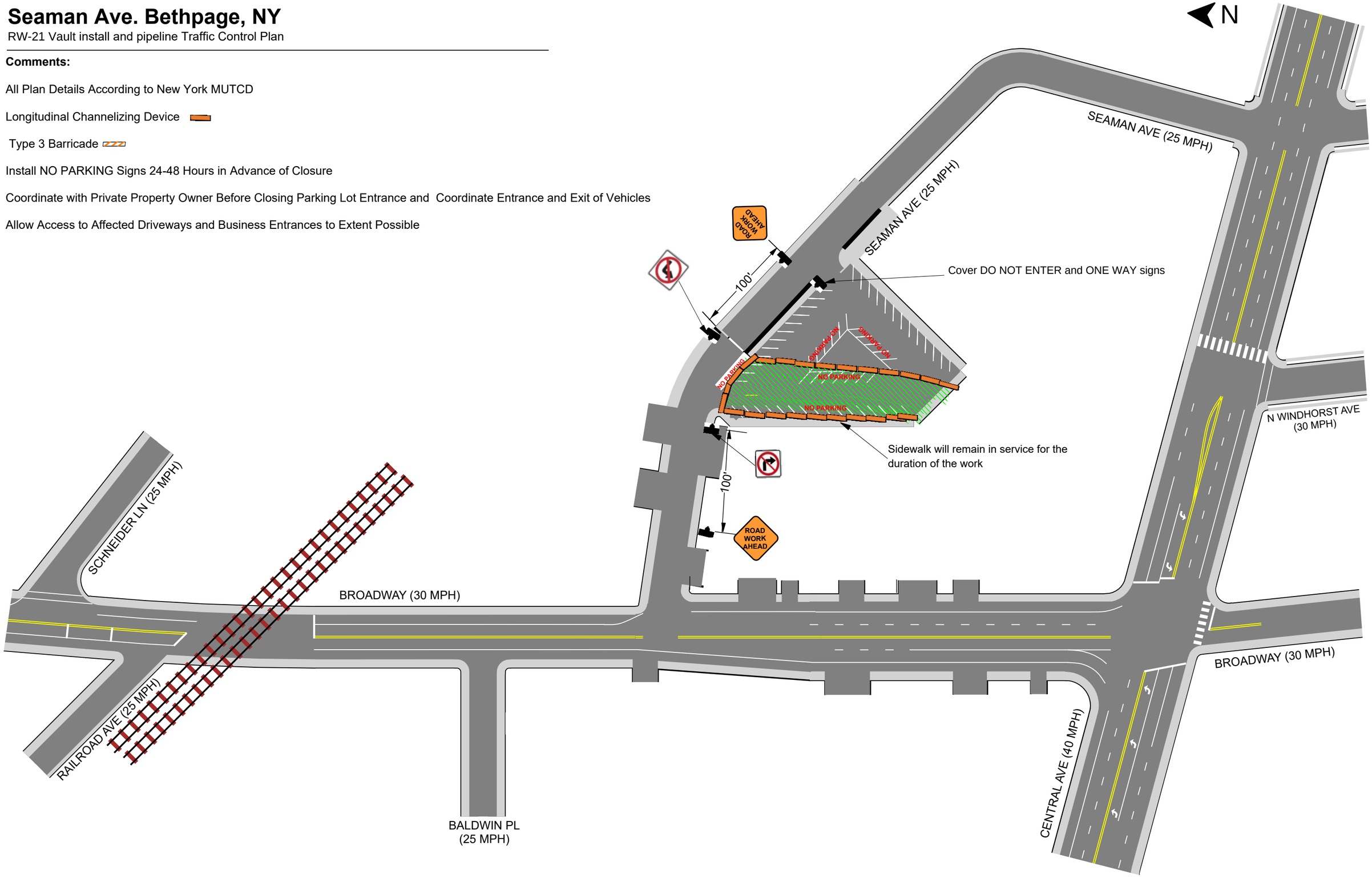
Longitudinal Channelizing Device

Type 3 Barricade

Install NO PARKING Signs 24-48 Hours in Advance of Closure

Coordinate with Private Property Owner Before Closing Parking Lot Entrance and Coordinate Entrance and Exit of Vehicles

Allow Access to Affected Driveways and Business Entrances to Extent Possible



Traffic Safety Plan (TSP)

Notes: ROW - Right of Way (Public) formerly known as "TCP"
Non-ROW - Not in the ROW (parking lots, etc.) formerly known as "STAR"

1.0 General

Plan type	Right of Way (ROW)
Project Name:	Northrop Grumman RW-22
Project Number:	30018023.STRA5
Developer Name:	Thomas Montz
Duration of Project (in hours or days):	1-2 Days
Time Restrictions (Y/N, if Y describe below):	N
Roadway Work Zone Start Point	See Drawing
Roadway Work Zone End Point	See Drawing
Posted Speed Limit (roadway in mph)	15
Number of Lanes (each direction)	1
Road Category Type (select)	NA

X Working on multiple roads?

Projects with roadway work on multiple roadways must prepare a TSP for each roadway location. A map should be attached indicating which TSP applies to each roadway location.

Comments: Atypical traffic control plan developed
Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.0 Work Description

Provide a brief description of scope of work:

Work performed in accordance with this traffic safety plan is associated with vault installation along a private driveway. Permission to encroach onto the private land needs to be acquired. Minimal disruption to the driveway is anticipated. Vehicles should be used to shield the work area to the extent practical.

3.0 Type and Duration

Work locations on this project will be: Long term work (>8 hours per location)

Roadway work will be performed: Off shoulder

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

The following traffic control configuration in the Traffic Safety Handbook applies:

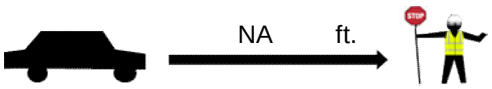
Section 6.1 Work Beyond the Shoulder (DOT Facts-301i)

The menu below will be blank and is not applicable.

The menu below will be blank and is not applicable.

All Arcadis vehicles in a ROW will, at a minimum, have a functioning high intensity strobe or rotating orange light. All Arcadis employees in the ROW will wear, at a minimum, a retroreflective high visibility outer clothing meeting ANSI Class II or III requirements and other PPE required by JSA or HASP. Don't leave vehicle doors open. Park vehicles in ROW with front wheels turned to the right. Avoid work configurations requiring standing to rear of vehicles. Stage equipment in vehicles where it can be accessed from the right side of the vehicle to the extent practical.

Intermediate Term (1-8 Hours)
Channelizing Cones with Caution Tape

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.	ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A NA ft. B NA ft. C NA ft.	 NA ft.

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

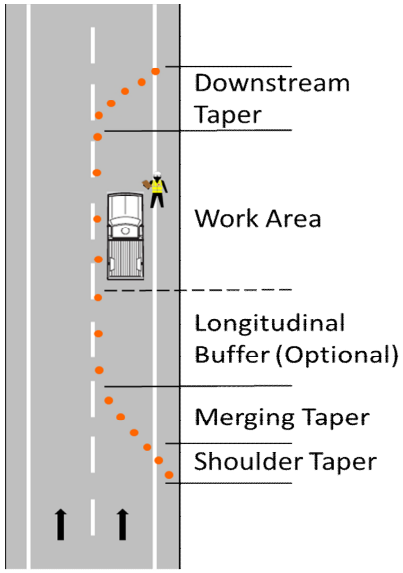
	Active work area length (feet)	
☐	Apply Optional Longitudinal Buffer (ft)?	0
	Lane width of offset (feet)	
	Shoulder width of offset (feet)	
	Posted speed limit	15

☐ **Shoulder Taper**

Taper Length (feet)	NA
Cones Required	0
Cones Spacing (max., ft)	NA

☐ **Shifting/Merging Taper**

Taper Length (feet)	####
Cones Required	4
Cones Spacing (max., ft)	NA



☐ **Work Area**

Cone Spacing (max., ft)
Cones Required

☐ **Downstream Taper**

Taper Length (feet)	125
Cones Required	4
Cone Spacing (max., ft)	35

Cones Required (minimum) 8

Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
X	Warning signs	Utility Work Ahead	1
X	Warning signs	End Road Work	1
	Warning signs		
	Stop/Slow paddle		
	Red flag		
	Drums		
	Channelizer cone (42 inch height, 10 lb base)		
	Channelizer cone (42 inch height, 30 lb base)		
	Traffic cones (≥ 18 inches tall)		
	Barricade:		
	Flags for cones		
	Lights (for night work)		
	Plastic fencing (rolls)		
	Caution tape (rolls)		
X	Other (specify):		
		Longitudinal Channelizing Device	5

ROW Phasing:

1) Deploy warning signs at first approach, if required

2) Deploy subsequent approach warning signs, if required

3) Deploy channeling devices, if required, starting with first approach

4) Deploy "End Road Work" signs, if required

5) Position vehicle as shield to the extent practical

6) Commence work, SSO or designated contractor to maintain devices

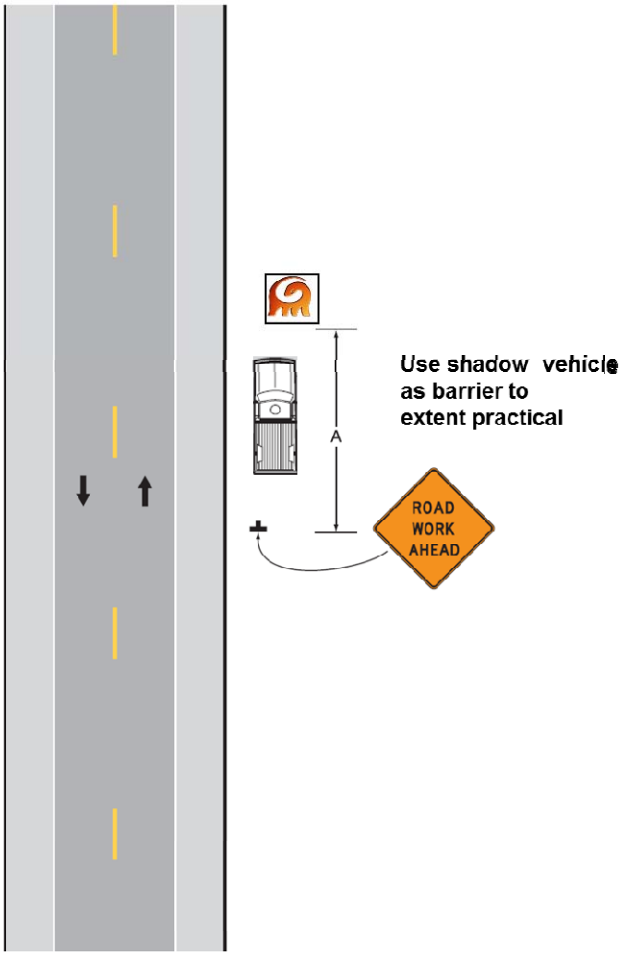
7) Remove devices in reverse order

Reviewed By: Thomas Montz

HASP Reviewer:

DOT Facts-301i
Work beyond the Shoulder

The following configuration may be used for work conducted beyond the shoulder of the roadway:



Road Type	"A" (m/ft)
Urban (Low Speed)	30/100
Urban (High Speed)[1]	100/350
Rural	150/500

1 – Excludes freeway, expressway, and interstate highway scenarios

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The ARCADIS Transportation Safety Program is committed to continuous improvement. Report all errors or omissions to Sam Moyers in the Knoxville, TN office. sam.moyers@arcadis-us.com.

Revision 2, 8/26/2014

Mandatory:

M1. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

Guidance:

G1. If the work space is in the median of a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

G2. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

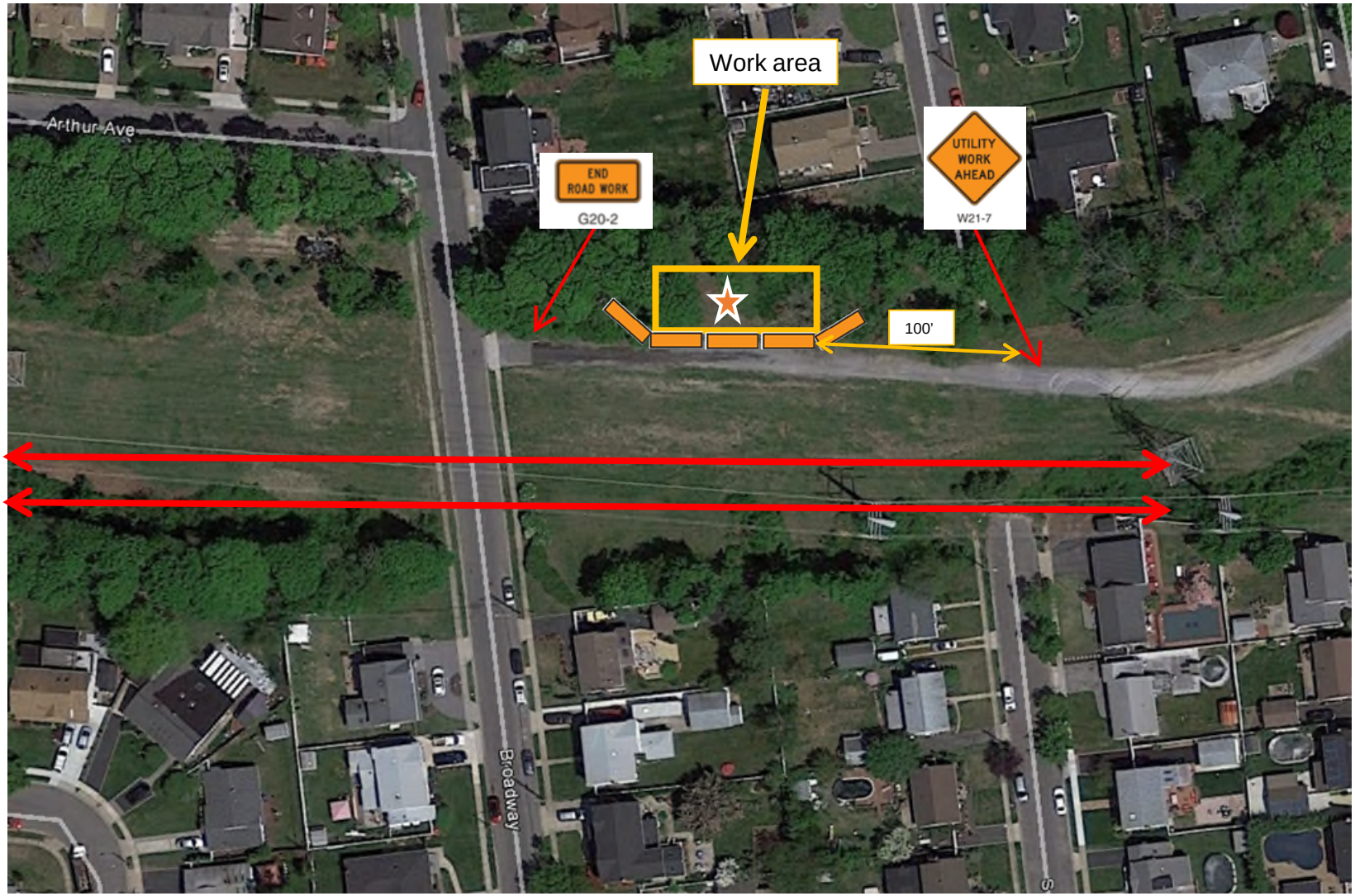
G3. The ROAD WORK AHEAD sign may be omitted where the work space is behind a barrier, more than 600 mm (24 in) behind the curb, or 4.6 m (15 ft) or more from the edge of any roadway.

G4. For short-term, short-duration or mobile operation, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

G5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Revision 2, 8/26/2014

RW-22 Layout of Workzone Temporary Traffic Control



High Tension Lines

Longitudinal Channelizing Barriers. To be placed approx 5 ft from edge of driveway

Traffic Safety Plan (TSP)

Notes: ROW - Right of Way (Public) formerly known as "TCP"
Non-ROW - Not in the ROW (parking lots, etc.) formerly known as "STAR"

1.0 General

Plan type	Non-Right of Way (Non-ROW)
Project Name:	Northrop Grumman RW-22
Project Number:	30018023.STRA5
Developer Name:	Thomas Montz
Duration of Project (in hours or days):	1-2 Days
Time Restrictions (Y/N, if Y describe below):	N
Not Applicable	
Not Applicable	
Not Applicable	15
Not Applicable	1
Not Applicable	NA

[X] Working on multiple roads?

Projects with roadway work on multiple roadways must prepare a TSP for each roadway location. A map should be attached indicating which TSP applies to each roadway location.

Comments: Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.0 Work Description

Provide a brief description of scope of work:

Work performed in accordance with this traffic safety plan is associated with pipeline installation along a private access drive. Low speeds and low volumes are expected. Vehicles should be used to shield the work area to the extent practical. Special consideration needs to be given to allow access to basins when needed.

3.0 Type and Duration

Work locations on this project will be: Long term work (>8 hours per location)

Non-ROW work will be performed in: On shoulder

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

The following Non-ROW requirements in the Traffic Safety Handbook applies:

Section 6.2 Work on the Shoulder (DOT Facts-301j)

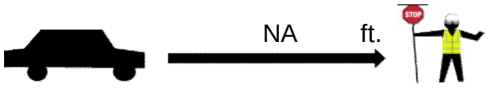
The menu below will be blank and is not applicable.

The menu below will be blank and is not applicable.

Non-ROW configuration:

An example non-ROW traffic control configuration for this project is illustrated below. The actual type and number of devices required are specified below. Don't leave vehicle doors open. Don't establish controls within 25 ft of the front or rear of parked large vehicles/rolling equipment without coordinating with the vehicle/equipment operator.

Intermediate Term (1-8 Hours)
Channelizing Cones with Caution Tape

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.		ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A	100 ft.	 NA ft.
B	100 ft.	
C	100 ft.	

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

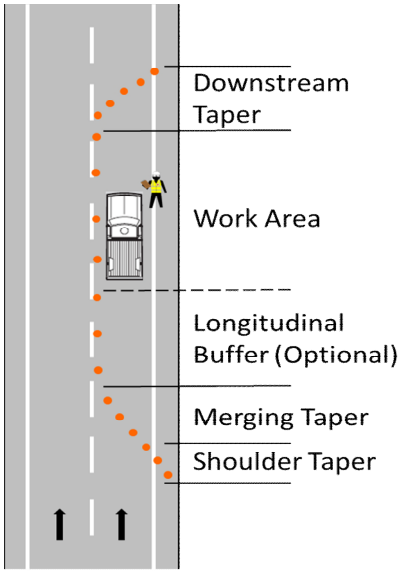
	Active work area length (feet)	1700
☐	Apply Optional Longitudinal Buffer (ft)?	0
	Lane width of offset (feet)	8
	Shoulder width of offset (feet)	0
	Posted speed limit	15

☒ **Shoulder Taper**

Taper Length (feet)	0
Cones Required	4
Cones Spacing (max., ft)	15

☐ **Shifting/Merging Taper**

Taper Length (feet)	######
Cones Required	4
Cones Spacing (max., ft)	NA



[X] **Work Area**

Cone Spacing (max., ft)	35
Cones Required	49

[ ] **Downstream Taper**

Taper Length (feet)	100
Cones Required	4
Cone Spacing (max., ft)	35

Cones Required (minimum) 57

Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
X	Warning signs	Road Work Ahead	1
X	Warning signs	End Road Work	1
	Warning signs		
	Stop/Slow paddle		
	Red flag		
	Drums		
	Channelizer cone (42 inch height, 10 lb base)		
	Channelizer cone (42 inch height, 30 lb base)		
X	Traffic cones (≥ 18 inches tall)		57
	Barricade:		
	Flags for cones		
	Lights (for night work)		
	Plastic fencing (rolls)		
	Caution tape (rolls)		
	Other (specify):		

Non-ROW Phasing:

1) Position truck as shield, if practical

2) Deploy traffic control devices

3) Affix flags, caution tape or fencing

4) Unload project equipment

5) Commence work

6) SSO to maintain controls

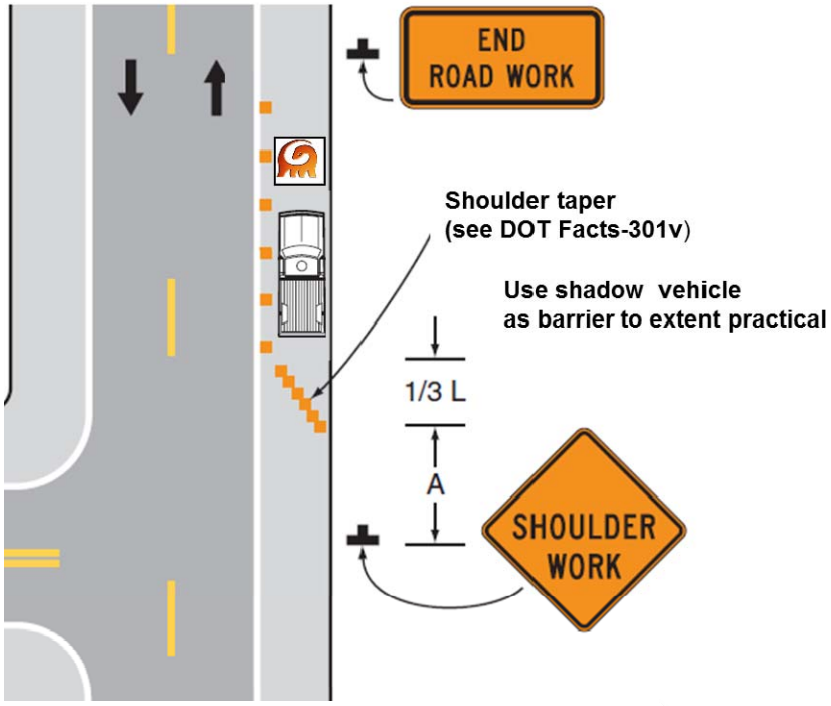
7) Remove controls in reverse order

Reviewed By: Thomas Montz

HASP Reviewer:

DOT Facts-301j
Work on the Shoulder

The following configuration may be used for work conducted on the shoulder of the roadway:



Road Type	"A" (m/ft)
Urban (Low Speed)	30/100
Urban (High Speed)[1]	100/350
Rural	150/500

1 – Excludes freeway, expressway, and interstate highway scenarios

Mandatory:

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Revision 2, 8/26/2014

M1. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

M2. When paved shoulders having a width of 2.4 m (8 ft) or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

Guidance:

G1. A SHOULDER WORK sign should be placed on the left side of the roadway for a divided or one-way street only if the left shoulder is affected.

