Stantec

Memo

To:	Frank Dellaripa, P.E. Director Greater Hartford Flood Commission 525 Main Street Hartford, CT 06103	From:	Peter V. Enzien, Jr., P.E. Stantec 3 Columbia Circle, Suite 6 Albany, NY 12203
File:	179450287	Date:	August 23, 2021

Reference: GHFC Application for Approval – Hartford Brainard Airport Obstruction Removal Project

Dear Mr. Dellaripa,

Please find enclosed an application for work within the floodplain district proposed by the Connecticut Airport Authority (CAA) at the Hartford-Brainard Airport (HFD). This public safety project includes the removal of vegetative obstructions to navigable airspace within the municipalities of Hartford, East Hartford and Wethersfield. The work will involve movement of equipment and materials on and over the Clark Dike system that is located between HFD and the Connecticut River. The use of the dike for access and the actual tree removal will occur within the designated 100-year floodplain of the Connecticut River as shown on your City of Hartford Flood Control Map and the most recent edition of the Flood Insurance Rate Map issued by the Federal Emergency Management Agency. The work areas were previously cleared of obstructions in the 1980s, and prior to that in the 1940s.

HFD is a public use airport that was developed and is maintained using funds provided by the Federal Aviation Administration (FAA) and is required to comply with FAA design criteria and safety standards. The FAA standards define the protected airspace geometry at HFD and require the airspace to be maintained. The CAA has conducted a detailed analysis of the existing approaches at HFD and has identified areas of obstructions that must be removed to protect the existing runway environment. The removal project identified in this application represents a balance between compliance with FAA airspace regulations and sensitivity to the host of environmental resources associated with the floodplain environment. The project timing, management methods and debris removal plan were all developed to minimize impacts to sensitive wetland resources and flood protection utilities.

This application package includes a plan set that show the areas of proposed vegetation management, equipment access routes and staging areas for log removal. The supporting narrative (e.g. U.S. Army Corps of Engineers (USACOE) Section 408 application) provides details on the use of the Clark Dike access, the proposed equipment involved with the work, and the project timing and duration. The application also includes the required form, filing fee and abutters list.

The CAA requests the Greater Hartford Flood Commission (GHFC) to review and approve the proposed work per the Rules and Regulations Governing the Use of the Floodplain District, allowing for the temporary and limited use of the Clark Dike for project access and to manage certain areas of tree obstructions within the Connecticut River Floodplain.

Reference: GHFC Application for Approval – Hartford Brainard Airport Obstruction Removal Project

Please consider this request and contact this office with any questions.

Peter V. Enzien, Jr., P.E.
Senior Associate / Project Manager
Phone: (518) 423-8863
Fax: (518) 452-9234

Attachment: GHFC Application Check
Abutters List
Section 408 Application

c. CAA – Mr. Bob Bruno
CAA – Ms. Molly Guyer
CAA – Mr. Colin Goegel

GREATER HARTFORD FLOOD COMMISSION

APPLICATION FORM

DATE SUBMITTED: August 23, 2021

APPLICANT'S NAME: Connecticut Airport Authority

ADDRESS: 334 Ella Grasso Turnpike, Windsor Locks, CT 06096

PHONE: (860) 386-6000

PROPERTY OWNER'S NAME: City of Hartford Flood Commission

ADDRESS: 239 Brainard Road

TELEPHONE: (860) 757-9975

[X] Flood Plain Activity [X] Work on or near Flood Control Infrastructure

[ ] Rental/Procurement of Flood Commission Land

[X] Other- Brief description of work (attach document as needed)

Please see attached Section 408 Application – Clark Dike Access

APPLICANT'S SIGNATURE

Kevin Dillon, Executive Director
Printed Name/Title

Kevin A. Dillon

PROPERTY OWNER'S SIGNATURE

Michael T. Looney, Director - DPW
Printed Name/Title

Michael T. Looney

Notes: 1) Permit fee of $100.00 applies for all applications, payable to "Treasurer, City of Hartford"
2) Please refer to RULES AND REGULATIONS OF THE GREATER HARTFORD FLOOD COMMISSSION for specific plan requirements for submission of application.