G2. The Workers symbol signs may be used instead of SHOULDER WORK signs.

G3. The SHOULDER WORK AHEAD sign on an intersecting roadway may be omitted where drivers emerging from that roadway will encounter another advance warning sign prior to this activity area.

G4. For short-duration operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

G5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Revision 2, 8/26/2014

ARCADIS Design & Consultancy for natural and built assets

Northrop Grumman Systems Corporation

COMMUNITY AIR MONITORING PLAN

RW-21 Project Area Remedy - Pipeline And Vault Installation, Bethpage New York

NYSDEC Site # 1-30-003a

November 8, 2019

Rev. January 28, 2020

COMMUNITY AIR MONITORING PLAN

RW-21 Project Area Remedy - Pipeline and Vault Installation

Bethpage New York

NYSDEC Site # 1-30-003a

Xuan Xu
Project Scientist

Kevin Held, CIH, CSP
HASP Reviewer

David Stern, PG
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Prepared for:

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Our Ref.:

300018023

Date:

November 8, 2019

Rev. January 28, 2020

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3 MONITORING FREQUENCY 1

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1 INTRODUCTION

In accordance with New York State Department of Health (NYSDOH) requirements, this Community Air Monitoring Plan (CAMP) has been prepared for use during the pipeline and well vault construction activities associated with the Northrop Grumman Systems Corporation (NG) RW-21 Project Area Remedy. This CAMP serves to present the methods and procedures to conduct real-time monitoring for VOC and total particulates (i.e. nuisance dust) at each designated work area when certain activities are in progress.

This CAMP is not intended for use in establishing action levels for worker respiratory protection; action levels are described in the Site-Specific Health and Safety Plan (HASP) (Arcadis. 2019). The intent of this CAMP is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers that are not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of remedial work activities that are related to the Site. The response levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, this CAMP helps to confirm that work activities do not spread contamination off-site through the air.

Reliance on this CAMP does not preclude simple, common-sense measures to keep potential dust and odor emissions at a minimum around work areas. On the contrary, the air monitoring proposed is intended to enhance and record the effectiveness of good work practices in the control of potential emissions. The following sections of this CAMP present the monitoring instrumentation required to comply with NYSDOH policy, the frequency of monitoring, response levels, and response actions.

2 MONITORING INSTRUMENTATION

VOC monitoring will be performed using real-time monitoring instrumentation that is capable of measuring the types of VOCs known or suspected to be present at the work location (please refer to the HASP for details). The equipment will be calibrated daily and using the methods described in the HASP. Fifteen-minute running average concentrations will be recorded using PID MiniRAE 3000 or similar. The monitoring equipment will have with an audible alarm to indicate exceedance of the action level.

The particulate monitoring will be performed using real-time monitoring instrumentation that is capable of measuring total particulate. Fifteen-minute running average concentrations will be recorded using a ThermoFisher Scientific PDR 1000 (or similar) dust monitor. The particulate monitoring equipment will be equipped with an audible alarm to indicate exceedance of the action level.

Weather monitoring using a portable weather station will be also be performed to monitor the wind direction and speed to assist correct positioning of the VOC and particulate monitoring stations.

3 MONITORING FREQUENCY

This section defines the typical activities that will occur in relation to the work area and relates these activities to the frequency of monitoring required.

Continuous Monitoring for VOC and Particulates Will be Carried out for Intrusive Activities. Additionally, upwind particulate concentrations will be measured at the **start** of each workday and **periodically** (see below) thereafter to establish the background concentration. Ground intrusive activities typically include the following:

1. Soil excavation and handling
2. Test pitting or trenching
3. Construction activities involving earthwork or disturbance of earthen surfaces.
4. Other activities specified in this CAMP.

Periodic monitoring for VOCs will be carried out during non-intrusive activities. For non-intrusive activities, the upwind concentrations will be measured at the **start and finish** of the work effort to establish the background concentration. Non-intrusive activities typically include the following:

1. Site Mobilization/Demobilization of equipment and machinery
2. Surveying (geophysical, coordinate/elevation)
3. Waste transportation
4. Site preparation and restoration that does not involve re-grading or other disturbances to surface materials

"Periodic" monitoring should be performed, at a minimum as follows:

1. Upon arrival at a work location to determine the ambient, or background concentrations
2. During each phase of work that potentially may generate VOC emissions to the air
3. Prior to leaving the work location

For non-intrusive activities, particulate monitoring will not be performed.

3.1 VOC Monitoring Stations Locations, Response Levels, and Action

During each workday, the VOC monitoring station will be positioned at the downwind perimeter of the work area (i.e., the exclusion zone – see HASP for definition). As stated above, monitoring frequency (periodic or continuous) will be determined based on whether the activity is considered intrusive or non-intrusive. The direction of wind (if any) will be periodically recorded during each workday and re-positioning of upwind/downwind monitoring stations will be performed accordingly.

The VOC monitoring instrumentation output documenting 15-minute running average concentrations will be compared to the following response levels:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds 5 parts per million (ppm) **above background** for the 15-minute average, work activities will be temporarily halted and monitoring continued.

If the elevated VOC measurements are from site activities the project manager will be notified and the occurrence will be documented in the daily work report. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm **above background** but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15- minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shut down.

Readings will either be recorded with a data management program integral with a cloud-based telemetry system or data will be recorded on the appropriate air monitoring log (please refer to the HASP for details) or the electronic log will be printed. Air monitoring results will be appended to the appropriate report. Data that exceeds levels specified above will be documented with a determination on the source of the elevated levels. Instances where site operations contribute to the exceedance will be reported to the project manager. In the event exceedance levels for VOCs are suspected to have come from soils disturbed as part of site operations will be investigated to determine if the source of the emissions may have been site contaminants. This would likely include the collection and analysis of soil samples for known site contaminants such as TCE. If site contaminants (i.e. TCE contaminant plume) are thought to be a contributing factor to VOC emissions, then the Project manager will confer with the client to determine if the operations should be under the provisions of the OSHA HAZWOPER standard (29 CFR 1926.65(a) and 29 CFR 1910.120(a).

3.2 Particulate Monitoring Stations Locations, Response Levels, and Actions

For intrusive activities, the particulate (e.g., dust) monitoring station will be positioned at the downwind perimeter of the work zone (i.e. outside the work zone). In addition, fugitive dust migration will be visually assessed during all work activities. The direction of wind (if any) will be periodically recorded during each workday and re-positioning of the downwind monitoring station will be performed accordingly. The response levels and actions for fugitive dust are as follows:

- If the downwind PM-10 particulate level is 0.5 milligrams per cubic meter (mg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is visually observed leaving the work area, then dust suppression techniques will be employed. Dust suppression techniques will include (but not be limited to) misting of soil excavation activities, wet cutting of asphalt or concrete as necessary, wetting of roadways and work areas. Work will continue with dust

suppression techniques provided that downwind particulate levels do not exceed 0.5 mg/m^3 above the upwind level and provided that no visible dust is observed leaving the work area.

- If, after implementation of dust suppression techniques, downwind particulate levels are greater than 0.5 mg/m^3 above the background concentration, then work will be stopped, and a re-evaluation of activities initiated. Work will resume if dust suppression measures and/or other controls are successful in reducing the downwind particulate concentration to less than 0.5 mg/m^3 of the upwind level and in preventing visible dust from leaving the work area.

Readings will either be recorded with a data management program integral with a cloud-based telemetry system or data will be recorded on the appropriate air monitoring log (Appendix C) or the electronic log will be printed out. Air monitoring results will be appended to the appropriate report.

If particulate emissions are suspected to be from sources affected by site contaminants (e.g., TCE plume) then the matter will be brought to the attention of the Project Manager who will decide as to whether this is indeed the case. If suspended particulates, either in the work zone or at the perimeter are considered to be potentially affected by site contaminants (as might be determined through analysis of samples, odors, or other indicators) then the project manager will discuss the matter with Northrop Grumman and determine if the operations should operate under the scope of the OSHA HAZWOPER standard.

4 REPORTING

This section describes reporting requirements for work performed specifically on Town of Oyster Bay (TOB) property and rights-of-way under access agreement made between Northrop Grumman Systems Corporation (Northrop Grumman) and TOB. Special provisions may apply under specific access agreement.

- Northrop Grumman shall notify the TOB of any exceedance of criteria established under the CAMP within 24 hours after Northrop Grumman becomes aware of the exceedance and shall provide to the TOB on a weekly basis, copies of the daily data and reports of the air monitoring program;
- Northrop Grumman shall provide to the TOB a copy of any and all data and reports that Northrop Grumman submits to the NYSDEC, NYSDOH, or other regulatory agency regarding the Work covered by any access agreement made with TOB. Northrop Grumman's provision of such data and reports to the TOB shall be concurrent with Northrop Grumman's submission to said agency or agencies. All data and reports shall be provided to the TOB in an electronic format.

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www.arcadis.com

ARCADIS Design & Consultancy for natural and built assets

Northrop Grumman Systems Corporation

SITE SPECIFIC HEALTH AND SAFETY PLAN

RW-21 Project Area Remedy - Pipeline and Vault Installation

November 8, 2019

Revised: January 28, 2020

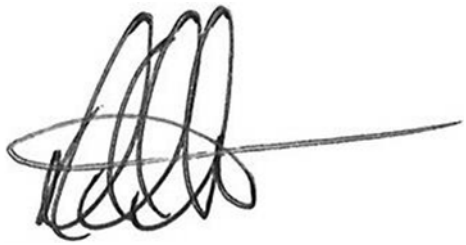
,

SITE SPECIFIC HEALTH AND SAFETY PLAN

RW-21 Project Area Remedy – Pipeline and Vault Installation

Salvatore Tedesco, EIT
Project Engineer
HASP Preparer

Kevin Held, CIH, CSP
Senior Scientist
HASP Reviewer



David E. Stern, PG
Project Manager

Prepared for:

Northrop Grumman Systems Corp.

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Prepared by:

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Our Ref.:

NYNG2019.TS15 (30018041)

Date:

11/8/19

Rev. 1/28/2020

VERSION CONTROL

Issue	Revision No	Date Issued	Page No	Description	Reviewed by
TOB comments	1	1/6/2020	12	Added Town stop work authority per TOB comments	
Stakeholder comments	2	1/28/2020		Revised date and final following 1/23/2020 Public Meeting	

SIGNATURES

I have read, understand and agree to abide by the requirements presented in this health and safety plan (HASP). I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Name Printed	Signature	Date

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1 Site Location

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A Task Hazard Analysis (THA)
B Job Safety Analyses (JSAs)
C Field Forms
D Community Air Monitoring Plan (CAMP)
E Traffic Control Plan (TCP)

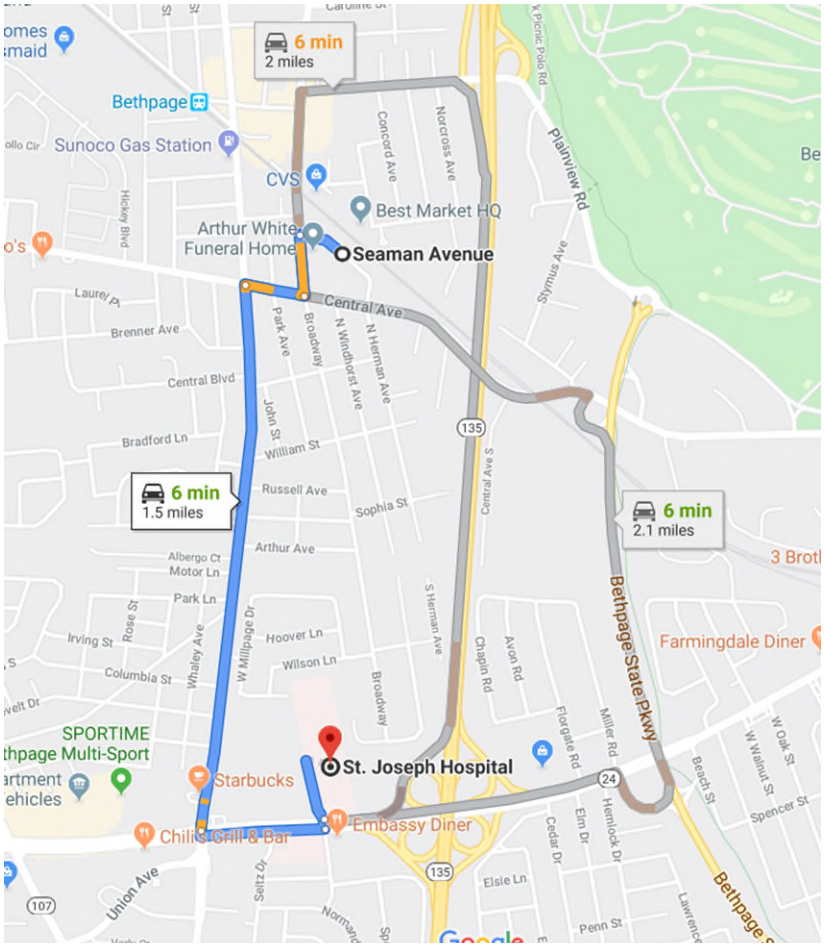
ACRONYMS AND ABBREVIATIONS

%	percent
APR	Air Purifying Respirator
Arcadis	U.S., Inc.
bgs	below ground surface
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
ft	feet
HASP	Health and Safety Plan
MCL	Maximum Contaminant Level
mg/m3	milligrams per cubic meter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
N/A	Not applicable
OV	Organic Vapor
OSHA	Occupational Safety and Health Administration
PM10	Particulate Matter less than 10 microns in nominal diameter
PPE	Personal Protective Equipment
PPM	Parts per Million
ROW	Right-of-Way
TCE	Trichloroethene
TCP	Traffic Control Plan
VOC	Volatile Organic Compound

EMERGENCY ACTION PLAN

1.1 Route to the Hospital

RW-21 Seaman Avenue, Bethpage to St. Joseph Hospital, Bethpage



Seaman Ave, Bethpage, NY 11714 to St. Joseph Hospital

Seaman Ave

Bethpage, NY 11714

1. Head northwest on Seaman Ave toward Broadway

410 ft

2. Turn left onto Broadway

0.1 mi

3. Turn right onto Central Ave

0.1 mi

4. Turn left at the 2nd cross street onto Stewart Ave

0.9 mi

5. Turn left onto Hempstead Turnpike

Pass by Burger King (on the left)

0.2 mi

6. Turn left at Randal Dr

89 ft

7. Slight left

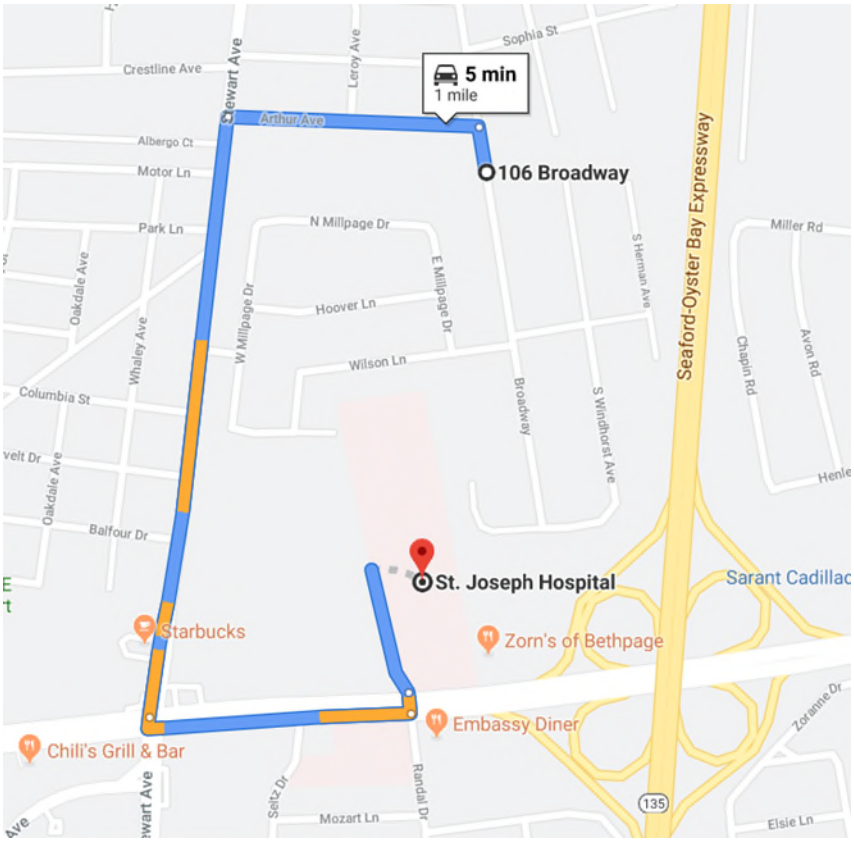
Destination will be on the right

0.1 mi

St. Joseph Hospital

4295 Hempstead Turnpike, Bethpage, NY 11714

RW-22 Broadway, Bethpage to St. Joseph Hospital, Bethpage



106 Broadway, Bethpage, NY 11714 to St. Joseph Hospital

106 Broadway
Bethpage, NY 11714

1. Head north on Broadway toward Arthur Ave

187 ft

2. Turn left onto Arthur Ave

0.2 mi

3. Turn left onto Stewart Ave

0.5 mi

4. Turn left onto Hempstead Turnpike
   Pass by Burger King (on the left)

0.2 mi

5. Turn left at Randal Dr

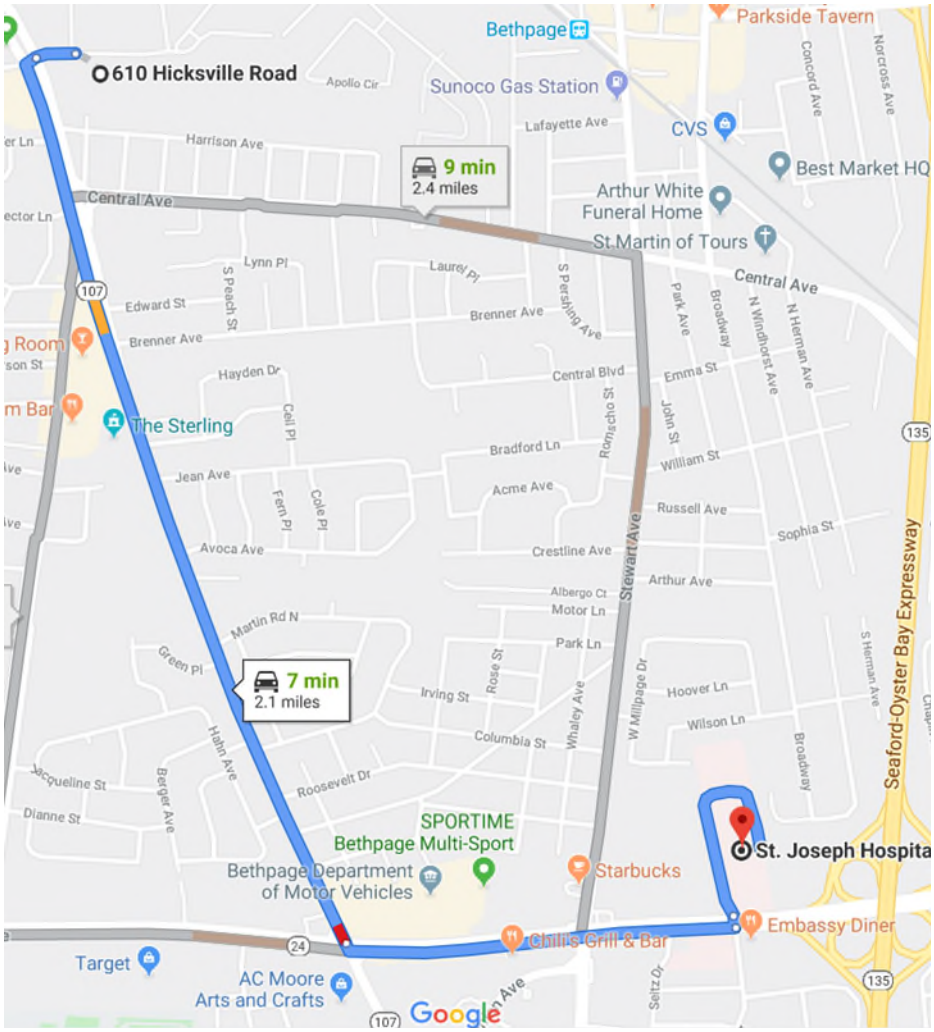
89 ft

6. Slight left
   Destination will be on the right

0.1 mi

St. Joseph Hospital
4295 Hempstead Turnpike, Bethpage, NY 11714

South Basin Pipeline, Bethpage to St. Joseph Hospital, Bethpage



610 Hicksville Rd, Bethpage, NY 11714 to St. Joseph Hospital

610 Hicksville Rd

Bethpage, NY 11714

1. Head west toward Hicksville Rd

276 ft

2. Turn left onto NY-107 S/Hicksville Rd

1.2 mi

3. Use the left 2 lanes to turn left onto Hempstead Turnpike

Pass by Jiffy Lube (on the right)

0.5 mi

4. Turn left at Randal Dr

89 ft

5. Slight left

Destination will be on the right

0.3 mi

St. Joseph Hospital

4295 Hempstead Turnpike, Bethpage, NY 11714

1.2 Hospital Information

The designated hospital for this project is provided below.

Hospital Information
Hospital name: St. Joseph Hospital
Hospital address: 4295 Hempstead Turnpike, Bethpage, NY 11714
Hospital phone: (516) 579-6000

1.3 Emergency Contact Information and Procedures

Contact	Phone Number
Local Police –	911 and 123.456.7890
Local Ambulance –	911 and 123.456.7890
Local Fire Department –	911 and 123.456.7890
WorkCare	1.888.449.7787
Client Emergency Response (if applicable) -	516-575-3333
Poison Control	800.332.3073
National Response Center (all spills in reportable quantities)	800.424.8802
U.S. Coast Guard (spills to water)	800.424.8802
Arcadis Project Manager – David Stern	631-391-5284
Arcadis H&S Manager – Dennis Balcer	614-985-9114
Client Contact – Ed Hannon	516-575-2333

Use the following notification procedure in the event of an emergency:

- Step 1: Dial 911 (if necessary) and/or Work Care 1-888-449-7787
- Step 2: Contact the Arcadis PM or TM
- Step 3: Contact designated H&S representative for the project
- Step 4: PM or TM to contact Client unless the checkbox below is checked:

	Designated field lead to contact client according to client instructions (see section 13 of this HASP) for all emergency or property damage situations.

1.4 Emergency Supplies and Equipment List

Emergency supplies and equipment for specific tasks are presented on job safety analyses for the task. The following supplies and equipment are applicable to all tasks performed on the project.

	Emergency Supplies and Equipment (check all that apply)	Location on Project Site
+	First Aid Kit (type): Construction	RW-21, RW-22 or South Basin Support Zone
+	Fire Extinguisher (2)	RW-21, RW-22 or South Basin Support Zone
+	Mobile Phone	RW-21, RW-22 or South Basin Personnel
	Satellite Phone	
+	Traffic Cones	RW-21, RW-22 or South Basin Support Zone
	2-Way Radios	
+	Water or Other Fluid Replenishment	RW-21, RW-22 or South Basin Support Zone
	Eye Wash/Quick Drench Station	
+	Eye Wash Bottle	RW-21, RW-22 or South Basin Support Zone
	Wash and Dry Towelettes	
+	Sunscreen (SPF 15 or higher)	RW-21, RW-22 or South Basin Support Zone
+	Insect Repellent	RW-21, RW-22 or South Basin Support Zone
	Chemical Spill Kit	

2 INTRODUCTION

2.1 General

The Scope of Work is to install selected segments of a groundwater recovery and treatment system at several residential and non-residential areas in Bethpage New York in vicinity of the former Grumman Aerospace Corporation facility (Grumman Site). Most of the work is not expected to entail contact with chemical contaminants in any form (vapors, dust, product). Work does entail heavy construction including excavation in clean backfill, installation of below-grade piping systems, the installation of below-grade concrete vaults, and the restoration of excavated areas. This is sometimes referred to as clean construction in comparison to HAZWOPER activities.

All work on this project will be carried out in compliance with Arcadis' Health and Safety Standards, and the Occupational Safety and Health Administration's Standards for Construction (29CFR1926) and General Industry (29CFR1910). Some tasks are under the OSHA Hazardous Waste Operations and Emergency Response regulation (29 CFR1926.65 and 29CFR1910.120) and, as described above, most tasks are not under the HAZWOPER standard because the un-controlled contaminants are in groundwater and most tasks do not entail any handling of groundwater so there is no potential for contact with the site contaminants. Essentially, work entails constructing a groundwater recover and conveyance system without operating it. Personnel will install a pre-cast concrete vault around an existing recovery well and install groundwater conveyance piping system (high density polyethylene) without any contact with groundwater, thereby constituting 'clean' construction. Therefore, most contractor and subcontractor personnel do not require HAZWOPER training or medical surveillance. There are some tasks, in and around the South Basin, that do entail potential exposure to site contaminants and are under the HAZWOPER standard. One of Arcadis's responsibilities during the execution of this project is to routinely monitor site conditions in order to verify the task(s) underway remain non-HAZWOPER operations and to ensure tasks that are under the HAZWOPER standard are in compliance with this standard.

This technical aspect of the project aside, personnel shall strive to recognize construction work, whether or not it is under the HAZWOPER standard, poses significant and dynamic risks to health and safety and it is everyone's shared responsibility to maintain a workplace with appropriate controls.

The design of this health and safety plan (HASP) conforms to the requirements of the ARC HSFS010 - H&S Plan Standard. Specific health and safety information for the project is contained in this HASP. All personnel working on hazardous operations or in the area of hazardous operations shall read and be familiar with this HASP before doing any work. All project personnel shall sign the certification page acknowledging that they have read and understand this HASP.

Changes in the scope of the project or introduction of new hazards to the project shall require revision of the HASP by the HASP writer and reviewer, and approval by the Project Manager.

Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.2 HASP Structure

This HASP contains important information related to this project in appendices. Review of relevant appendix information must be conducted to ensure work is performed safely on the project site. The following appendices are included in this HASP with a summary of their contents:

- Appendix A – Task Hazard Analysis (THA). This appendix contains an analysis of the hazards and controls to be used for tasks performed on this project.
- Appendix B – Job Safety Analyses (JSAs) and permits. This appendix contains all of the project JSAs and any applicable permits required to perform work on this project. If an H&S Standard is required to be attached to this HASP, the standard will be located in this appendix.
- Appendix C – Hazard Communication/Globally Harmonized System (HAZCOM/GHS). This appendix contains a list of chemicals used on the project and safety data sheets (SDSs) applicable to the chemicals used on site.
- Appendix D – Field Forms. This appendix contains the field forms and checklists that are expected to be used on the project.
- Appendix E - Supplemental Plans – This appendix contains applicable supplemental plans (i.e. Traffic Control Plan, Lone or Remote Worker Plan, Journey Management Plan, etc.). Shipping Determinations should also be located in this appendix.
- Appendix F – Air Monitoring Requirements. This appendix contains all of the action levels for constituents of concern (CoCs), required monitoring instruments to be used, and monitoring frequency for specific tasks or for the project.
- Appendix G – Enhanced Personal Protective Equipment Requirements. This appendix contains all of the specific requirements for tasks on this project requiring enhanced skin, eye and/or respiratory protection.

2.3 Hierarchy of Administrative Controls

This HASP references several documents that might be used in the field which contain requirements specific to the task and/or project. Arcadis staff utilizing these documents must implement the requirements [(personal protective equipment (PPE), safety equipment, monitoring equipment, etc.)] based on the hierarchy specified below (in order of decreasing priority):

1. Permits, if applicable to the task or project.
2. Job Safety Analyses (JSAs)
3. HASP/Supplemental Plans
4. H&S Standards
5. Field H&S Handbook

During the tailgate safety briefing, the applicable administrative controls to be utilized for the task/project will be identified, communicated to the field staff, and documented. Requirement changes to a lesser control in a lower hierarchy document requires approval of the HASP reviewer or member of the Corporate H&S Department.

3 PROJECT SITE HISTORY AND REQUIREMENTS

3.1 Site Background

The former Grumman Aerospace Corporation, Bethpage New York facility (Grumman), which is identified as New York State Superfund Site No. 1-30-003A; Class 2; is now referred to as the Northrop Grumman Systems Corporation (Northrop Grumman), Bethpage, New York facility site. The original Grumman facility had been situated on 550 acres in east-central Nassau County, in the Hamlet of Bethpage, Town of Oyster Bay, New York. The former Grumman site had been bounded by Stewart Avenue to the north, Central Avenue to the south, Route 107 to the southwest, South Oyster Bay Road to the west, and various residential and commercial areas to the east. The former Naval Weapons Industrial Reserve Plant site (NWIRP)(a Government-Owned, Contractor Operated [GOCO] facility) (NYSDEC Site# 1-30-003B), situated on 105 acres, is located in the north-central portion of the former Grumman Site. Ownership of the majority of the NWIRP property was transferred by the U.S. Navy to Nassau County. Former Grumman Plant 2 (now owned by Steel Los Corporation) (NYSDEC Site #1-30- 003C) is located in the southwest portion of the former Grumman Site. Operable Units (OU) included at the facility are OU1 and OU2 and consist of a soil vapor extraction system and a groundwater remediation system, respectively. The groundwater remediation system is located within the facility, but monitoring wells and outpost wells used to monitor the system are located to the south and to the east of the facility in areas that are a mix of commercial, industrial, and residentially zoned properties.

Operable Unit 3 consists of the Bethpage Community Park (the Park) that is located east of the former NWIRP site. The former Occidental Chemical Corporation/Hooker RUCO Polymer Site (currently owned and operated by Bayer Corporation), a federal Superfund Site, and is located west of the former Grumman/NWIRP Sites.

Currently, there are interim remedial measures in place at the Park to remediate soil vapor and groundwater. Contaminants of concern are also located in the soils located in the ballfield section of the Park as well as the Former Plant 24 Access Road. Monitoring wells used to monitor the groundwater associated with OU3 are located to the south of the Park in areas that are a mix of commercial, industrial, and residentially zoned properties. The site location is shown on Figure 1 of this HASP.

3.2 Site Description

X	Active	X	Inactive Industrial	X	Remote Area	X	Parking Lot/Private Roadway
	Bridge	X	Active Industrial	X	Residential	X	Public Roadway or Right of Way
	Buildings		Landfill		Retail		Security Risk Site/Location
X	Commercial		Marine		Service Station		Non-Military Government Installation
	Construction		Mining		Utility		
	Military Installation		Railroad		Other		
Other Specify:							

The majority of the Northrop Grumman and former Naval Weapons Industrial Reserve Plant (NWIRP) sites (as well as the adjacent former OCC/RUCO Site) has been developed as commercial/industrial, with numerous residences bordering the sites. At the sites, the land surface is relatively flat and is approximately 120 feet above mean sea level; land surface elevation decreases at a rate of approximately 20 ft per mile to the south. The site area is devoid of significant natural features. Man-made recharge basins receive stormwater runoff and are located sporadically on- and off-site. The Bethpage Community Park, which is 18 acres in size, is located east of the former NWIRP site, and consists of paved and unpaved areas, a swimming pool, recharge basin and an indoor ice rink. Soils underlying the sites consist of sands with interbedded lenses of silt and clay. Groundwater is encountered at approximately 50 ft bls. The prevailing regional horizontal groundwater flow direction is to the south-southeast.

Work associated with this HASP will primarily occur on lands and public roadway and rights-of-way owned by the Town of Oyster Bay (Town) and are associated with equipment installation at or near existing remedial recovery well (RW) installations at a Town commuter parking lot, public road and wooded right-of-way. Town commuter parking lot is located within a commercial area at Seaman Avenue, Bethpage and accommodates the location of RW-21 at the far south corner of the parking lot.

A portion of work will also occur at the west portion of Seaman Avenue up to its terminus at Broadway Avenue. Town wooded right-of-way, where RW-22 is located, is situated within a residential neighborhood in proximity to the Arthur Avenue, Bethpage recharge basin and is accessed from Broadway Avenue. Additionally, approximately 2,200 feet of pipeline will be installed below-grade at Northrop Grumman Systems owned property at a South Recharge Basin that currently receives treated groundwater effluent and local storm water runoff for recharge to the groundwater aquifer.

The primary constituents of concern (CoCs) on this project are:

Known Compounds	Source (soil/water/drum, etc.)	Known Concentration Range (ppm, mg/kg, mg/l)	
		Lowest	Highest
Trichloroethylene (TCE)	Soil	ND	<0.5 mg/kg

3.3 List of Project Tasks and Scope of Work

The Scope of Work is to install selected segments of a groundwater recovery and treatment system at several residential and non-residential areas in Bethpage New York in vicinity of the former Grumman Aerospace Corporation, Bethpage New York facility (Grumman Site). Work entails heavy construction including excavation in clean backfill, installation of piping systems, installation of below-grade concrete vaults, installation of a pipeline discharge to a drainage basin, and restoration of excavated areas. Work will occur in varied locales: public and non-public roadways, wooded areas, grass areas, and near residential properties, Work will occur near overhead and underground utilities.

Some tasks will involve work on or near steep slopes and near water. Select tasks have the potential for contact with site contaminants

This HASP addresses the following work tasks on this project:

- Excavation, trenching, piping installation, and backfill
- HDPE fusion welding
- Pressure testing groundwater conveyance systems
- Vault Installation (hoisting, rigging and crane operation) and application of epoxy coating
- Pipeline installation at South Basin
- Restoration of asphalt/sidewalk/curb

4 ARCADIS ORGANIZATION AND RESPONSIBILITIES

4.1 All Personnel

Each person is responsible for completing tasks safely, and reporting any unsafe acts or conditions to their supervisor. No person may work in a manner that conflicts with these procedures. Prior to initiating site activities, all Arcadis and subcontractor personnel will receive training in accordance with applicable regulations, and be familiar with the requirements and standards referenced in this HASP.

In addition, all personnel will attend daily safety meetings (tailgate meetings) to discuss site-specific hazards prior to beginning each day's work. Every Arcadis employee, subcontractor, and client representative at the Site has the responsibility to stop the work of a coworker or subcontractor if the working conditions or behaviors are considered unsafe. The Stop Work Authorization is a principle that Arcadis stands by and makes an effort to indoctrinate personnel of its significance with frequent reminders at tailgate safety discussions.

4.2 Project Manager/Task Manager

The Project Manager is responsible for verifying that project activities are completed in accordance with the requirements of this HASP. The Project Manager is responsible for confirming that the project has the equipment, materials, and qualified personnel to fully implement the safety requirements of this HASP, and/or that subcontractors assigned to this project, meet the requirements established by Arcadis. It is also the responsibility of the Project Manager to:

- Review all applicable H&S Standards, and ensure that project activities conform to all requirements.
- Obtain client-specific health and safety information and communicate with the client on health and safety issues.
- Communicate with the Site Safety Officer (SSO) on health and safety issues.
- Allocate resources for correction of identified unsafe work conditions.
- Ensure Arcadis site workers have all training necessary for the project.
- Ensure contractors performing work under the HAZWOPER Standard are in compliance including, but not limited to: having a corporate HAZWOPER program and contractors have a site-specific HASP.
- Ensure air monitoring programs (worker exposure, HAZWOPER compliance, and Community Air Monitoring Program) are implemented.
- Report all injuries, illnesses and near-misses to the client representative, lead incident investigations, and ensure that any recommendations made are implemented.

4.3 Site Safety Officer (SSO)

The SSO has overall responsibility for the technical health and safety aspects of the project. Inquiries regarding Arcadis health and safety standards, project procedures, and other technical or regulatory issues should be addressed to this individual. It is also the responsibility of the SSO to:

- Review and work in accordance with the components of this HASP.
- Ensure that this HASP is available to and reviewed by all site personnel including subcontractors.
- Ensure that necessary site-specific training is performed (both initial and “tailgate” safety briefings).
- Ensure site visitors have been informed of the hazards related to Arcadis work.
- Ensure that work is performed in a safe manner and has authority to stop work when necessary to protect workers and/or the public.
- Coordinate activities during emergency situations.
- Ensure that all necessary permits and safety information provided by the client is disseminated to other site personnel and is maintained in an organized manner.
- Monitor site conditions during designated non-HAZWOPER to confirm the absence of potential exposure to site contaminants.
- Implement the Community Air Monitoring Program.
- Ensure contractors performing work under the HAZWOPER Standard are in compliance including, but not limited to: having a corporate HAZWOPER program, all relevant personnel have current HAZWOPER training and medical surveillance, and contractors have a site-specific HASP which they adhere to.
- Communicate with the PM on health and safety issues.
- Reports all injuries, illnesses and near-misses to the PM
- Ensures that necessary safety equipment is maintained and used at the site.

The SSO will contact a health and safety professional for assistance in establishing the respiratory cartridge change schedule as required.

5 PROJECT HAZARDS AND CONTROL MEASURES

5.1 Task Hazard Analysis

The scope of work for this project has been subdivided into tasks and each task has been evaluated for hazards using the Hazard Ranking Chart illustrated in Table 1 in accordance with the Arcadis Hazard Assessment and Risk Control (HARC) Health and Safety Standard (AUS HSMS002). Refer to Appendix A for a detailed Task Hazard Analysis (THA) for this project.

Table 1. Hazard Ranking Chart

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

5.2 Job Safety Analyses (JSAs), Permits and H&S Standards

5.2.1 Job Safety Analyses

A JSA has been completed for each safety critical task and are included in Appendix B. Hazards identified in the table above are addressed specifically in the JSAs as well as control methods to protect employees and property from hazards. The JSA also lists the type of personal protective equipment (PPE) required for the completion of the task or activity. PPE listed in the task specific JSA will take precedence over PPE requirements listed in section 5.3.1 of this HASP.

5.2.2 Permits

Selected work tasks listed below require a permit in accordance with client or specific Arcadis H&S Standards. Any applicable permit is presented in Appendix B with the JSAs. PPE and equipment prescribed by the permit take precedence over JSA and HASP requirements.

- Hot Works Permit for HDPE fusion machine and any hot work activities
- Access Agreement between Northrop Grumman and the Town
- Confined space permit for applying epoxy coating inside vault
- Lifting Operations Permit

5.2.3 H&S Standards

Arcadis H&S Standards applicable to this project are listed below. These standards should be reviewed by the PM, TM and site personnel prior to start of the project or applicable task to ensure all requirements are met.

- ARC HSFS019 – Utility Location and Clearance
- ARC HSCS013 – Hot Work (Including Welding and Cutting)
- ARC HSCS005 – Excavation and Trenching
- ARC HSCS06 – Heavy and Mechanized Equipment
- ARC HSFS003 – Confined Space

- ARCH HSCS003 – Hoisting and Rigging (Crane, Mobile Cranes, Pile Drivers, Dericks and Variations of Such Equipment)
- ARC HSH013 - Heat and Cold Stress Prevention
- ARC HSFS002 – Water Operations Safety Standard

5.3 Personal Protective Equipment

5.3.1 General Requirements

PPE requirements are specified in task specific JSAs and/or permits listed in Appendix B. If the work activity is not performed under a permit or JSA, then all project workers working on-site outside of an office or cabbed vehicle must wear, at a minimum:

- Hard hat;
- Safety glasses;
- Safety toed boot; and
- Class II Traffic vest.

Regardless of the requirements above, the following PPE marked "R" is required to be available on site for this project:

Description (Put specific Material or Type in Box)	R= Required O= Optional
Coveralls	
Chemical Protective Suit (Include type in cell, e.g., Tyvek, Saranex, PVC, etc.)	
Splash Apron	
Rain Suit	
Traffic Safety Vest (Class II minimum)	R
Hard Hat (if does not create other hazard)	R
Head Warmer (depends on temperature and weather conditions)	
Safety Glasses (incorporate sun protection as necessary)	R
Goggles (based on hazard)	

Splash Guard (based on hazard)	
Ear Plugs	R
Ear Muffs	
Outer Chemical Resistant Gloves (specify the type of glove based on chemical hazard)	
Inner Chemical Resistant Gloves (specify the type of glove based on chemical hazard)	
Insulated Gloves	
Work Gloves*	R
Safety Toe Boots	R
Rubber, Chemical Resistant Boots	
Rubber Boots	
Disposable Boot Covers	
Snake Chaps or Guards	
Briar Chaps	
Other:	
Note: Subcontractors are required to have the same PPE available on site as the PPE listed above	

5.3.2 Levels of PPE Protection

The following is a summary of the different levels of PPE protection which may be referred to in this HASP, project related JSAs/permits or in H&S Standards:

- Level D- Standard work clothing consisting of long pants, shirt with at least a quarter sleeve, hard hat, safety glasses, safety toed boots, protective gloves and Class II retroreflective vest (traffic vest).
- Level D Modified – All of the PPE listed above plus coveralls (standard or flame resistant coveralls or Tyvek).
- Level C – All of the PPE listed above including enhanced skin protection including use of coated Tyvek, Saranex or equivalent and use of inner and outer protective gloves and possible use of boot covers. Also includes respiratory protection including mandatory use of dust masks, or use of half or full face piece air purifying respirators (APRs).