Stantec Consulting Services Inc.
Check Date: Jul 27, 2021

Vendor Name: Treasurer City of Hartford
Vendor Number: 151145

Check Number: **646739**

Invoice Number	Invoice Date	Invoice Amount	Discount Taken	Amount Paid
MANCKJUL2221	22-Jul-21	100.00	0.00	100.00

Net Check Amount: 100.00
(US Dollars)

Stantec

Stantec Consulting Services Inc.

Bank Of America
Dekalb County
Atlanta, GA
061112788

64-1278
611 GA

646739

DATE 0 7 2 7 2 0 2 1
M M D D Y Y Y Y

PAY **********One Hundred Dollars And Zero Cents

$*******100.00**

US Funds

TO THE ORDER OF
Treasurer City of Hartford
250 Constitution Plaza
Hartford, CT 06123

THIS DOCUMENT CONTAINS A GRADIENT COLOUR BACKGROUND • INVISIBLE FLUORESCENT PATTERN UNDER CONVENIENCE FIELD XXX • SECURITY MICROPRINTING • TRUE WATERMARK

⑈646739⑈ ⑆061112788⑆ 329 902 7492⑈

Abutter's list

The abutter's list was generated using The City of Hartford's GIS Interactive Mapping Website *Abutters List Viewer.* The City of Hartford Flood Commission property at 239 Brainard Road, parcel I.D. 247 077-001 was selected with a 100' buffer distance. The project area is limited to the Clark Levee stopping near Maxim Road. Since the parcel continues North along the Connecticut River the abutters list ends at the Materials Innovation and Recycling Authority property on the North side of Maxim Road. Below is the list of abutters requiring notification:

City of Hartford Flood Commission, 239 Brainard Road, parcel I.D. 247 077-001
Mailing address: 550 Main Street, Hartford, CT 06103-2913

City of Hartford Public Works, 1020 Wethersfield Ave, parcel I.D. 301 816-002
Mailing address: 550 Main Street, Hartford, CT 06103-2913

The Metropolitan District (MDC), 225 Brainard Road, parcel I.D. 301 816-004 and 244 Brainard Road, parcel I.D. 334 077-001
Mailing address: 555 Main Street, Hartford, CT 06103-2915

The Hartford-Brainard Airport, State of CT Airport Division – Aeronautic, 233 Maxim Road, parcel I.D. 333 077-003
Mailing address: 251 Maxim Road, Hartford, CT 06114-1607

Materials Innovation and Recycling Authority, 300 Maxim Road, parcel I.D. 329 077-001
Mailing address: 100 Constitution Plaza 17FL, Hartford, CT 06103-1703

Stantec Consulting Services, Inc.
136 West Street Suite 203, Northampton MA 01060-3711

August 17, 2021
File: 179450287

Attention: Mr. Alex Garneau - Levee Inspection Team Lead
US Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Dear Mr. Garneau,

Reference: Hartford-Brainard Airport Obstruction Removal Project
Section 408 Application – Clark Dike Access

Please find enclosed an application pursuant to Section 408 (Federal Clean Water Act) related to temporary equipment access over the Clark Dike system that separates the Hartford-Brainard Airport (HFD) from the Connecticut River. The Section 408 access permission would provide for the use of the existing up/down ramps over the dike to facilitate land clearing machinery access to the wooded floodplain of the river. The Connecticut Airport Authority (CAA) requires removal of certain trees on the riverside of the dike to address obstructions to navigable airspace to three runway ends at HFD. The project design has mitigated potential impacts to the dike by significantly minimizing the number of equipment movement operations over the structure. Felled timber will be removed from the work area using a crane to lift each tree over the dike thus eliminating all trips associated with timber removal. Only a once-in, once-out access for the larger forestry equipment is needed over the dike, during a period of frozen ground conditions.

Our previous conversations and site visit regarding this project have provided you with substantial information regarding the project. We had discussed the possibility of this action qualifying for a general permit due to the lack of any invasive work on the dike and the limited number of operations. We have provided you with a plan and project narrative in this application so you might determine the ability of the project to meet the general permit conditions. If not, we remain ready to assist with addressing the requirements of an individual permit. The CAA has already addressed the National Environmental Policy Act for this project (with the Federal Aviation Administration) and are actively coordinating with the Section 404 regulatory program on a general permit pursuant to Section 404 of the Clean Water Act. This information is available to you upon request.