- Level B – All of the PPE listed above except enhanced respiratory protection which includes use of supplied air (self-contained breathing apparatus or airline supplied air).
- Level A – All of the PPE listed above except enhanced skin protection through use of completely encapsulating protective outer suit.

For detailed application of PPE for Level C and higher protection, see Appendix F.

5.3.3 Field Health & Safety Handbook

The Field H&S Handbook (FHSHB) is an Arcadis document containing information about topic-specific health and safety requirements for the field. This handbook contains relevant general topics and is used as part of the overall HASP process. To aid in the consistency of the HASP process the handbook will be used as an informational source in conjunction with this HASP.

The following handbook sections and Arcadis H&S standards are required reading for this project:

- ARC HSFS019 – Utility Location
- ARC HSCS013 – Hot Work (Including Welding and Cutting)
- ARC HSCS005 – Excavation and Trenching
- ARC HSCS06 – Heavy and Mechanized Equipment
- ARC HSFS003 – Confined Space
- ARC HSIH013 – Heat Stress
- ARC HSCS003 – Hoisting, Rigging and Other Lifting

6 HAZARD COMMUNICATION (HAZCOM)/ GLOBAL HARMONIZATION SYSTEM (GHS)

All project required chemicals must be handled in accordance with the Arcadis-HAZCOM/GHS Standard (ARC HSGE007), and the requirements outlined in the Field H&S Handbook. The table in Appendix C lists all chemicals that will be brought, used, and/or stored on the site by Arcadis or its subcontractors. Safety Data Sheets (SDSs) for chemicals brought on site are included in Appendix C.

All Arcadis staff must be made aware of the location of and have ready access to the SDS information on site. For this project, the Hazardous Material Inventory and SDS File is located in the RW-21, RW-22 or South Basin Support Zones.

7 TAILGATE MEETINGS

Tailgate safety briefings must be conducted at least once daily. The tailgate safety briefing must be documented on the form included in Appendix D and maintained with the project files. The tailgate safety briefing will serve as a final review for hazard identification and controls to be utilized. JSA and the Arcadis FHSHB controls (including any applicable permit or supplemental plans) should be reviewed as part of the briefing to ensure hazard controls are adequate for planned work. A tailgate safety briefing should be conducted again and documented during the same work shift if site conditions change from anticipated conditions.

8 PERSONAL EXPOSURE MONITORING AND RESPIRATORY PROTECTION

8.1 General Requirements

Personal and area exposure monitoring will be documented on the Air Monitoring Log provided in Appendix D. All monitoring equipment will be maintained and calibrated in accordance with manufacturer's recommendations. All pertinent monitoring data will be logged on the form and maintained on site for the duration of project activities. Calibration of all monitoring equipment will be conducted daily and logged on the same form.

Appendix F lists exposure monitoring requirements and associated action levels for site exposure hazards (e.g. chemical, noise, radiation, etc.). Action levels have been developed for exposure monitoring with real-time air monitoring instruments as specified in the table. Air monitoring data will determine the required respiratory protection levels at the Site during scheduled intrusive activities. The action levels are based on sustained readings indicated by the instrument(s). Air monitoring will be performed and recorded at intervals specified in Appendix F.

If elevated concentrations are indicated, the monitoring frequency will be increased, as appropriate. If sustained measurements are observed during this time, the following actions will be instituted, and the Project Manager and Project Health and Safety Manager will be notified. For purposes of this HASP, sustained readings are defined as the average airborne concentration maintained for a period of one (1) minute.

9 MEDICAL SURVEILLANCE

Medical surveillance requirements prescribed by OSHA's Hazardous Waste Operations and emergency Response (HAZWOPER) regulations apply to all tasks on this project. Arcadis' medical surveillance requirements for HAZWOPER work are outlined in the Arcadis Medical Monitoring Program Standard ARCHSGE010. All medical surveillance requirements as indicated must be completed and site personnel medically cleared before being permitted on the project site.

10 SANITATION

10.1 Potable Water

An adequate supply of potable water must be provided on the site. Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from containers. Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose. Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

Potable water will be stored in support zones located at RW-21, RW-22 or South Basin work areas.

10.2 Toilet Facilities

Under temporary field conditions, the SSO will make provisions so that no less than one toilet facility is available. Use of a nearby toilet facility is an acceptable arrangement for mobile crews having transportation readily available.

Field toilet and wash facilities will be available at the RW-21, RW-22 or South Basin work areas.

11 DECONTAMINATION AND SITE CONTROL PROCEDURES

11.1 Decontamination

Site workers should exercise good hygiene practices by washing hands and face with soap and water prior to consumption of food, drink, or use of tobacco products. Ready access to an adequate supply of potable water, soap and disposable towels is expected to be maintained on site. Exposed skin in contact with potentially impacted environmental media, site chemicals, decontamination materials (i.e. isopropyl alcohol), or calibration solutions should promptly wash the affected area with soap and water to reduce potential for contamination or skin irritation. Work conducted under Level C or higher protection must utilize decontamination controls specified in Appendix G.

12 SUPPLEMENTAL PLANS AND REQUIREMENTS

The following checked supplemental plans are applicable to this project and are presented in Appendix E:

X	Traffic Safety Plan (TSP)
	Site Traffic Awareness and Response (STAR) Plan
	Lone or Remote Worker Plan
	Journey Management Plan
	Site Security Plan
	International Travel Security Plan
	State Specific Injury and Illness Prevention Plan – State:
	State Specific Heat Prevention Plan – State:
X	Other: Permit-Required Confined Space Entry Program if Entry into Concrete Vault for Purpose of Applying Epoxy Coating Occurs On-Site.
X	Other: Lift Plan (To be Prepared by Subcontractor and reviewed by Arcadis H&S)
	Supplemental plans are not required for this project

A shipping determination is required for all equipment, chemical, battery and sample shipments. For this project, one or more shipping determinations are:

	Required for this project and are presented in Appendix E.
X	Not required for this project.

13 CLIENT-SPECIFIC HEALTH AND SAFETY REQUIREMENTS

The client has not specified specific health and safety requirements for this project.

14 ARCADIS BEHAVIOR BASED SAFETY PROGRAM

As part of any project, no matter how simple or complex, Task Improvement Processes (TIPs) should be conducted when practical and when able to integrate into normal business activities. TIPs should be scheduled based on the risk of the tasks being performed, and should be conducted for different tasks and at different times.

The following tasks are suitable for TIP activity for the project:

- Driving
- Excavation and Backfilling
- HDPE Pipe Fusion
- Hydrostatic Pressure Testing
- Installation of subsurface concrete vault
- Asphalt/sidewalk/curb restoration

15 SUBCONTRACTORS

Subcontractors are responsible for the H&S of their employees at all times, and have the authority to halt work if unsafe conditions arise.

A copy of this HASP is to be provided to all subcontractors prior to the start of work so that the subcontractor is informed of the hazards at the site. While the Arcadis HASP will be the minimum health and safety requirements for the work completed by Arcadis and its subcontractors, each subcontractor performing work activities within the scope of the HAZWOPER Standard (29CFR1926.56(a)), in coordination with Arcadis health and safety personnel, is expected to perform its operations in accordance with its own HASP, policies and procedures unique to the subcontractor's work to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to Arcadis for review prior to the start of on-site activities.

In the event that the subcontractor's procedures/requirements conflict with requirements specified in this HASP, the more stringent guidance will be adopted after discussion and agreement between the subcontractor and Arcadis project health and safety personnel. Hazards not listed in this HASP, but known to the subcontractor or known to be associated with the subcontractor's services, must be identified and addressed to the Arcadis project or task manager and SSO prior to beginning work operations.

When the subcontractor is under contract to Arcadis or if directed by the client to act on the client's behalf, the Project/Task Manager and SSO (or authorized representative) has the authority to halt the subcontractor's operations and to remove the subcontractor or subcontractor's employee(s) from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

16 PROJECT PERSONNEL HASP CERTIFICATION

All site project personnel will sign the certification signature page provided in the front of this HASP.

APPENDIX A

Task Hazard Analysis (THA)

Hazard Analysis

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Business Line
All Categories

Business Unit
All Categories

Task 1: General Site Work

Hazardous Activity #1

Field-Ambient environment - exposure heat, cold, sun, weather, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III I, III M

Biological	-	Chemical	-	Driving	M	Electrical	L
Environmental	L	Gravity	H	Mechanical	-	Motion	L
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Field H&S Handbook (see ref. above) Secondary: H&S Standards Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) PPE (see HASP "PPE" section)

Enter Required Controls: TRACK, ARCADIS Field Health & Safety HandBook (III.M), H&S Standards: ARC HSIG013 – Heat Stress Prevention, ARC HSIG014 - Cold Stres Prevention

Hazardous Activity #2

General-Housekeeping - poor

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III E, III F

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	M	Mechanical	-	Motion	-
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK Housekeeping Inspections Secondary: JSAs Job Briefing/Site Awareness

Enter Required Controls: TRACK

Hazardous Activity #3

General-Vehicle -motor vehicle operation (all types on roadways)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III V

Biological	-	Chemical	-	Driving	M	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK Smith System (on line) Inspections Secondary: JSAs Admin. Controls (specify below)

Enter Required Controls: TRACK, JSAs, Smith System Training, Vehicle Inspections

Hazardous Activity #4

Field-Equipment - working on ground in the vicinity of heavy equipment

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: IV E

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	H	Mechanical	H	Motion	H
Personal Safety	-	Pressure	-	Radiation	-	Sound	M

Overall Unmitigated Risk: High Mitigated Risk: Medium. if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Job Briefing/Site Awareness Site Awareness Secondary: HASP H&S Standards Field H&S Handbook (see ref. above) Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) Inspections

Enter Required Controls: TRACK, JSAs

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Task 2: Excavation, tank/piping installation, and backfill

Hazardous Activity #1

Field-Excavation - soil removal, installation or removal piping, tanks or utilities, geologic investigations, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: IV D

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	H	Mechanical	H	Motion	H
Personal Safety	-	Pressure	-	Radiation	-	Sound	M

Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK H&S Standards Excavation Awareness Training Excavation Competent Person Training (designated person) Engineering Controls (specify below) Secondary: JSAs HASP Job Briefing/Site Awareness Client Training/Briefing Cont./Emerg. Planning PPE (see HASP "PPE" section) Specialized Equipment (specify below) Housekeeping Inspections

Enter Required Controls: TRACK, JSAs

Hazardous Activity #2

Field-Excavations - working adjacent to or within trenches and excavations

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: IV D

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	H	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium. if utilizing:

Controls that should be Considered: Primary: TRACK Competent Person Required (designated person) H&S Standards Excavation Awareness Training Engineering Controls (specify below) Secondary: JSAs Job Briefing/Site Awareness Specialized Equipment (specify below) Housekeeping Inspections

Enter Required Controls: TRACK, JSAs

Hazardous Activity #3

Field-Confined space - work in or adjacent to confined spaces

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III Z

Biological	L	Chemical	H	Driving	-	Electrical	-
Environmental	-	Gravity	M	Mechanical	-	Motion	-
Personal Safety	H	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium. if utilizing:

Controls that should be Considered: Primary: TRACK Permits Confined Space Entrant Training Confined Space Supervisor Training (designed person) See HASP "Monitoring" section Secondary: HASP Job Briefing/Site Awareness Cont./Emerg. Planning Engineering Controls (specify below) Specialized Equipment (specify below) Housekeeping Inspections PPE (see HASP "PPE" section)

Enter Required Controls: TRACK, JSAs

Hazardous Activity #4

Field-Utilities - drilling, digging or excavating in the vicinity of subsurface utilities

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III AN

Biological	-	Chemical	H	Driving	-	Electrical	H
Environmental	-	Gravity	-	Mechanical	-	Motion	L
Personal Safety	-	Pressure	M	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK H&S Standards Engineering Controls (specify below) Admin. Controls (specify below) Inspections Specialized Equipment (specify below) Secondary: JSAs Field H&S Handbook (see ref. above) Job Briefing/Site Awareness Cont./Emerg. Planning Engineering Controls (specify below) Admin. Controls (specify below)

Enter Required Controls: TRACK, JSAs

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Task 3: **Pressure Testing**

Hazardous Activity #1

Field-Equipment - work with or in the vicinity of small pressurized or cutting equipment (power washers, air compressors, etc.)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III AA

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	L	Motion	L
Personal Safety	-	Pressure	M	Radiation	-	Sound	-

Overall Unmitigated Risk: Low Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Specialized Training per Standard Operator Competency per Standard Specialized Equipment (specify below) Secondary: HASP H&S Standards Job Briefing/Site Awareness Housekeeping Inspections Competent Person Required (designated person)

Enter Required Controls: TRACK, JSAs

Hazardous Activity #2

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #3

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #4

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

^Warning: You must enter required controls for each hazardous activity.^

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Task 4: Road/Sidewalk/Curb Restoration

Hazardous Activity #1

Field-Traffic - working on or adjacent to roadways

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III AM, V F

Biological	-	Chemical	-	Driving	M	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	H
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium. Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Traffic Control Plan (TCP) Engineering Controls (specify below) Engineering Judgement Employee Required Secondary: H&S Standards Job Briefing/Site Awareness Admin. Controls (specify below) Specialized Equipment (specify below) PPE (see HASP "PPE" section)

Enter Required Controls: Track, JSAs

Hazardous Activity #2

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #3

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #4

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Task 5: 0

Hazardous Activity #1

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #2

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #3

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

Hazardous Activity #4

None

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: NA

Biological		Chemical		Driving		Electrical	
Environmental		Gravity		Mechanical		Motion	
Personal Safety		Pressure		Radiation		Sound	

Overall Unmitigated Risk: Not Ranked Mitigated Risk: Not Ranked if utilizing:

Controls that should be Considered: Primary: Secondary:

Enter Required Controls:

APPENDIX B

Job Safety Analyses (JSAs)

Job Safety Analysis

General

JSA ID	15131	**Status**	(3) Completed
Job Name	Construction-Oversight - excavation and construction	**Created Date**	6/6/2017
Task Description	Arcadis will be hiring a construction subcontractor to trench through the road, excavate to depths of up to 6' below grade, install&nb	**Completed Date**	06/07/2017
Template	False	**Auto Closed**	False

Client / Project

Client	NORTHROP GRUMMAN
Project Number	NY0014962715
Project Name	RW-21 Area Remedial Action
PIC	JOHNSTON, DAVID KENT
Project Manager	SANGIOVANNI, CARLO

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Squires, Michael Kevin	6/27/2017	6/6/2017	Antczak, Bridget	☑
HASP Reviewer	Held, Daniel K.	6/20/2017	6/7/2017	Kaufman, Brian	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Utility Clearance	1	Contact with utilities can cause injury, property damage, and cause releases of hazardous substances to the environment.	Establish a minimum of three lines of evidence, and obtain additional lines of evidence as needed for site specific conditions. Maintain utility markings, perform detailed site inspections, and keep open and constant communication between operators, onsite staff, and project management. Always Use Stop Work Authority if there is a question or concern about the location of a utility.	ARCHSFS019 - Utility Clearance HS Standard
		2	Slip trip and falls while performing site clearance activities	Focus on task at hand and do not hurry through task. Avoid reading maps/drawings while walking, stop walking when looking up for overhead utilities.	
2	Excavation/Trenching and Backfilling Oversight	1	Slips trips and falls from poor housekeeping around trench or excavation.	Maintain work area and minimize clutter near excavation. Place excavated material properly and at least 2 feet away from the edge of excavation. Remove potential hazards when possible. Mark hazards when it cannot be removed. Create and maintain awareness of hazard. Maintain barriers, fall hazard warning signage and traffic controls properly. Do not cross over caution tape, safety fencing etc. Follow Project specific Traffic Control Plan.	FHSHB IV(D)

2	Excavation/Trenching and Backfilling Oversight	2	Excavation or trench collapse trapping workers or creating falls.	Excavation/Trench greater than five (5) feet deep in which subcontractor, employees or others will be entering must be properly sloped, benched, shored or have a trench box in place. Sloping, benching, shoring or use of trench box is not required IF an excavation is less than five (5) feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in. Ensure a Competent Person is on site to inspect and oversee excavation/ trenching activities. Where feasible, stay six (6) feet from edge of excavation/trench. A safe means of egress, such as a stairway, ladder, or ramp, shall be located so that no more than twenty-five (25) feet of lateral travel is necessary for site workers conducting activities in trenches exceeding four (4) feet in depth.	
		3	Potential high level of dust, fumes, vapors or particulates creating visibility or inhalation/contact hazards could result in exposure above occupational exposure limit or create an IDLH atmosphere.	Visually monitor air for dust, and wet excavated soil as needed to control dust. Monitor for chemical vapors if hazard exists. The atmosphere must be tested in excavations greater than four (4) feet in depth where oxygen deficiency or toxic or flammable gases are likely to be present, before workers will be permitted to enter. Ensure downwind and perimeter monitoring also performed, if atmospheric hazards exists.	
		4	Excessive noise from excavating equipment or pumps.	Make sure all authorized personnel including subcontractors are wearing hearing protection (ear plugs/muffs) when working around noisy equipment. Increase distance from noise hazard when practical.	
		5	Potential Leaks of Petroleum Fluids and Lubricants from excavating equipment and support equipment.	Make sure all authorized personnel including subcontractors perform equipment inspections looking for leaks, cracked hoses, and loose fittings. Promptly and properly repair all leaks.	
		6	Open Excavation, Unauthorized Entry, or Property Damage	Make sure all authorized personnel including subcontractors mark open excavation with demarcation tape, orange fencing, orange cones, etc. to prevent unauthorized / accidental entry. Make sure controls are adequate for traffic protection after dark or when the site is unstaffed. Backfill excavation area as soon as possible and fence off any excavation not backfilled at the end of the work day.	
		7	Contact with potentially impacted groundwater and soil.	Conduct task in a calm, cautious manner. Wear appropriate PPE. Ensure equipment is in working conditions before start of work every day. Stop work immediately and report to the site manager, if any life threatening conditions exist.	
		8	Working Around Heavy Machinery	Where feasible, maintain distance from excavation equipment in excess of the swing radius. Maintain eye contact with operators at all time. Ensure equipment is in good working condition before work begins. Wear appropriate PPE, including safety vest. Do not wear loose clothing and pull back long hair. Be aware of and avoid standing in red zones (equipment operator "blind-spots"). No personnel are permitted to stand underneath suspended loads.	
3	Stockpile Maintenance and Sampling	1	Falls climbing on or during covering of stockpile.	Avoid climbing on stockpiles when possible, keep hands free, do not hurry trough tasks such as pulling plastic sheeting up onto or over piles.	
		2	Overexertion placing plastic sheeting, weight, and straw bales.	Use proper lifting techniques, avoid twisting of body, and forceful pulling/pushing. Do not hurry through task.	

3	Stockpile Maintenance and Sampling	3	Cuts, scrapes, impalement from debris in stockpiles.	Have excavation contractor remove/isolate large chunks of concrete, exposed rebar etc. from stockpile to extent practical. Inspect areas prior to kneeling or placing hands when sampling upon stockpile.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	boots		Required
	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	When sampling groundwater	Required
	work gloves (specify type)	Leather when hand hazard exists; nitrile for soil/	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs	When working near heavy equipment	Required
Miscellaneous PPE	other	Sunscreen - SPF 30 or higher	Required
	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone	Remote area, check reception	Required
Decontamination	Decon supplies (specify type)		Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Required
Personal	eye wash (specify type)		Required
	insect repellant		Recommended
	sunscreen	SPF 30 or higher	Required
Traffic Control	barricades		Required
	Other	Cones/tape to delineate trenches prior to backfill	Required
	traffic cones		Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Held, Daniel K. HASP Reviewer Approve 6/7/2017	

Job Safety Analysis

General

JSA ID	15132	**Status**	(2) Review
Job Name	Construction-Excavation and trenching	**Created Date**	6/6/2017
Task Description	Excavation/trenching, backfilling, Site restoration/grading	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	NORTHROP GRUMMAN
Project Number	NY0014962715
Project Name	RW-21 Area Remedial Action
PIC	JOHNSTON, DAVID KENT
Project Manager	SANGIOVANNI, CARLO

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Squires, Michael Kevin	6/27/2017	6/6/2017	Antczak, Bridget	☑
HASP Reviewer	Held, Daniel K.	6/20/2017		Kaufman, Brian	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Site preparation	1	Improper utility clearance may result in utility/equipment damage or injury.	Perform utility clearance with a minimum of 3 lines of evidence. Document utility clearance for reference including any ticket numbers or phone numbers of utilities.	
		2	Clearing vegetation may result in impact hazards.	Stand at least 25 ft from clearing operations using manual or mechanized methods. Larger vegetation like trees may be under stress and may break and wood parts my fly in any direction.	
		3	Slip trip and fall hazards from walkover activities (vegetation, uneven surfaces, etc and applies to all job steps in this JSA)	Plan route and focus on the task at hand (walking). Do not walk while looking at utility maps/drawings or talking on cell phones.	
2	Excavation and backfilling	1	Struck by equipment during excavation.	Stay at least 10 feet beyond the reach of excavation equipment unless establishing communication with operator. Wear PPE required by this JSA for increased visibility. Keep unneccessary workers away from the excavation area.	
		2	Equipment/worker falls into excavations from edge collapse	Stand at least 6 ft from edge of excavation. Competent person to oversee sloping, benching, bracing excavation to ensure stability.	
		3	Worker entrapment/suffocation/chemical overexposure/engulfment in excavation	Entry into excavations are prohibited unless approved by a Competent Person. Keep spoil piles at least 2 ft from excavation edge. Ensure proper slope/bench/shielding is in place prior to entry. Air monitor for toxic vapors and oxygen deficiency. Ensure proper means of access and egress.	
		4	Chemical exposure to site contaminants.	Wear protective clothing specified in this JSA, avoid skin contact with soil materials or any liquids in the excavation. Use air monitoring to ensure TLVs are not exceeded. Wash hands and face prior to eating, drinking or consuming tobacco.	
		5	Noise from excavation equipment	Keep distance from equipment to reduce noise levels. If levels cannot be controlled wear hearing protection appropriate for the hazard.	
3	Excavation equipment decontamination	1	Slips and falls on wet surfaces.	Wear footwear appropriate for wet environments. Reduce amount of pressure washing required by removing soils using dry methods to extent practical	

3	Excavation equipment decontamination	2	Flying particles from cleaning activities.	Wear eye and skin protection during decontamination activities. Use face shield if overspray or flying debris is a persistent problem. Avoid cleaning (pressure washing) in direction of other nearby workers, keep unneccessary workers clear of decontamination activity.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	chemical protective suit (specify type)	Tyvek per SSO	Required
Eye Protection	faceshield	During decontamination (per SSO)	Required
	safety glasses		Required
Foot Protection	boots		Required
	rubber boots	Wet environments (per SSO)	Required
	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile when handling impacted soils	Required
	work gloves (specify type)	leather or equivalent (per SSO)	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	other	Sunscreen - SPF 30 or higher	Required
	traffic vest--Class II or III	Class II	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
	walkie talkie		Required
Miscellaneous	auxilary lighting	Light plant for night work	Required
	fire extinguisher	ABC 10 pound minimum	Required
	first aid kit		Required
Personal	eye wash (specify type)	Bottle	Required
	insect repellant		Recommended
	sunscreen	SPF 30 or higher	Recommended
Traffic Control	barricades		Required
	traffic cones		Required

Job Safety Analysis

General

JSA ID	15133	**Status**	(2) Review
Job Name	Construction-Pipeline installation/inspection/removal	**Created Date**	6/6/2017
Task Description	Hydrostatic pressure testing of below grade piping; pneumatic testing containment pipe of dual-walled pipe	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	NORTHROP GRUMMAN
Project Number	NY0014962715
Project Name	RW-21 Area Remedial Action
PIC	JOHNSTON, DAVID KENT
Project Manager	SANGIOVANNI, CARLO

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Squires, Michael Kevin	6/27/2017	6/6/2017	Antczak, Bridget	☑
HASP Reviewer	Held, Daniel K.	6/20/2017		Kaufman, Brian	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	General awareness of working in a remediation site	1	General potential hazards related to remediation site.	Oversight person is required to have OSHA HAZWOPER training. All personnel should be cognizant of the work area surroundings. Conduct a Tailgate meeting before the start of the work to review site hazards and risks.	JSA001900, JSA6099
		2	Work conducted by subcontractor	1. Arcadis project personnel and subcontractor should review task specific SOW document and attend Kickoff Meeting with project management team (TM, APM and/or PM) to discuss SOW and Arcadis role. Employee should use this meeting to ask questions. 2. Ensure Subcontractor is familiar with Arcadis HASP and applicable standards/SOPs.	
2	Site Access; Mob/Demob	1	Potential hazards related to driving	Refer to JSA001461	JSA001461
		2	Heavy lifting; working around heavy machinery and heavy equipment when loading/unloading equipment	1. Use two persons and proper lifting technique or tools to help lifting heavy equipment. 2. Be aware of heavy machinery around the site. Wear traffic vest. Make sure operator of the heavy machine can see you and be aware of where you are when walk around the work zone. 3. Have the operator inspect the machine before operation to make sure all the parts and hydraulic lines are in good shape. Replace worn parts if needed. 4. All heavy equipment should be equipped with a back-up alarm, which should be tested and verified to be working at the start of each day.	

3	Shut down and Lockout/Tagout the treatment system and remedial well prior any work. Remove lock and tag and start up the treatment system and remedial well after the completion of the pressure test.	1	Electric shock and electrocution	1. Only qualified electrically trained persons are allowed to access the energized electrical panel. 2. Wear personal protective equipment (including insulating gloves, eye protection and insulating suit) 3. Use necessary barriers or warning signs to warn any other personnel from entering the room with energized panel during LOTO 4. Always assume all circuits are energized unless they were de-energized, LOTO and tested. 5. a) De-energize and LOTO the treatment system and/or the relevant remedial well prior the beginning of work 5. b) Remove lock and tag from the remedial well switch, and energize the treatment well and treatment system after the test is completed 6. Eliminate access to exposed energized parts by closing and securing the panel cover, so untrained personnel can access the room after LOTO and during the hydrostatic pressure test, if necessary. 7. Maintain safe clearance around electric panels	RW LOTO Standard procedure
4	Remove and secure the drop pipe with submersible pump and motor from the pitless adaptor and install blank adaptor. Re-install the pump and appurtenances and secure the well.	1	Slips, trips, and falls	1. Plan and discuss how the drop pipe will be removed prior the action itself; 2. Be aware of surrounding terrain; 3. Use caution and appropriate equipment when removing and securing the drop pipe; 4. Use appropriate communication skills	
		2	Working around open remedial well	1. Use traffic cones to identify the work area for other personnel working at the site; 2. Use caution when walking around remedial well area; 3. Place any item that could potentially fall into the remedial well a safe distance from the well.	
		3	Pinch points and lacerations	1. Perform TRACK assessment to identify pinch points; 2. Be aware of body and hand position during installation; 3. Wear appropriate cut resistance work gloves; 4. Do not place hands into spaces not clearly visible; 5. If working with a helper, communicate what you are doing and be aware of interference.	
		4	Chemical hazard associated with groundwater quality	Wear nitrile gloves, eye protection and long sleeve clothing, if inspecting or re-assembling equipment that has been in contact with groundwater. Clean your hands or body part with clean water, if it got into contact with the groundwater. Always clean your hands prior lunch breaks.	
		5	Muscle/Joint Strain	1. Use TRACK and be aware of awkward ergonomical positions; find comfortable position to work in; 2. Switch body positions at intervals to relieve stress; 3. Use knee pads or kneeling pads when work on hard surfaces for a long durations; 4. Rotate workers to reduce stress.	
		6	Volatile Organic Compounds (VOC) in the atmosphere	Use Photoionization Detector (PID) to monitor the VOC concentration in the air as described in the HASP's Air Monitoring Procedure.	
5	Release water from the pipe line to be tested	1	Hit by pressurized part of the tested piping	1. Release pressure inside pipe lines to be tested before any disconnect and installation of the hydrostatic testing line. 2. Wear ANSI rated safety glasses and work gloves.	

6	Assemble test line in the treatment building (including installation of i.e. ball valve, blind flange connection and pressure gauge)	1	Slips, trips and falls	1. Be aware of uneven terrain; 2. Wear sturdy steel toes safety boots with an anti-slip sole; 3. Be aware of slippery surface if any surface areas become wet during testing. Clean up wet areas as soon as practicable.	
		2	Injuries related to failure of parts during testing	1. Inspect all parts (i.e., pressure fittings) that will be used before start testing; lubricate and change worn gaskets and o-rings; make sure pressure ratings of all the parts are sufficient for the actual testing pressure; reject and replace under-rated or damaged parts; 2. Review approved engineering plans regarding the parts to be used and proper assembly of the parts; discuss with project manager if questions are raised or site conditions have changed. 3. All joints used to restrain end caps should be made for their intended purpose. If the fitting is a non-restraining type, ensure that there is a means to restrain the fitting using a thrust block or tie-rods.	
		3	Eye injury	1. Wear ANSI approved safety glasses or goggles; 2. Postition face away from connections being torqued during installation.	
		4	Pinchpoint and lacerations	1. Perform TRACK assessment to pinch points; 2. Be aware of body and hand position during installation; 3. Wear appropriate cut resistance work gloves; 4. Do not place hands into spaces not clearly visible; 5. If working with a helper, communicate what you are doing and be aware of interference.	
		5	VOC in the atmosphere	Use Photoionization Detector (PID) to monitor the VOC concentration in the air as described in the HASP's Air Monitoring Procedure.	
7	Perform hydrostatic pressure testing; fill carrier pipe with water and operate hydrostatic pump	1	Parts failure related to existence of air in the pipe	1. Fill the pipe with water slowly to evacuate air in the line; 2. Use a air-release valve (if necessary) at high points in line to remove air; 3. When testing, increase the pressure slowly over time.	
		2	Injury related to part failure and flying objects	1. Ensure fill pipe and hose are secured in place from dislodging during pressure testing; 2. Check hose connections on the hydrostatic pumps for worn parts and defects; replace if necessary. 3. Use two pressure gauges (i.e., gauge at hydrostatic test pump, existing pressure transmitter at remedial well line) to confirm the built-up pressure in the tested line. The test pressure is 90 psi and the built-up pressure in the line should not exceed 95 psi.	
		3	Struck by line of fire	1. Evaluate conditions of surrounding area; use traffic cones or caution tapes to stop or redirect pedestrian or other traffic, if necessary. 2. Use a safe distance to protect personnels and vehicles on the job site from line of fire and the testing pipes; 3. Use proper pressure-rated tubing /connections to connect the tested line to the pressure gauge and the hydrostatic test pump, so that pressure readings can be checked safely during testing. 4. Limit personnel exposure to immediate pump area during operation; 5. All personnels working on the site should know where emergency shut-off is.	

7	Perform hydrostatic pressure testing; fill carrier pipe with water and operate hydrostatic pump	4	Eye injury and hand injury	1. Wear ANSI rated safety glasses and work gloves when adjusting any valves and hose connections; 2. Keep eyes and face away from hose connection and bleeding valves during operation.	
		5	Hearing damage / loss	1. Wear hearing protection when working around pump; 2. Stage hydrostatic pump away from personnel and ongoing work activities.	
8	Complete hydrostatic pressure testing and disconnect hoses	1	Hit by pressurized hoses	1. Install pressure release valves on the testing pipe and hydrostatic pump; 2. Release pressures inside pipes and all hoses before disconnect; 3. Wear ANSI rated safety glasses and work gloves.	
9	Pneumatic testing of containment pipe for dual-walled pipe	1	Hit by pressurized lines	1. Install pressure gauge onto pipe 2. Fill pipe slowly with air to 5 psi, as per manufacturer recommendation; do NOT exceed 10 psi 3. The inner carrier shall be full of water and under pressure to avoid any possible collapse 4. Release pressures inside pipes and all hoses before disconnect. 5. Flush out piping to ensure metal shavings are cleared out.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	boots		Required
	steel-toe boots		Required
Hand Protection	work gloves (specify type)	cut/crush/abrasion - resistant	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Personal	sunscreen	SPF 30 or higher	Required
Traffic Control	barricades		Required
	traffic cones		Required

Job Safety Analysis

General

JSA ID	15134	**Status**	(3) Completed
Job Name	Construction-Cranes/rigging	**Created Date**	6/6/2017
Task Description	Construction - Cranes & Rigging : Vault installation	**Completed Date**	07/08/2017
Template	False	**Auto Closed**	False

Client / Project

Client	Northrop Grumman Corporation
Project Number	NY0014962715
Project Name	RW-21 Area Remedial Action
PIC	ALEXANDER, PHILIP
Project Manager	SANGIOVANNI, CARLO

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Squires, Michael	7/2/2017	6/19/2017	Antczak, Bridget	☑
HASP Reviewer	Held, Daniel	7/3/2017	7/8/2017	Kaufman, Brian	☑
Quality Reviewer	Welch, Wayne	7/10/2017	7/10/2017	Hotha, Bhaumik	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Crane/Boomtruck setup	1	Impact with facility equipment or facilities from improper access route selection	Lift plan specific to the task to be developed by Competent Person. Ensure right crane/boom truck for the task to be performed, know height, width, weight of crane and coordinate route with township prior to crane/boom truck arrival. Any instructions from town (e.g. police department) should be transmitted to crane rental dispatcher. Use spotters to watch for impact hazards, especially for overhead piping or wires.	Handbook section IV F
		2	Tipping from improper outrigger placement	Place crane/boom truck in location where all outriggers can be fully deployed	
		3	Tipping from set up on soft or uneven ground	Evaluate set up area and ensure ground suitable for placement, use pads, wood blocking or other suitable support device to displace weight if needed.	
		4	Crush hazards from test lifts	Test lifts are required, ensure unnecessary workers keep clear of the test lift location activity, be aware and keep feet clear of suspended load if inspecting rigging	
		5	Hand hazards (cuts, pinch, crush) from test lifts	Be aware and keep hands clear of rigging when load being lifting for test. Watch for pinch points of secured devices and keep fingers clear, leather gloves required.	
		6	Contact with Overhead Utilities	Subcontractor to prepare Lift Plan specific to each vault installation. Crane operator to inspect work area for potential hazards before locating crane. Arcadis *Lifting Operations Permit* must be completed prior to staging crane/boom.	Hoisting & Rigging ARC HSCS003 Sections 5.2 & 5.2.1
2	Inspections and Maintenance (crane or boom truck)	1	Hoisting failure from lack of or improper maintenance.	All aspects of inspection and maintenance to be performed under the oversight of a competent person, Crane or boom truck shall not be used if any identified defect is observed that has the potential to affect safe operation.	
		2	Cuts and scrapes to hands	Wear protective gloves, watch for sharp surfaces and avoid contact. Avoid reaching into location where visibility is impaired.	

		3	Struck by hazards from crane components	Wear hard hat and eye protection at all times, if raising up from a kneeling position, look up for possible overheard hazard, Stay aware of surroundings on crane or boom truck. Secure any loose rigging that could be affected by wind causing it to swing freely.	
		4	Tipping due to absence of boom angle indicators and load charts	Competent person shall ensure all manufacturer supplied angle indicators and load charts are present, readable by the operator and unobstructed at all times. No crane or boom truck shall be use if these device/information are not present	
		5	Muscle strain from awkward body positions	Avoid awkward body testing and bending when servicing crane/boot truck engine compartment(s)	
3	Inspections and attachment of rigging	1	Load securing failure from improperly inspected or maintained components	Competent person to inspect and approve of all rigging components to be used for the lift daily or more often as required by site conditions. Competent person shall provide oversight of rigger activities to ensure good load securement and load is evenly balanced and contained.	
		2	Cuts, scrapes, puncture wounds to hands and arms from wire cable	Wear leather gloves for all rigging attachment activities, watch for and avoid pinch points.	
		3	Muscle strain from moving heavy chain or cable	Avoid moving bulky or heavy coiled cable or chain, use buddy system or other automated methods to move long strands of cable or chains or if moving blocking.	
		4	Pinch hazard to hands from connecting devices	Keep hands clear, wear leather gloves. Do not hurry through task	
		5	Struck by hazards from blocking	Be aware of hazard and stay clear when crane/boom truck in operation, ensure blocking is secured when not in use	
4	Hoisting	1	Load failure from impact with other equipment or objects	All site workers will be educated in the Emergency Stop Hand Signal. Standard hand signals will be reviewed prior to hoisting activities for all workers involved in the lift. Lifts to be performed in a smooth methodical manner. All loads to be adequately contained and/or secure to prevent being knocked off and falling to ground.	
		2	Worker struck by hazard from spinning or swinging load	Tagline required for all loads lifted over knee height to prevent sudden spinning or swinging, number of taglines required to be specified by Competent Person based on size of load lifted. Hard hat required for all activities.	
		3	Crush hazard to feet during load placement	Steel toe boot required, stay clear of loads be lowered into place, if close proximity required, be aware of hazard and ensure visibility of surface and feet are not obscured.	
		4	Tipping of crane/boom truck form excessive load or boom angle	Operator shall ensure all loads do not exceed load limits or the boom angle is not exceeded at any time during the lift.	

PPE	**Personal Protective Equipment**		
Type	**Personal Protective Equipment**	**Description**	**Required**
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	boots		Required
	steel-toe boots		Required
Hand Protection	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
	walkie talkie		Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Personal	sunscreen	SPF 30 or higher	Required
Traffic Control	barricades		Required
	traffic cones		Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Held, Daniel HASP Reviewer Revise 6/18/2017	Job Step 1 - Hazard 1 Route should be coordinated with township instead of facility before mobilization. Any instructions from town (e.g. Police Dept) should be transmitted to crane rental dispatcher. Job Step 1 - Should also identify potential hazard for contact with overhead utilities. Crane operator to inspect work area for potential hazards before locating crane.
Employee: **Role** **Review Type** **Completed Date**	Held, Daniel HASP Reviewer Approve 7/8/2017	
Employee: **Role** **Review Type** **Completed Date**	Welch, Wayne Quality Reviewer NA 7/10/2017	Through JSA. Should consider adding: - daily tailgates during event - define "Competent Person" - Adding section on safety steps in the event of a storm.

Job Safety Analysis

General

JSA ID	17183	**Status**	(2) Review
Job Name	Environment-Boating/water work	**Created Date**	11/6/2019
Task Description	Trenching and other general construction activities occurring near water hazards. Pipeline being installed adjacent to recharge basins in narrow work zone.	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	Northrop Grumman Corporation
Project Number	30018023
Project Name	NYNG2019.35LS-OU3.5 RW-21 Project Area
PIC	Alexander, Andrew
Project Manager	Sangiovanni, Carlo

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Corbett, Dylan	11/27/2019	11/7/2019	Zahradnik, Arthur	☑
HASP Reviewer	Held, Daniel	11/21/2019		Kaufman, Brian	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Inspect work zone and working near retention basin	1	Slips, Trips, and Falls	Wear safety boots with appropriate traction and avoid wet ground when possible. Do not walk or stand along steep sections, instead divert to areas that allow stable walking. Do not walk or stand near the edge of embankment. Use walking sticks/trekking poles where appropriate to aid stability. Communicate water hazard and embankment hazard to all staff each day.	Tailgate Health and Safety Meetings Standard; FH&SH Section II, Part G; ARC HSFS002 (water work STD
		2	Drowning	Only staff required to be near the water should be. Avoid driving/walking/standing near edge of embankment at all times. Any note-takers or oversight staff should stay away from steep sections of the basin near the water. Bring and don when necessary US Coast Guard approved personal floatation devices appropriate for flowing water. They will be worn: 1) If work occurs in an area where there is a potential to fall into water that represents a drowning hazard (e.g., work along a river or basin with a steep or slippery bank): 2) When working in water where the depth is unknown; 3) When walking into a body of water that will be waist deep or higher; and/or, 4) When work activities occur on water or within 5 feet of any body of water that represents a drowning hazard.	
		3	Cold stress or hypothermia	Do not enter the water for any reason. If you get water on you or your clothing, dry off your clothing when possible or change your clothing. Use the buddy system to monitor each other for signs of cold stress and hypothermia. Stop work if someone is exhibiting those signs and get them treatment as soon as possible.	
		4	Reflected sunlight.	Reflected sunlight results in increased sun exposure to your skin and eyes - wear sunscreen and tinted glasses during sunny weather. Consider wearing a hat or UPF-rated clothing. Avoid looking at water surface when not necessary.	

2	Driving Near Water Hazard	1	Vehicle Incidents	Work area is narrow and situated between water hazard and fence. Signal to other staff and vehicles on site and communicate when driving vehicles through work zone. Always maintain minimum 10 feet of clearance from water hazard and edge of basin embankment. Do not drive in reverse near water hazard. Always back into parking spots and use spotters when turning vehicle near the water. use traffic control devise as visual aids for avoiding the embankment. There will be no equipment operation between trench and steep embankment. Soils will be staged and loaded and transported at the fence side of trenching	Tailgate Health and Safety Meetings Standard, Driving JSA.