CAA will be submitting an application to the Greater Hartford Flood Commission (GHFC) pursuant to their Rules and Regulations governing the use of the Flood District within the next few days; seeking a certificate of approval from the GHFC for both dike access and the tree work within the floodplain. It is our understanding that the GHFC works closely with your office prior to making a determination. We are available to facilitate the coordination in any way possible. Please let us know how we can be of assistance with this process.

Reference: Hartford-Brainard Airport Obstruction Removal Project Section 408 Application – Clark Dike Access

Please consider this application for dike access and contact this office with any questions.

Regards,

Stantec Consulting Services, Inc.

Randall P. Christensen M.S.
Senior Environmental Scientist
Phone: 413387 4508
Fax: Fax Number
randy.christensen@stantec.com

Attachment: 408 application materials

c. CAA – Mr. Bob Bruno
CAA – Ms. Molly Guyer
CAA – Mr. Colin Goegel

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Stantec

Application pursuant to 33 USC 408 (Section 408) for Removal of Vegetative Obstructions

At

Hartford-Brainard Airport
Hartford, CT

August 17, 2021

Prepared for:

Connecticut Airport Authority (CAA)
334 Ella Grasso Turnpike
Windsor Locks, CT 06096

Prepared by:

Stantec Consulting Services, Inc.
3 Columbia Circle, Suite 6
Albany, NY 12203-5158

TABLE OF CONTENTS

LIST OF APPENDICES

Introduction

The Connecticut Airport Authority (CAA) is requesting authorization pursuant to 33 USC 408 (Section 408) for access over the Clark Dike (levee) for the removal of vegetative obstruction from navigable airspace associated with the Hartford-Brainard Airport (HFD).

This application provides the required guidance as outlined in Engineering Circular 1165-2-220.

1.0 SUMMARY OF COORDINATION ACTIVITIES

A field meeting took place on April 6, 2021 between CAA, Stantec (CAA's consultant), City of Hartford DPW and USACE. The purpose of the site visit was to investigate the tree removal methods that may involve usage of the levee for transport of cut wood off-site. The primary focus of the discussions was the access issue for crossing the levee with forestry equipment and mitigation measures needed to protect the flood control system. Meeting notes can be found in Appendix E.

A Webex meeting was conducted between CAA, Stantec and Metropolitan District (MDC) staff on June 29, 2021 to discuss construction equipment and personnel access to the levee right-of-way (ROW) through the MDC construction site located at the south end of Brainard Road. The discussion also focused on protection measures required for equipment crossing the MDC outfall pipe within the levee ROW.

A conference call was conducted between CAA, Stantec, City of Hartford and USACE on July 14, 2021. This meeting discussed the requirements needed prior to the submission of the Section 408 application. Because the City of Hartford is the property owner of the levee and the CAA is currently in the process of obtaining updated easements rights to the parcel, a letter of "No Objection" from the City of Hartford will be required for the acceptance of the 408 application. The Greater Hartford Flood Commission (GHFC) permitting efforts will proceed concurrently with the Section 408 process.

The City of Hartford's City Engineer and Director of the Greater Hartford Flood Commission issued the Letter of No Objection to the USACE on August 4, 2021.

Stantec also conducted a field meeting on August 5, 2021 with representatives from Buckeye Pipeline to review protection measures for their 12" pipeline in areas where we anticipate equipment crossings. Meeting notes can be found in Appendix E.

Finally, the CAA and Stantec conducted multiple field visits, hosted conference calls and corresponded via email with the environmental permitting agencies identified under Section 3.2 - Environmental Compliance.

2.0 DOCUMENTATION AND SUMMARY OF WRITTEN REQUEST

A letter was sent by Stantec on behalf of the CAA to the City of Hartford (local non-federal sponsor) on July 27, 2021 requesting a statement of "No Objection" letter to allow the initiation of the Section 408 application process with the USACE. A copy of that letter is attached to this submittal (Appendix A). This section provides a summary of the required content of the written request as described in EC 1165-2-220 to ensure that all items are addressed.