PPE — Personal Protective Equipment

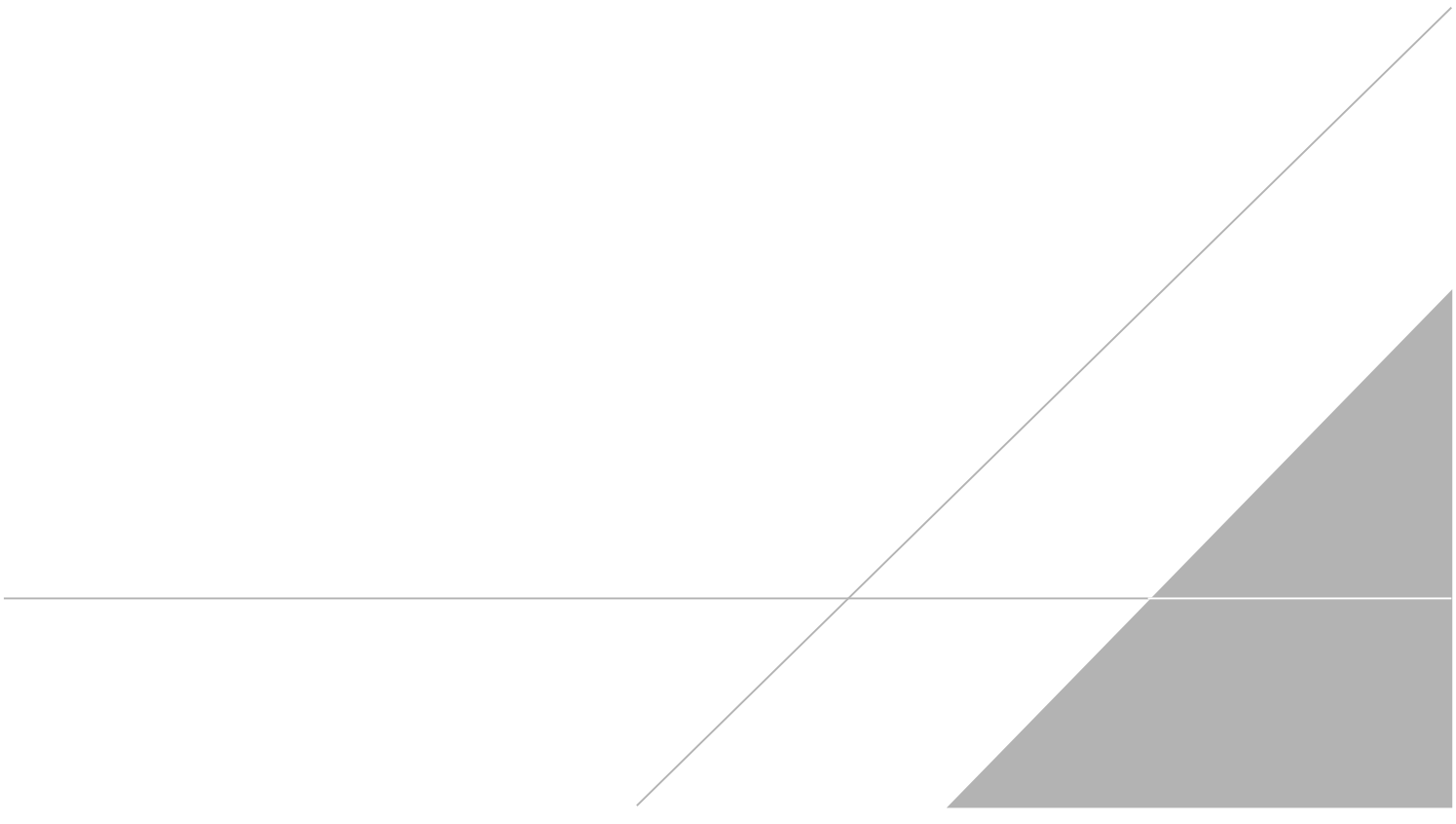
Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	Other	Throw Rope	Required
	steel-toe boots		Required
Hand Protection	insulated gloves	During Cold Weather	Required
	work gloves (specify type)	Leather or cut resistant	Required
Head Protection	On road - Hard Hat		Required
Miscellaneous PPE	personal flotation device	USCG Type 1	Required
	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	auxilary lighting		Recommended
	first aid kit		Required
Traffic Control	barricades		Required
	traffic cones	Use visual markers to help avoid embankment	Required

APPENDIX C

Field Forms



ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name:			**Project Location:**
Date:	**Time:**	**Conducted by:**	**Signature/Title:**
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 _____ 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Topics from Corp H&S to cover?	☐ Incidents from day before to review?	☐ Lessons learned from the day before?
☐ Any Stop Work Interventions yesterday?	☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?
☐ If deviations, notify PM & client	☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?
☐ All equipment checked & OK?	☐ Staff has appropriate PPE?	☐ Staff knows Emergency Plan (EAP)?
☐ Staff knows gathering points?		

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **Assess** the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☐ Motion (i.e., traffic, moving water) (L M H)	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☐ Environment (i.e., heat, cold, ice) (L M H)
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☐ Biological (i.e., ticks, poison ivy) (L M H)	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☐ Driving (i.e. car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

☒	**STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - (*See statements below*)		
☐	Elimination	☐ Substitution	☐ Isolation
☐	Engineering controls	☐ Administrative controls	☐ Monitoring
☐	General PPE Usage	☐ Hearing Conservation	☐ Respiratory Protection
☐	Personal Hygiene	☐ Exposure Guidelines	☐ Decon Procedures
☐	Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐	JLA to be developed/used ***(specify)***	☐ LPO conducted ***(specify job/JLA)***	☐ Traffic Control
☐		☐	☐ Other ***(specify)***
☐		☐	☐

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- ☐ Lessons learned and best practices learned today: _____
- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

Real Time Exposure Monitoring Data Collection Form

Document all air monitoring conducted on the Site below. Keep this form with the project file.

Site Name: _____ Date: _____

Instrument: _____ Model: _____ Serial #: _____

Calibration Method: (Material used settings, etc.)	
Calibration Results:	
Calibrated By:	

Activity Being Monitored	Compounds/Hazards Monitored	Time	Reading	Action Required? Y/N

Describe Any Actions Taken as a Result of this Air Monitoring and Why (does it match Table 5-1):

_____

_____

Employee Signature Form

I certify that I have read, understand, and will abide by the safety requirements outlined in this HASP.

Printed Name	Signature	Date

Subcontractor Acknowledgement: Receipt of HASP Signature Form

ARCADIS claims no responsibility for the use of this HASP by others although subcontractors working at the site may use this HASP as a guidance document. In any event, ARCADIS does not guarantee the health and/or safety of any person entering this site. Strict adherence to the health and safety guidelines provided herein will reduce, but not eliminate, the potential for injury at this site. To this end, health and safety becomes the inherent responsibility of personnel working at the site.

Printed Name	Company	Signature	Date

Visitor Acknowledgement and Acceptance of HASP Signature Form

By signing below, I waive, release and discharge the owner of the site and ARCADIS and their employees from any future claims for bodily and personal injuries which may result from my presence at, entering, or leaving the site and in any way arising from or related to any and all known and unknown conditions on the site.

Name	Company	Reason for Visit	Date/Time On Site	Date/Time Off Site

Hazardous Materials Transportation Form

	Vehicle (place X in box)	Type (pick-up, car, box truck, etc.)
Personal		
Rental		
ARCADIS owned/leased		
Government owned		
Trailer		

Materials Transported	Quantity	Storage/Transport Container

List Trained Drivers:

_____

_____

Hazardous Materials Shipment Form

Material Description and Proper Shipping Name (per DOT or IATA)	Shipment Quantity	DOT Hazard Classification	Shipment Method (air/ground)

List Shipper (i.e., who we are offering the shipment to):

_____

_____

List Trained Employee(s):

_____

_____

Water Risk Assessment Form

Project Name: Northrop Grumman South Basin Influent Pipeline	Project Location: South Basin, Bethpage, New York
Project Number:30018023. STRA5	Date / Time:
Project Manager:David Stern	Evaluation Completed By: Salvatore Tedesco, Xu Xuan, Kevin Held
Expiration Date: (At a minimum the WRAF must be reviewed and update every 3 months)	

1. Description of Water Operations

Scope of work: Trenching and below grade remedial influent pipeline installation in proximity to an active storm/groundwater recharge basin with standing water	
Type or Water Body (Stream, Pond, River, Ocean, etc.): Recharge Basins	
Depth range of Water Body: 1 to 25	Typical Working Hours: 7 to 4
Water Body Flow Rate or Current (List unit of measurement): None	
Water Body Temperature Range (List unit of measurement): Ambient	
Geographic Limits of Work Area including Start/End Location: Trenching and loading spoils within 20' of top of recharge basin slope	
Surrounding Topography or Site Conditions: Relatively flat terrain with mowed grass around top of steep slope that lead to bottom of retention basins, approximately 25' - 30' bgs.	

2. Identification & Control of Water Hazards [1,2]

(Circle Answer that Applies)

1) Will work be conducted at a height of 6ft or greater with unprotected edges? If **YES,** completion of the Elevated Work Permit is required. See Section 5.3 of Water Operations Standard	**YES**	**NO**
2) Will work be conducted when water temperature is at or below 60˚F? If **Yes**, below select type of cold water work PPE to be used : (See Section 5.2 of Water Operations Standard) (note this may not be considered applicable since personnel are technically more than 6-ft from water).	**YES**	**NO**
Water temperatures are between 60 °F and 50°F and the air temperature is above 60°F and when rescue can be achieved within 15 minutes	**Type I PFD**	
Water temperature is at or below 60°F and when rescue can be achieved within 1 hour	**Work Suit**	
Water temperature is at or below 50°F and/or when rescue is anticipated to exceed greater than 1 hour	**Immersion Suit**	
2) Does the Water Operations listed in Section 1. present a risk of drowning? If **YES,** select type of Inherently Buoyant PFD to be used: (See Section 5.1.1 of Water Operations Standard)	**YES**	**NO**
Worn when employees are working in or near an open ocean, rough seas, or remote water where rescue may be slow coming. See Section 2.	**Type I**	
Worn by employees when working around or on calm, inland waters, or where there is a good chance for fast rescue	**Type II**	
Worn by employees when working around or on calm, inland waters, or where there is a good chance for fast rescue	**Type III**	
4) Does the work require the use of a boat / vessel ? If **YES**, an electronic Float Plan must be completed and submitted prior to starting work. (See Section 5.5.1 of Water Operations Standard)	**YES**	**NO**
5) Will work on boat/vessel be conducted within 3,000ft of a Dam, Spillway, Similar Fearture? If **YES**, completion of a communication plan is required. (See Section 5.5 of Water Operations Standard)	**YES**	**NO**

2. Identification & Control of Water Hazards [1,2]

(Circle Answer that Applies)

6) Will staff be working alone (Lone Worker)? If **YES**, the use of the buddy system is required and completion of a communication plan is required. (See Section 5.1 of Water Operations Standard)	**YES**	**NO**
7) Will work be conducted at night without the use of a boat / vessel? If **YES**, completion of a communication plan is required. (See Section 5.1 of Water Operations Standard)	**YES**	**NO**

2) **If YES** is selected **for any questions 3, 4, 5, and 6 must be reviwed and completed**.

3.Communcition Plan

(List Minimum Requirements as required in Section 5.1 of the Water Operations Safety Standard)

1) If working in water within 3,000ft of a dam, dam overflow, water intake, or similar structure, Arcadis will notify the structure owner and discuss the appropriate safety requirements and work restrictions and document the requirements here.

4. Emergency Action / Rescue Plan

(List the Rescue Requirements as requireed in Section 5.5.1 & 5.7 of the Water Operations Safety Standard)

As necessary personnel will enter the recharge basin from a service ramp to rescue fallen personnel and will contact 911 emergency services. Note that technically personnel that have fallen into the recharge basin will not be within 6-ft of water. Personnel will be working near the top of the slope that leads to the recharge basin. Field personnel will demarcate the high-hazard area (near edge of slope) with any combination of high-visiblity paint on the ground, orange snow fence, traffic cones or portable barrier as deemed appropriate based on proximity of work area to the edge of the basin sidewall slope. In general, if work area is more than 3-ft but less than 5-ft from a steep slope field team will use snow fence to provide a physical demarcation. If personnel will be working within the 3-ft buffer to a steep edge, suncontractor will install a portable barriers.

5.Restrictions

Minimum restrictions are listed below

1) The use of Type V and non-inherently buoyant PFDs is not approved unless approved by Corporate H&S.
2) The use of PFDs classified for recreational use are prohibited for use on Arcadis projects.
3) Snorkeling or diving work is prohibited unless reviewed and approval by the Arcadis Diving Control Board (DCB)

6.Site Safety Officer (SSO) Review and Signature

The signatory has reviewed this WRAF and has reviewed the Water Operations Safety Standard. The WRAF must be shared with all personnel performing the work, and must also be available for review in the appropriate work area. After activation of the Emergency Response Plan contact **Arcadis LIFELine (443-569-8585)**

Name (Print):	Date:
Signature:	Time:

Utilities and Structures Checklist

THIS FORM MUST BE COMPLETED IN ENTIRETY PRIOR TO BEGINNING ANY INTRUSIVE WORK

Project: _____
Project Number: _____
Form Completion Date: _____ Form Expiration Date: _____
(15 business days post form completion date)

Pre-Field Work

Required: One Call or "811" notified 48-72 hours in advance of work? #: _____
Ticket Expiration Date _____ (Review State Requirements)
Utility companies notified during the One Call process ☐ See attached ticket

_____ _____ _____ _____
_____ _____ _____ _____

List any other utilities requiring notification: ☐ None

_____ _____ _____ _____

Private Locator Contacted ☐ Yes ☐ No

Plan private utility clearance subcontractor assignments, areas, required clearance equipment, depth of clearance needed, types of utilities. When possible re-clear 811 markings to confirm utility locations.

Client provided utility maps or "as built" drawings showing utilities? ☐ Yes ☐ No

Field Work - This must be completed on site, by staff who have a minimum of one year of field experience in identifying utilities. Review Check list with PM or designee prior to beginning intrusive work.
Mechanized intrusive work in utility Tolerance Zone (<30-in.) requires pre-approval by Corporate H&S

List Soil Boring / Well IDs or Excavation Locations applicable to this clearance checklist:

3 Reliable Lines of Evidence Required Prior to Starting any Subsurface Intrusive Work

☐ One Call/"811" (Reliable as a line of evidence when working in public right of way or easement)
Utility Markings Present: ☐ Paint ☐ Pin flags/stakes ☐ Other ☐ None

☐ Client Provided Maps/Drawings **OR** ☐ Maps/Drawings requested but not provided
☐ Client Clearance Name(s)/Affiliation(s) _____
☐ Interview(s): Name(s)/Affiliation(s) _____
_____
_____

Did person(s) interviewed indicate depths of any utilities in the subsurface?
☐ Yes, depths provided: ☐ Did not know or refused to answer
Additional Comments:

☐ Site Inspection (**Complete Page 2 & Photo Document Marked Utilities & Utility Structures**)
☐ Public Records / Maps / As-Builts
☐ **Private Locator: (Name and Company)** _____
☐ Ground Penetrating Radar (GPR)
☐ Radiofrequency (RF Loc)
☐ Electromagnetic (EM)
☐ Metal Detector

Soft Dig Methods
☐ Termination Depth _____ft. bgs
☐ Potholing / Vacuum Extraction
☐ Air-Knife ☐ Hydroknife
☐ Probing
☐ Hand Auguring

☐ Other: _____
☐ Marine Locator: (Name and Company) _____

Tips for Successful Utility Location (H&S Standard Section 5.6):
1. Don't forget to look up (mark above grade utilities if warranted)
2. Be on-site with Private Utility Locators
3. Ask Private Locators to "confirm" other's markings
4. Select alternate/backup locations during clearance process
5. Mark out all known utilities. Leave nothing to question
6. No hammering - no pickaxes - no digging bars - no shortcutting
7. No excessive turning or downward force of hand augers/shovels
8. Utilities may run in or directly under asphalt/concrete
9. Clearing, grubbing, and heavy equipment may damage shallow utilities.
10. Is Spotter needed for Heavy Equipment near aboveground utilities?

Utilities and Structures Checklist

ARCADIS Design & Consultancy for natural and built assets

During the site inspection look for the following: **("YES" requires additional investigation and the utility must be marked properly prior to beginning subsurface intrusive work)**:

Site Inspection	Utility Color Codes	Present	
A) Natural gas line present (evidence of a gas meter)?	Yellow	☐ Yes	☐ No
i) Feeder Lines to buildings or homes?		☐ Yes	☐ No
B) Evidence of electric lines:	Red		
i) Conduits to ground from electric meter or along wall?		☐ Yes	☐ No
ii) Conduits from power poles running into ground?		☐ Yes	☐ No
iii) Light poles, electric devices with no overhead lines?		☐ Yes	☐ No
iv) Overhead electric lines present? Marked? (See Section L)		☐ Yes	☐ No
C) Evidence of sewer drains:	Green		
i) Restrooms or kitchen on site?		☐ Yes	☐ No
ii) Sewer cleanouts present?		☐ Yes	☐ No
iii) Combined sewer /storm lines or multiple sewer lines?		☐ Yes	☐ No
D) Evidence of water lines:	Blue		
i) Water meter on site or multiple water lines?		☐ Yes	☐ No
ii) Fire hydrants in vicinity of work?		☐ Yes	☐ No
iii) Irrigation systems? (Sprinkler heads, valve boxes, controls in building)		☐ Yes	☐ No
E) Evidence of storm drains:	Green		
i) Open curbside or slotted grate storm drains		☐ Yes	☐ No
ii) Gutter down spouts going into ground		☐ Yes	☐ No
F) Evidence of telecommunication lines:	Orange		
i) Fiber optic warning signs in areas?		☐ Yes	☐ No
ii) Aboveground cable boxes or housings or wires in work area? Marked?		☐ Yes	☐ No
G) Underground storage tanks:			
i) Tank pit present, tank vent present?		☐ Yes	☐ No
ii) Product lines running to dispensers/buildings?		☐ Yes	☐ No
H) Do utilities enter or exit existing structures/buildings?			
If Yes, confirm the utility markings outside of structure/building match up.		☐ Yes	☐ No
I) Proposed excavation marked in white?	White	☐ Yes	☐ No
J) Unclassed utilities / anomalies marked in pink?	Pink	☐ Yes	☐ No
K) **Overhead** Utilities/Communication Lines - **Look Up and MARK**:			
i) Overhead electrical conduit, pipe chases, cable trays, product lines?		☐ Yes	☐ No
ii) Overhead fire sprinkler system?		☐ Yes	☐ No
L) **Overhead** Power lines in or near the work area:			
i) < 50 kV within 10 ft. of work area?		☐ Yes	☐ No
ii) >50 - 200 kV within 15 ft. of work area?		☐ Yes	☐ No
iii) >200-350 kV within 20 ft. of work area?		☐ Yes	☐ No
iv) >350-500 kV within 25 ft. of work area?		☐ Yes	☐ No
v) >500-750 kV within 35 ft. or work area?		☐ Yes	☐ No
vi) >750-1000 kV within 45 ft. of work area?		☐ Yes	☐ No
M) Other:			
i) Evidence of linear asphalt or concrete repair?		☐ Yes	☐ No
ii) Evidence of linear ground subsidence or change in vegetation?		☐ Yes	☐ No
iii) Unmarked manholes or valve covers in work area?		☐ Yes	☐ No
iv) Warning signs (Call Before you Dig, Look Up, etc.) on or adjacent to site?		☐ Yes	☐ No
v) Utility color markings not illustrated in this checklist?	i.e. Purple	☐ Yes	☐ No
vii) Operating heavy equipment on unpaved/unimproved ground; review equipment route for shallow utilities crossing it and modify if necessary.		☐ Yes	☐ No
O) Utilities & Structures Checklist been reviewed by the PM or Designee		Yes	No*
PM or Designee Name: _____		* If no, STOP WORK, call PM	

Name and Signature of person completing the checklist: _____

Date: _____

Do not perform mechanized intrusive work within 30 inches of a utility marking without receiving pre-approval by Corporate H&S.

ALL UTILITY STRIKES REQUIRE CORPORATE H&S NOTIFICATION (EMAIL OR CALL) WITH A CONFIMRED RESPONSE

Lifting Operations Permit (Critical Lift Plan)

Project Name:	**Date:**
Project Location:	**Project Manager:**

Weight of Load Estimated or Known (Circle One) _____	Method by Which Weight was determined:_____	Center of Gravity was Estimated or Calculated (circle one):_____

Crane (if the answer to any of the following questions is NO, lifting operations shall not proceed)	Yes	No	N/A
1. Was a pre-lifting operations meeting held?	☐	☐	☐
2. Is the yearly crane/hoist inspection current and documented?	☐	☐	☐
3. Has the daily visual inspection been completed? (copy attached to permit)	☐	☐	☐
4. Are safety devices (e.g., two-block) installed and tested?	☐	☐	☐
5. Has qualified person assessed and accounted for wind and other environmental conditions?	☐	☐	☐
6. Is wind speed below manufacturer specified limit or 30 miles per hour (26.1 knots; 48.3 km/hour) – whichever is more conservative? If wind speed exceeds manufacturers limit or 30 mph, lifting operations shall not proceed	☐	☐	☐
7. Have precautions been established to keep other personnel out of the lift area?	☐	☐	☐
8. Was the need to protect the swing area and lift/landing zones been considered?	☐	☐	☐
9. Has the ground stability been assessed and is the ground stability adequate for the lift?	☐	☐	☐
Load (if the answer to any of the following questions is NO, lifting operations shall not proceed)	**Yes**	**No**	**N/A**
10. Has the need for taglines been evaluated and addressed?	☐	☐	☐
11. Is the load to be lifted stable? (no liquid or other material that could shift load)	☐	☐	☐
12. Have the lifting lugs and pad eyes been inspected?	☐	☐	☐
13. Have we identified/ accounted for the characteristics, weight, dimensions, center of gravity, and whether the item to be moved contains any hazardous or toxic materials?	☐	☐	☐
Critical Lift Assessment (if the answer to any of the following questions is YES, a Critical Lift Plan must be completed	**Yes**	**No**	**N/A**
14. Could loss of control of the item being lifted result in a declaration of an emergency?	☐	☐	☐
15. Could mishandling or dropping of the load result in irreplaceable damage or delays that involve a negative impact of facility or project site?	☐	☐	☐
16. Does the total load to be lifted exceed 75% of the rated capacity of the crane? (no lift is allowed if it exceeds 90% of the load chart for given crane configuration)	☐	☐	☐
17. Does the load require exceptional care in handling because of size, weight, shape, close tolerance or high susceptibility to damage?	☐	☐	☐
18. Is this a lift where the load cannot be reasonably estimated?	☐	☐	☐
19. Does this lift require multiple cranes for the lift, or the use of two or more cranes or lifting devices to lift one load simultaneously?	☐	☐	☐
20. Will this lift be performed while the operator of the lifting equipment cannot see the load? If yes, answer the following questions: Insufficient communication between the signal person, hoist operator and/or lift leader? Detail the type of communication (circle one): RADIO RELAYED HAND SIGNAL or OTHER	☐ ☐	☐ ☐	☐ ☐
21. Are people being lifted?	☐	☐	☐

22. Will the load be lifted over the top of live process equipment/piping (e.g., gasoline, crude oil, natural gas, etc)?	☐	☐	☐
23. Could the crane come within 20 feet of an energized power line? (all power lines must be considered to be energized without proper verification) (if the answer is YES, contact the Electrical Service Provider to determine the actual electric line voltage and implement encroachment prevention measures (refer to section 5.2.1 of HSS)	☐	☐	☐

Pre-Lift Notes:	**Post Lift Notes:**

Critical Lift Details

Crane Make:	**Model #:**

Total Weight of Required Rigging:	
Total Weight of the Lift to be made:	
Additional Weight to be added to the load:	
Total Weight of the Lift:	
Allowable Load (from the load chart):	
Ratio Calculation: Total Lift Weight divided by the Crane Lift Weight Capacity x 100 (if value exceeds 90%, **STOP WORK**)	
Maximum Operating Boom Radius:	
Planned Operating Boom Radius:	

Rigging Diagram (attach separate page if needed)**:**	**Crane Setup Diagram** (attach separate page if needed)**:**

Emergency and Rescue Plan

Detail Emergency Planning and Notification Procedures (attach separate page if needed):

Critical Lift Plan Signatures

I certify that the weight of the lift is less than 90% of the allowable load (from the load chart) at the planned boom radius:

Lift Leader Name:	Lift Leader Signature:	Date:
Rigger Name:	Rigger Signature:	Date:
Crane/Hoist Operator Name:	Crane/Hoist Operator Signature:	Date:
Signal Person Name:	Signal Person Signature:	**Date:**

**** Must attach hoisting equipment and sling/rigging equipment inspection checklists and Hoisting/Lifting JSA****

APPENDIX D

Air Monitoring Plan

ARCADIS Design & Consultancy for natural and built assets

Northrop Grumman Systems Corporation

COMMUNITY AIR MONITORING PLAN

RW-21 Project Area Remedy - Pipeline And Vault Installation, Bethpage New York

NYSDEC Site # 1-30-003a

November 8, 2019

Rev. January 28, 2020

COMMUNITY AIR MONITORING PLAN

RW-21 Project Area Remedy - Pipeline and Vault Installation

Bethpage New York

NYSDEC Site # 1-30-003a

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November 8, 2019

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3 MONITORING FREQUENCY 1

3.1 VOC Monitoring Stations Locations, Response Levels, and Action 2

3.2 Particulate Monitoring Stations Locations, Response Levels, and Actions 3

1 INTRODUCTION

In accordance with New York State Department of Health (NYSDOH) requirements, this Community Air Monitoring Plan (CAMP) has been prepared for use during the pipeline and well vault construction activities associated with the Northrop Grumman Systems Corporation (NG) RW-21 Project Area Remedy. This CAMP serves to present the methods and procedures to conduct real-time monitoring for VOC and total particulates (i.e. nuisance dust) at each designated work area when certain activities are in progress.

This CAMP is not intended for use in establishing action levels for worker respiratory protection; action levels are described in the Site-Specific Health and Safety Plan (HASP) (Arcadis. 2019). The intent of this CAMP is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers that are not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of remedial work activities that are related to the Site. The response levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, this CAMP helps to confirm that work activities do not spread contamination off-site through the air.

Reliance on this CAMP does not preclude simple, common-sense measures to keep potential dust and odor emissions at a minimum around work areas. On the contrary, the air monitoring proposed is intended to enhance and record the effectiveness of good work practices in the control of potential emissions. The following sections of this CAMP present the monitoring instrumentation required to comply with NYSDOH policy, the frequency of monitoring, response levels, and response actions.

2 MONITORING INSTRUMENTATION

VOC monitoring will be performed using real-time monitoring instrumentation that is capable of measuring the types of VOCs known or suspected to be present at the work location (please refer to the HASP for details). The equipment will be calibrated daily and using the methods described in the HASP. Fifteen-minute running average concentrations will be recorded using PID MiniRAE 3000 or similar. The monitoring equipment will have with an audible alarm to indicate exceedance of the action level.

The particulate monitoring will be performed using real-time monitoring instrumentation that is capable of measuring total particulate. Fifteen-minute running average concentrations will be recorded using a ThermoFisher Scientific PDR 1000 (or similar) dust monitor. The particulate monitoring equipment will be equipped with an audible alarm to indicate exceedance of the action level.

Weather monitoring using a portable weather station will be also be performed to monitor the wind direction and speed to assist correct positioning of the VOC and particulate monitoring stations.

3 MONITORING FREQUENCY

This section defines the typical activities that will occur in relation to the work area and relates these activities to the frequency of monitoring required.

Continuous Monitoring for VOC and Particulates Will be Carried out for Intrusive Activities. Additionally, upwind particulate concentrations will be measured at the **start** of each workday and **periodically** (see below) thereafter to establish the background concentration. Ground intrusive activities typically include the following:

1. Soil excavation and handling
2. Test pitting or trenching
3. Construction activities involving earthwork or disturbance of earthen surfaces.
4. Other activities specified in this CAMP.

Periodic monitoring for VOCs will be carried out during non-intrusive activities. For non-intrusive activities, the upwind concentrations will be measured at the **start and finish** of the work effort to establish the background concentration. Non-intrusive activities typically include the following:

1. Site Mobilization/Demobilization of equipment and machinery
2. Surveying (geophysical, coordinate/elevation)
3. Waste transportation
4. Site preparation and restoration that does not involve re-grading or other disturbances to surface materials

"Periodic" monitoring should be performed, at a minimum as follows:

1. Upon arrival at a work location to determine the ambient, or background concentrations
2. During each phase of work that potentially may generate VOC emissions to the air
3. Prior to leaving the work location

For non-intrusive activities, particulate monitoring will not be performed.

3.1 VOC Monitoring Stations Locations, Response Levels, and Action

During each workday, the VOC monitoring station will be positioned at the downwind perimeter of the work area (i.e., the exclusion zone – see HASP for definition). As stated above, monitoring frequency (periodic or continuous) will be determined based on whether the activity is considered intrusive or non-intrusive. The direction of wind (if any) will be periodically recorded during each workday and re-positioning of upwind/downwind monitoring stations will be performed accordingly.

The VOC monitoring instrumentation output documenting 15-minute running average concentrations will be compared to the following response levels:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds 5 parts per million (ppm) **above background** for the 15-minute average, work activities will be temporarily halted and monitoring continued.

If the elevated VOC measurements are from site activities the project manager will be notified and the occurrence will be documented in the daily work report. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm **above background** but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15- minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shut down.

Readings will either be recorded with a data management program integral with a cloud-based telemetry system or data will be recorded on the appropriate air monitoring log (please refer to the HASP for details) or the electronic log will be printed. Air monitoring results will be appended to the appropriate report. Data that exceeds levels specified above will be documented with a determination on the source of the elevated levels. Instances where site operations contribute to the exceedance will be reported to the project manager. In the event exceedance levels for VOCs are suspected to have come from soils disturbed as part of site operations will be investigated to determine if the source of the emissions may have been site contaminants. This would likely include the collection and analysis of soil samples for known site contaminants such as TCE. If site contaminants (i.e. TCE contaminant plume) are thought to be a contributing factor to VOC emissions, then the Project manager will confer with the client to determine if the operations should be under the provisions of the OSHA HAZWOPER standard (29 CFR 1926.65(a) and 29 CFR 1910.120(a).

3.2 Particulate Monitoring Stations Locations, Response Levels, and Actions

For intrusive activities, the particulate (e.g., dust) monitoring station will be positioned at the downwind perimeter of the work zone (i.e. outside the work zone). In addition, fugitive dust migration will be visually assessed during all work activities. The direction of wind (if any) will be periodically recorded during each workday and re-positioning of the downwind monitoring station will be performed accordingly. The response levels and actions for fugitive dust are as follows:

- If the downwind PM-10 particulate level is 0.5 milligrams per cubic meter (mg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is visually observed leaving the work area, then dust suppression techniques will be employed. Dust suppression techniques will include (but not be limited to) misting of soil excavation activities, wet cutting of asphalt or concrete as necessary, wetting of roadways and work areas. Work will continue with dust

suppression techniques provided that downwind particulate levels do not exceed 0.5 mg/m^3 above the upwind level and provided that no visible dust is observed leaving the work area.

- If, after implementation of dust suppression techniques, downwind particulate levels are greater than 0.5 mg/m^3 above the background concentration, then work will be stopped, and a re-evaluation of activities initiated. Work will resume if dust suppression measures and/or other controls are successful in reducing the downwind particulate concentration to less than 0.5 mg/m^3 of the upwind level and in preventing visible dust from leaving the work area.

Readings will either be recorded with a data management program integral with a cloud-based telemetry system or data will be recorded on the appropriate air monitoring log (Appendix C) or the electronic log will be printed out. Air monitoring results will be appended to the appropriate report.

If particulate emissions are suspected to be from sources affected by site contaminants (e.g., TCE plume) then the matter will be brought to the attention of the Project Manager who will decide as to whether this is indeed the case. If suspended particulates, either in the work zone or at the perimeter are considered to be potentially affected by site contaminants (as might be determined through analysis of samples, odors, or other indicators) then the project manager will discuss the matter with Northrop Grumman and determine if the operations should operate under the scope of the OSHA HAZWOPER standard.

4 REPORTING

This section describes reporting requirements for work performed specifically on Town of Oyster Bay (TOB) property and rights-of-way under access agreement made between Northrop Grumman Systems Corporation (Northrop Grumman) and TOB. Special provisions may apply under specific access agreement.

- Northrop Grumman shall notify the TOB of any exceedance of criteria established under the CAMP within 24 hours after Northrop Grumman becomes aware of the exceedance and shall provide to the TOB on a weekly basis, copies of the daily data and reports of the air monitoring program;
- Northrop Grumman shall provide to the TOB a copy of any and all data and reports that Northrop Grumman submits to the NYSDEC, NYSDOH, or other regulatory agency regarding the Work covered by any access agreement made with TOB. Northrop Grumman's provision of such data and reports to the TOB shall be concurrent with Northrop Grumman's submission to said agency or agencies. All data and reports shall be provided to the TOB in an electronic format.

Arcadis of New York, Inc.

Two Huntington Quadrangle

Suite 1S10

Melville, New York 11747

Tel 631 249 7600

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www.arcadis.com

APPENDIX E

Traffic Safety Plan

Traffic Safety Plan (TSP)

Notes: ROW - Right of Way (Public) formerly known as "TCP"
Non-ROW - Not in the ROW (parking lots, etc.) formerly known as "STAR"

1.0 General

Plan type	ROW and Non-ROW
Project Name:	Northrop Grumman RW-21
Project Number:	30018023.STRA5
Developer Name:	Thomas Montz
Duration of Project (in hours or days):	1-2 Days
Time Restrictions (Y/N, if Y describe below):	Yes - 8a to 5p
Roadway Work Zone Start Point	See Drawing
Roadway Work Zone End Point	See Drawing
Posted Speed Limit (roadway in mph)	25
Number of Lanes (each direction)	1
Road Category Type (select)	Urban (≤40 mph)

[X] Working on multiple roads?

Projects with roadway work on multiple roadways must prepare a TSP for each roadway location. A map should be attached indicating which TSP applies to each roadway location.

Comments: Atypical traffic control plan developed
Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.0 Work Description

Provide a brief description of scope of work:

Work performed in accordance with this traffic control plan is associated with vault and pipeline instalation in a parking area and along a minor street. An atypical traffic control plan has been developed for this application. Coordination with the local municipality and private business owners is expected to take place prior to work being performed.

3.0 Type and Duration

Work locations on this project will be: Long term work (>8 hours per location)

Roadway work will be performed: Travel lane

Non-ROW work will be performed in:

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

Review by an EJE employee is mandatory

The following traffic control configuration in the Traffic Safety Handbook applies:

Section 6.13 Freeway Ramp or Lane Closure/Atypical Traffic Control (DOT Facts-301u)

The following Non-ROW requirements in the Traffic Safety Handbook applies:

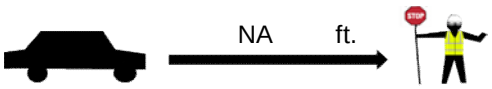
Section 7.3 Intermediate Duration Work in Parking Areas (1 to 8 Hours) (DOT Facts-302b)

The menu below will be blank and is not applicable.

Review by an EJE employee is mandatory

All Arcadis vehicles in a ROW will, at a minimum, have a functioning high intensity strobe or rotating orange light. All Arcadis employees in the ROW will wear, at a minimum, a retroreflective high visibility outer clothing meeting ANSI Class II or III requirements and other PPE required by JSA or HASP. Don't leave vehicle doors open. Park vehicles in ROW with front wheels turned to the right. Avoid work configurations requiring standing to rear of vehicles. Stage equipment in vehicles where it can be accessed from the right side of the vehicle to the extent practical. An example non-ROW traffic control configuration for this project is illustrated below. The actual type and number of devices required are specified below.

Intermediate Term (1-8 Hours)
Channelizing Cones with Caution Tape

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.		ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A	100 ft.	
B	100 ft.	
C	100 ft.	

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

	Active work area length (feet)	50
☐	Apply Optional Longitudinal Buffer (ft)?	0
	Lane width of offset (feet)	12
	Shoulder width of offset (feet)	10
	Posted speed limit	25

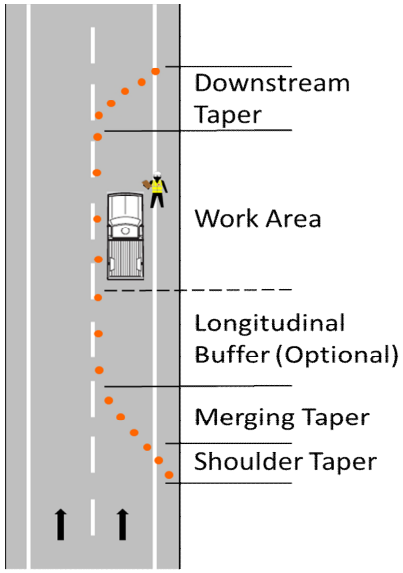
Contact EJE for assistance

☐ **Shoulder Taper**

Taper Length (feet)	NA
Cones Required	0
Cones Spacing (max., ft)	NA

☒ **Shifting/Merging Taper**

Taper Length (feet)	64.5
Cones Required	4
Cones Spacing (max., ft)	25



X	**Work Area**		
	Cone Spacing (max., ft)	35	
	Cones Required	10	Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.
X	**Downstream Taper**		
	Taper Length (feet)	125	
	Cones Required	8	
	Cone Spacing (max., ft)	35	
	Cones Required (minimum)	22	

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
X	Warning signs	Road Work Ahead	3
X	Warning signs	Road Closed	2
X	Warning signs	Detour	1
	Stop/Slow paddle		
	Red flag		
	Drums		
	Channelizer cone (42 inch height, 10 lb base)		
	Channelizer cone (42 inch height, 30 lb base)		
	Traffic cones (≥ 18 inches tall)		
X	Barricade: Type II		3
	Flags for cones		
	Lights (for night work)		
	Plastic fencing (rolls)		
	Caution tape (rolls)		
X	Other (specify):		
		Longitudinal Channelizing Device	35-40
		No Left Turn	1
		No Right Turn	1
		Road Closed to Thru Traffic	1

ROW Phasing:

1) Deploy warning signs at first approach, if required

2) Deploy subsequent approach warning signs, if required

3) Deploy channeling devices, if required, starting with first approach

4) Deploy "End Road Work" signs, if required

5) Position vehicle as shield to the extent practical

6) Commence work, SSO or designated contractor to maintain devices

7) Remove devices in reverse order

Non-ROW Phasing:

1) Position truck as shield, if practical

2) Deploy traffic control devices

3) Affix flags, caution tape or fencing

4) Unload project equipment

5) Commence work

6) SSO to maintain controls

7) Remove controls in reverse order

Reviewed By: Thomas Montz

HASP Reviewer:

Engineering Judgment Review By: Thomas Montz

Seaman Ave. Bethpage, NY

RW-21 Vault install and pipeline Traffic Control Plan

Comments:

All Plan Details According to New York MUTCD

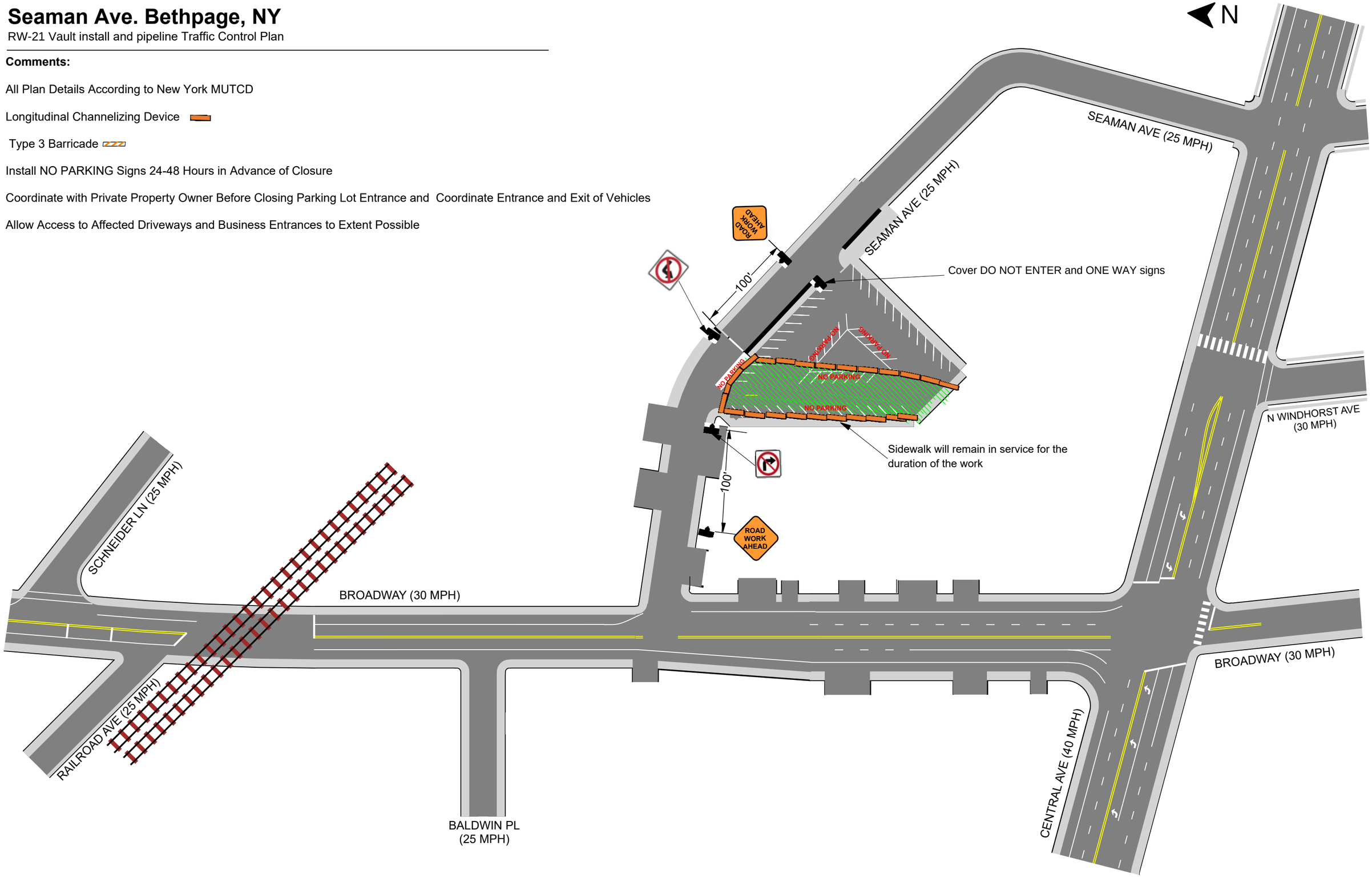
Longitudinal Channelizing Device

Type 3 Barricade

Install NO PARKING Signs 24-48 Hours in Advance of Closure

Coordinate with Private Property Owner Before Closing Parking Lot Entrance and Coordinate Entrance and Exit of Vehicles

Allow Access to Affected Driveways and Business Entrances to Extent Possible



Traffic Safety Plan (TSP)

Notes: ROW - Right of Way (Public) formerly known as "TCP"
Non-ROW - Not in the ROW (parking lots, etc.) formerly known as "STAR"

1.0 General

Plan type	Right of Way (ROW)
Project Name:	Northrop Grumman RW-22
Project Number:	30018023.STRA5
Developer Name:	Thomas Montz
Duration of Project (in hours or days):	1-2 Days
Time Restrictions (Y/N, if Y describe below):	N
Roadway Work Zone Start Point	See Drawing
Roadway Work Zone End Point	See Drawing
Posted Speed Limit (roadway in mph)	15
Number of Lanes (each direction)	1
Road Category Type (select)	NA

X Working on multiple roads?