2.1 PROJECT DESCRIPTION AND NEED FOR PROPOSED ALTERATION AND REQUEST FOR APPROVAL

The purpose of the proposed vegetative obstruction removal project is to promote public safety by bringing the airport into compliance with existing Federal Aviation Administration (FAA) design standards and regulations regarding clear airspace. The FAA has established airspace and design criteria to provide for safe aircraft operations. The CAA recently conducted an obstruction study to evaluate the airspace at HFD relative to these existing FAA airspace directives. Based on the FAA design criteria, the results of this analysis identified existing safety deficiencies at HFD which include multiple acres of tree obstructions to the Federal Aviation Regulation (FAR) Part 77 surfaces, Terminal Instrument Procedures (TERPS), and Airport Design Standards. The results of this study identified that HFD does not provide adequate airspace surfaces to its runways. To address this public safety deficiency identified by the FAA, the CAA has proposed the removal of obstructions from the approach surfaces. The project design seeks to address the obstructions and near-obstructions within the runway approaches with maximum attention to environmental sensitivity.

The work area on the airport-side of the Connecticut River involves approximately 30 acres of forested area within the 100-year floodplain of the river. Several areas of mature forest that are not within the runway approaches will be bypassed and protected during the work, as shown on the plans attached to this submittal (Appendix C). The plan is color coded to depict the various vegetation management methods proposed for the project. Furthermore, two sets of arrows are included on the plan to denote travel routes by the various equipment. The limits of the approach surfaces at each runway end are also provided to demonstrate that vegetation management is limited to only those areas required by airport design criteria.

2.2 WRITTEN STATEMENT REGARDING AUTHORIZATION PURSUANT TO SECTION 10/404/103, AND ANTICIPATED DATE OF APPLICATION/PRE- CONSTRUCTION NOTIFICATION SUBMITTAL

The CAA and Stantec have had pre-application correspondence with the Section 404 program and have identified a suitable CT General Permit for the Project. The Pre-Construction Notification (PCN) application has yet to be submitted, however CAA and Stantec are continuing regular communications

with the Section 404 staff regarding the project's status. Cori M. Rose, PWS, Senior Project Manager is the direct contact for the USACE for this project.

2.3 WRITTEN STATEMENT REGARDING WHETHER CREDIT UNDER SECTION 221 OF THE FLOOD CONTROL ACT OF 1970, OR OTHER LOW OR SECTION 204(F) OF WRDA 1986 IS BEING OR WILL BE SOUGHT

Section 221 (a)(4) of the Flood Control Act of 1970 is a comprehensive authority that addresses the affording of credit for the value of in-kind contributions provided by a non-Federal sponsor toward its required cost share (excluding the required 5 percent cash for structural flood damage reduction projects and the additional 10 percent cash payment over 30 years for navigation projects) if those in-kind contributions are determined to be integral to a study or project. This Project is not seeking credit under Section 221 (a)(4) of the Flood Control Act of 1970 or any other law, including Section 204(f) of the Water Resources Development Act, which contemplates work performed in harbors or inland harbors. CAA will provide all necessary funding to complete this obstruction removal project.

2.4 WRITTEN STATEMENT FROM THE NON-FEDERAL SPONSOR ENDORSING THE PROPOSED ALTERATION

Coordination between CAA and the City of Hartford / GHFC (non-Federal sponsor) is ongoing. The obstruction removal project will require access through the levee ROW of the City's flood control system. The GHFC provided a statement of "No Objection" letter to the USACE on August 4, 2021. A copy of that letter is attached to this submittal (Appendix B).

2.5 REAL ESTATE/RIGHTS-OF-WAY SUMMARY

To complete the obstruction removal project, CAA will not require the use of federally-owned real property. However, CAA will need to access property owned by the City of Hartford and GHFC (the non-federal sponsor).

Avigation easements are required to manage vegetation on the City of Hartford and GHFC parcels. While certain rights to specific portions of these parcels were acquired by the CAA in 1959, airspace surface dimensions have been updated and new airspace surfaces have been defined by FAA based on evolving technology of navigational aids and instrumentation. The area encompassed within the 1959 easement is no longer adequate for the scope of vegetation management now required, and therefore, new avigation easements are now necessary. These easements are currently being sought by the CAA and will soon be in the offer and negotiation stage.

The easement acquisition process is being conducted in accordance with 49 CFR Part 24 - Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally-Assisted Programs Act of 1970, as amended.

To access the GHFC ROW near the southwest end of the Clark Dike (end of Brainard Road), CAA will be seeking temporary construction access rights for the use of an existing roadway/paved ramp on parcels owned by the Metropolitan District (MDC) Parcel 301-816-002 and City of Hartford DPW Parcel 301-816-004. The CAA's request to use this road would be limited to the duration of the construction project.