Projects with roadway work on multiple roadways must prepare a TSP for each roadway location. A map should be attached indicating which TSP applies to each roadway location.

Comments: Atypical traffic control plan developed
Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.0 Work Description

Provide a brief description of scope of work:

Work performed in accordance with this traffic safety plan is associated with vault installation along a private driveway. Permission to encroach onto the private land needs to be acquired. Minimal disruption to the driveway is anticipated. Vehicles should be used to shield the work area to the extent practical.

3.0 Type and Duration

Work locations on this project will be: Long term work (>8 hours per location)

Roadway work will be performed: Off shoulder

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

The following traffic control configuration in the Traffic Safety Handbook applies:

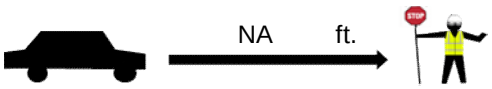
Section 6.1 Work Beyond the Shoulder (DOT Facts-301i)

The menu below will be blank and is not applicable.

The menu below will be blank and is not applicable.

All Arcadis vehicles in a ROW will, at a minimum, have a functioning high intensity strobe or rotating orange light. All Arcadis employees in the ROW will wear, at a minimum, a retroreflective high visibility outer clothing meeting ANSI Class II or III requirements and other PPE required by JSA or HASP. Don't leave vehicle doors open. Park vehicles in ROW with front wheels turned to the right. Avoid work configurations requiring standing to rear of vehicles. Stage equipment in vehicles where it can be accessed from the right side of the vehicle to the extent practical.

Intermediate Term (1-8 Hours)
Channelizing Cones with Caution Tape

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.	ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A NA ft. B NA ft. C NA ft.	 NA ft.

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

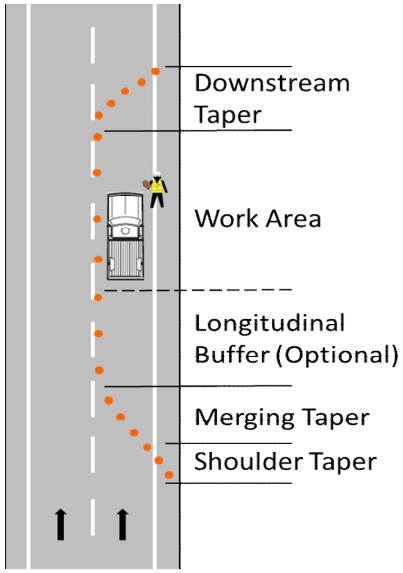
	Active work area length (feet)	
☐	Apply Optional Longitudinal Buffer (ft)?	0
	Lane width of offset (feet)	
	Shoulder width of offset (feet)	
	Posted speed limit	15

☐ **Shoulder Taper**

Taper Length (feet)	NA
Cones Required	0
Cones Spacing (max., ft)	NA

☐ **Shifting/Merging Taper**

Taper Length (feet)	####
Cones Required	4
Cones Spacing (max., ft)	NA



☐ **Work Area**

Cone Spacing (max., ft)
Cones Required

☐ **Downstream Taper**

Taper Length (feet)	125
Cones Required	4
Cone Spacing (max., ft)	35

Cones Required (minimum) 8

Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
X	Warning signs	Utility Work Ahead	1
X	Warning signs	End Road Work	1
	Warning signs		
	Stop/Slow paddle		
	Red flag		
	Drums		
	Channelizer cone (42 inch height, 10 lb base)		
	Channelizer cone (42 inch height, 30 lb base)		
	Traffic cones (≥ 18 inches tall)		
	Barricade:		
	Flags for cones		
	Lights (for night work)		
	Plastic fencing (rolls)		
	Caution tape (rolls)		
X	Other (specify):		
		Longitudinal Channelizing Device	5

ROW Phasing:

1) Deploy warning signs at first approach, if required

2) Deploy subsequent approach warning signs, if required

3) Deploy channeling devices, if required, starting with first approach

4) Deploy "End Road Work" signs, if required

5) Position vehicle as shield to the extent practical

6) Commence work, SSO or designated contractor to maintain devices

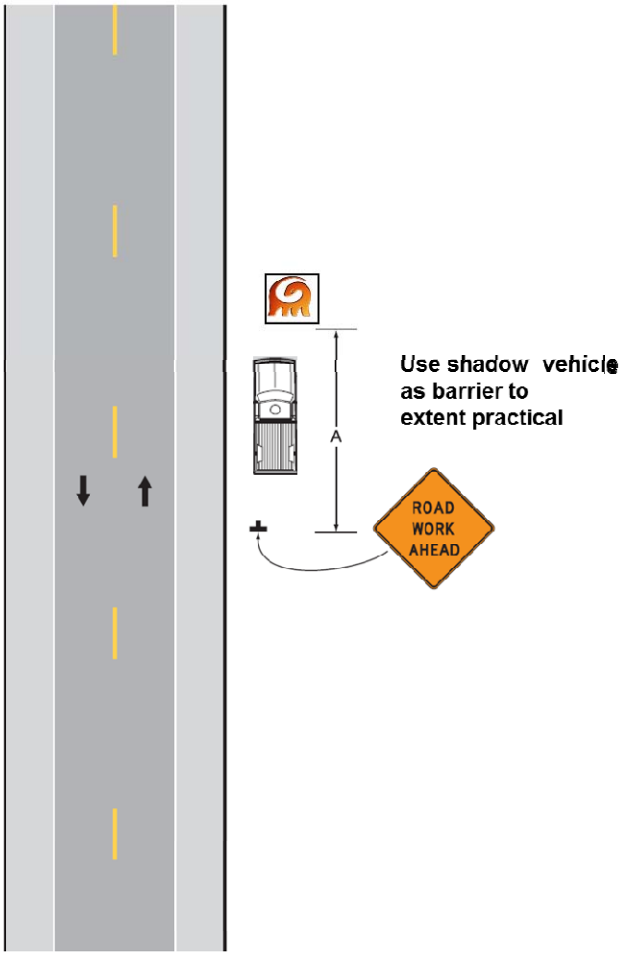
7) Remove devices in reverse order

Reviewed By: Thomas Montz

HASP Reviewer:

DOT Facts-301i
Work beyond the Shoulder

The following configuration may be used for work conducted beyond the shoulder of the roadway:



Road Type	"A" (m/ft)
Urban (Low Speed)	30/100
Urban (High Speed)[1]	100/350
Rural	150/500

1 – Excludes freeway, expressway, and interstate highway scenarios

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The ARCADIS Transportation Safety Program is committed to continuous improvement. Report all errors or omissions to Sam Moyers in the Knoxville, TN office. sam.moyers@arcadis-us.com.

Revision 2, 8/26/2014

Mandatory:

M1. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

Guidance:

G1. If the work space is in the median of a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

G2. The ROAD WORK AHEAD sign may be replaced with other appropriate signs such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

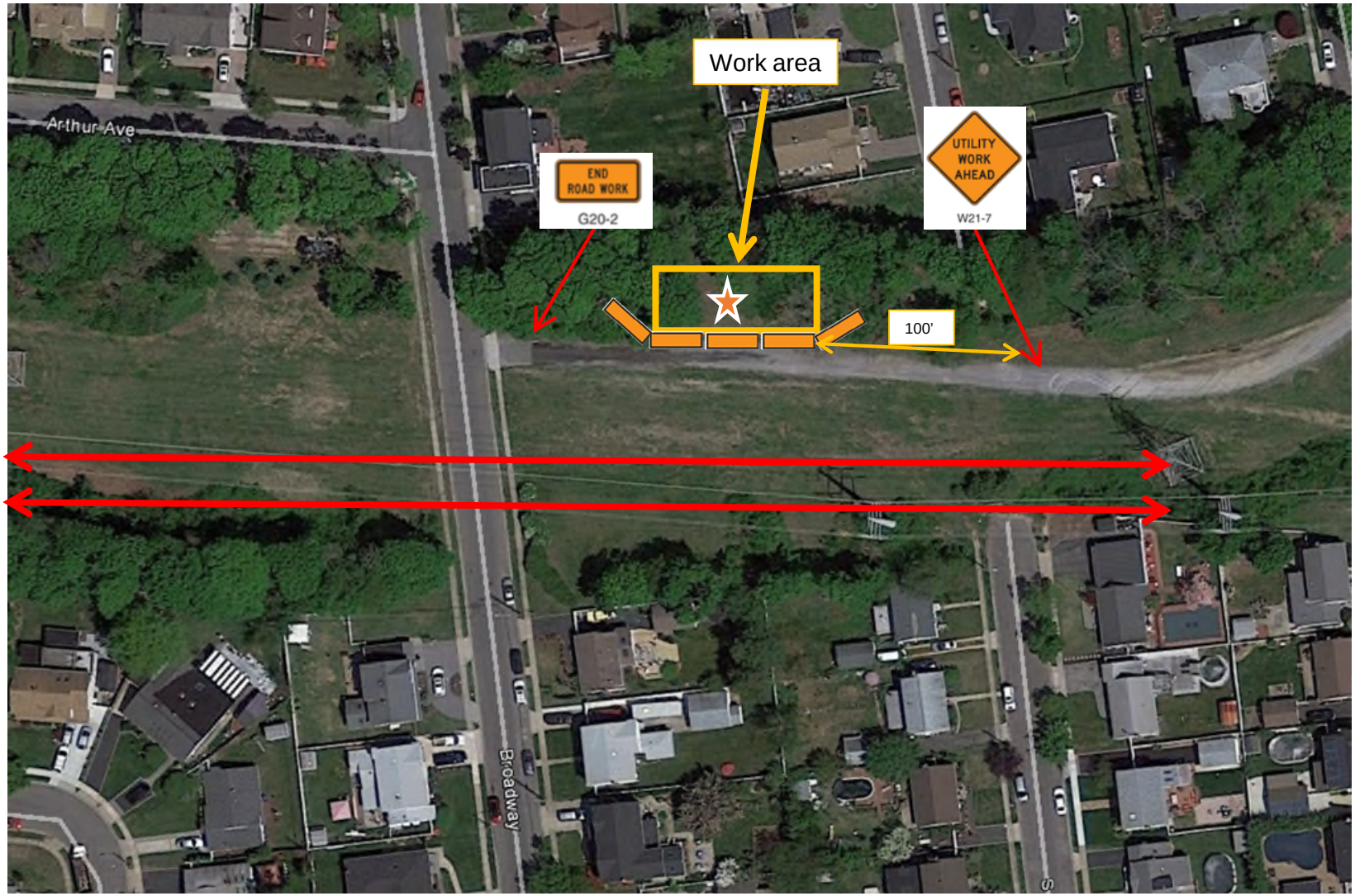
G3. The ROAD WORK AHEAD sign may be omitted where the work space is behind a barrier, more than 600 mm (24 in) behind the curb, or 4.6 m (15 ft) or more from the edge of any roadway.

G4. For short-term, short-duration or mobile operation, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

G5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Revision 2, 8/26/2014

RW-22 Layout of Workzone Temporary Traffic Control



High Tension Lines

Longitudinal Channelizing Barriers. To be placed approx 5 ft from edge of driveway

Traffic Safety Plan (TSP)

Notes: ROW - Right of Way (Public) formerly known as "TCP"
Non-ROW - Not in the ROW (parking lots, etc.) formerly known as "STAR"

1.0 General

Plan type	Non-Right of Way (Non-ROW)
Project Name:	Northrop Grumman RW-22
Project Number:	30018023.STRA5
Developer Name:	Thomas Montz
Duration of Project (in hours or days):	1-2 Days
Time Restrictions (Y/N, if Y describe below):	N
Not Applicable	
Not Applicable	
Not Applicable	15
Not Applicable	1
Not Applicable	NA

[X] Working on multiple roads?

Projects with roadway work on multiple roadways must prepare a TSP for each roadway location. A map should be attached indicating which TSP applies to each roadway location.

Comments: Town of Oyster Bay has the authority to stop work on its property if a condition exists that it deems unsafe.

2.0 Work Description

Provide a brief description of scope of work:

Work performed in accordance with this traffic safety plan is associated with pipeline installation along a private access drive. Low speeds and low volumes are expected. Vehicles should be used to shield the work area to the extent practical. Special consideration needs to be given to allow access to basins when needed.

3.0 Type and Duration

Work locations on this project will be: Long term work (>8 hours per location)

Non-ROW work will be performed in: On shoulder

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

The following Non-ROW requirements in the Traffic Safety Handbook applies:

Section 6.2 Work on the Shoulder (DOT Facts-301j)

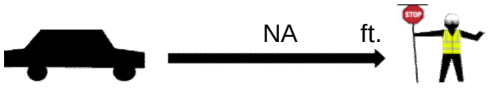
The menu below will be blank and is not applicable.

The menu below will be blank and is not applicable.

Non-ROW configuration:

An example non-ROW traffic control configuration for this project is illustrated below. The actual type and number of devices required are specified below. Don't leave vehicle doors open. Don't establish controls within 25 ft of the front or rear of parked large vehicles/rolling equipment without coordinating with the vehicle/equipment operator.

Intermediate Term (1-8 Hours)
Channelizing Cones with Caution Tape

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.		ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A	100 ft.	 NA ft.
B	100 ft.	
C	100 ft.	

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

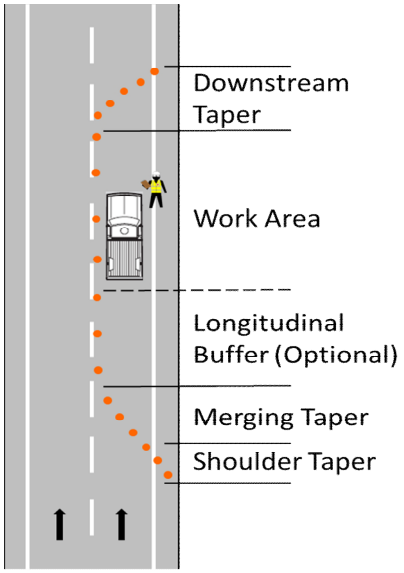
	Active work area length (feet)	1700
☐	Apply Optional Longitudinal Buffer (ft)?	0
	Lane width of offset (feet)	8
	Shoulder width of offset (feet)	0
	Posted speed limit	15

☒ **Shoulder Taper**

Taper Length (feet)	0
Cones Required	4
Cones Spacing (max., ft)	15

☐ **Shifting/Merging Taper**

Taper Length (feet)	######
Cones Required	4
Cones Spacing (max., ft)	NA



[X] **Work Area**

Cone Spacing (max., ft)	35
Cones Required	49

[ ] **Downstream Taper**

Taper Length (feet)	100
Cones Required	4
Cone Spacing (max., ft)	35

Cones Required (minimum) 57

Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
X	Warning signs	Road Work Ahead	1
X	Warning signs	End Road Work	1
	Warning signs		
	Stop/Slow paddle		
	Red flag		
	Drums		
	Channelizer cone (42 inch height, 10 lb base)		
	Channelizer cone (42 inch height, 30 lb base)		
X	Traffic cones (≥ 18 inches tall)		57
	Barricade:		
	Flags for cones		
	Lights (for night work)		
	Plastic fencing (rolls)		
	Caution tape (rolls)		
	Other (specify):		

Non-ROW Phasing:

1) Position truck as shield, if practical

2) Deploy traffic control devices

3) Affix flags, caution tape or fencing

4) Unload project equipment

5) Commence work

6) SSO to maintain controls

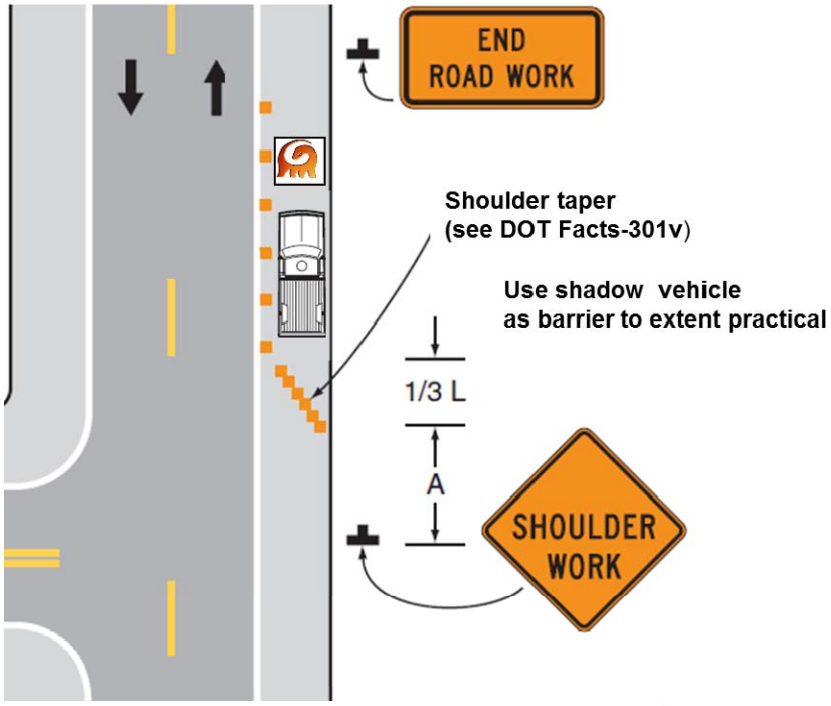
7) Remove controls in reverse order

Reviewed By: Thomas Montz

HASP Reviewer:

DOT Facts-301j
Work on the Shoulder

The following configuration may be used for work conducted on the shoulder of the roadway:



Road Type	"A" (m/ft)
Urban (Low Speed)	30/100
Urban (High Speed)[1]	100/350
Rural	150/500

1 – Excludes freeway, expressway, and interstate highway scenarios

Mandatory:

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Revision 2, 8/26/2014

M1. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

M2. When paved shoulders having a width of 2.4 m (8 ft) or more are closed, at least one advance warning sign shall be used. In addition, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

Guidance:

G1. A SHOULDER WORK sign should be placed on the left side of the roadway for a divided or one-way street only if the left shoulder is affected.

G2. The Workers symbol signs may be used instead of SHOULDER WORK signs.

G3. The SHOULDER WORK AHEAD sign on an intersecting roadway may be omitted where drivers emerging from that roadway will encounter another advance warning sign prior to this activity area.

G4. For short-duration operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.

G5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Revision 2, 8/26/2014

ARCADIS Design & Consultancy for natural and built assets

Other (to be modified in the document)

114 Lovell Road

Suite 202

Knoxville, Tennessee 37934

Tel 865 675 6700

Fax 865 675 6712

www.arcadis.com

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
01/09/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

Holder Identifier :

PRODUCER
Aon Risk Services South, Inc.
Franklin TN Office
501 Corporate Centre Drive
Suite 300
Franklin TN 37067 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 **FAX (A/C. No.):** 800-363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Greenwich Insurance Company	22322
INSURER B:	XL Specialty Insurance Co	37885
INSURER C:	XL Insurance America Inc	24554
INSURER D:		
INSURER E:		
INSURER F:		

INSURED
Arcadis of New York, Inc.
One Lincoln Center
110 West Fayette St., Suite 300
Syracuse NY 13202 USA

COVERAGES **CERTIFICATE NUMBER:** 570080150445 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS,

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE / X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / X PRO-JECT / X LOC OTHER:			GEC001076118 General Liability SIR applies per policy terms & conditions	10/01/2019	10/01/2020	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $1,000,000 $10,000 $1,000,000 $2,000,000 $2,000,000
B	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY			AEC001075818 Auto (AOS)	10/01/2019	10/01/2020	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
B	X **UMBRELLA LIAB** / X OCCUR **EXCESS LIAB** / CLAIMS-MADE DED / X RETENTION $10,000			UEC001075918 Umbrella	10/01/2019	10/01/2020	EACH OCCURRENCE AGGREGATE	$6,000,000 $6,000,000
C B	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y/N ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER **(Mandatory in NH)** N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		RWD943516314 AOS RWR943516714 AK, WI	10/01/2019 10/01/2019	10/01/2020 10/01/2020	X PER STATUTE / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000

Certificate No : 570080150445

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: RFP Number: 91-CMH-2014-410, Corporate Award Number: 3601, Northrop Grumman Request for Proposal (RFP), Environmental Remediation Engineering and Consulting Services for Environmental Site Restoration and Site Closure, Multiple Sites Nationwide. Northrop Grumman Systems Corporation and The Town of Oyster Bay are included as Additional Insured in accordance with the policy provisions of the General Liability and Automobile Liability policies. A Waiver of Subrogation is granted in favor of Northrop Grumman Systems Corporation in accordance with the policy provisions of the General Liability, Automobile Liability and Workers' Compensation policies.

CERTIFICATE HOLDER

Northrop Grumman Systems Corporation
Attn: Scott Rasmussen
6006 Wardleigh Road, Bldg. 1575
Mail Stop: Kemp A2BF
Hill AFB UT 84056 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services South Inc