A number of additional avigation easements are also required for this Project. These easements are all currently being pursued by the CAA and will soon be in the offer and negotiation stage and include the City of Hartford, Great Meadows Conservancy Trust, Town of East Hartford, Town of Wethersfield and Goodwin University. Note, the majority of the listed easements are not related to the work taking place near the Clark Dike. A complete list of easements being sought are shown below:

Unique Identifier	Address	City	Owner
214-003	Folly Brook Natural Area Hartfrord Avenue	Wethersfield	City of Hartford
347-077-001	239H Brainard Road	Hartford	City of Hartford Flood Commission
300-003	Hockanum Meadow	Wethersfield	Great Meadows Conservancy Trust Inc.
8-1	50 South Meadow Lane	East Hartford	Town of East Hartford
8-4	38 South Meadow Lane	East Hartford	Town of East Hartford
8-5	17 South Meadow Lane	East Hartford	Town of East Hartford
7-27	54 South Meadow Lane	East Hartford	Town of East Hartford
252--002*	Cove Park, 533 Main Street	Wethersfield	Town of Wethersfield
300-001	Hockanum Meadow	Wethersfield	Goodwin University
300-004	Hockanum Meadow	Wethersfield	Goodwin University
300-005	Hockanum Meadow	Wethersfield	Goodwin University
300-006	Hockanum Meadow	Wethersfield	Goodwin University
300-008	Hockanum Meadow	Wethersfield	Goodwin University
7-25	70 South Meadow Lane	East Hartford	Goodwin University
7-26	58 South Meadow Lane	East Hartford	Goodwin University
7-28	37 South Meadow Lane	East Hartford	Goodwin University
8-2	46 South Meadow Lane	East Hartford	Goodwin University
10-5/6	9 Riverside Drive	East Hartford	Goodwin University

3.0 REQUIRED DOCUMENTATION

3.1 TECHNICAL ANALYSIS AND DESIGN

3.1.1 Summary of Construction Methods

The project involves two types of vegetation management; mechanized felling (using heavy equipment) and climbing (using chainsaws). The mechanized felling involves two methods of feller-buncher work, flush cuts (within a foot of ground) and snag cuts (where the feller buncher will cut the tree as high as possible between 10' to 15' above the ground). Regrowth from the cut surfaces is anticipated for each of these options providing for rapid revegetation of the mechanical work areas. The cut wood generated from the mechanical felling operation will be collected and hauled off site. The climbing (non-mechanical) includes methods of cuts, topping which the climbers will cut the tree to a specific elevation, and pruning cuts which the climbers will take a certain amount off the top of the trees canopy with cuts being made at an appropriate notch, minimizing any damage to the tree. Full tree survivability is anticipated for all of the pruning areas, while some level of mortality is expected from the topping cuts. Where topping cuts result in a lost main stem, regrowth from the stump is anticipated for nearly all managed trees. The cut wood from climbing operations will be diced with chainsaws and scattered sufficiently to avoid the suppression of groundcover growth. This technique allows for the limitation of heavy equipment movement within the floodplain, restricting it to the limited area near each runway end. This approach also minimizes the amount of wood that must be collected and removed from the site, thus further limiting equipment operations within the floodplain and adjacent to the dike.

At each work area at the three runway ends 2, 20 and 29, the mechanical felling work will start from the wood line nearest the toe of the levee and work towards the river. The climbing work can take place concurrently with the mechanical felling. As the (tracked) feller buncher cuts the trees, small piles of logs will be made as feller buncher moves through the work zone. A forwarder will collect the small piles of logs and place them in a larger pile nearest the crane lift area; the forwarder will be specified in place of a standard skidder in order to maximize soil protection. A forwarder fully supports cut timber inside of a bunk during movement, as opposed to a skidder which drags the cut pieces over the exposed ground. Once a sufficient log pile is created the crane is brought into place on the airport-side to lift log bundles over the levee. A shovel logger will assist in creating hitches out of the larger log piles and with overall management of the log staging areas. These hitches will be placed within the reach of the crane and of a safe lifting size and weight as determined by the crane operator. After the hitch is lifted over the levee to the land side, the logs will be transported to the chipping operation located at the Maxim Road Gate 1 staging area. The northern crane location will be adjacent to the chipping operation and no addition transportation is needed. The southern crane location will require loaded forwarders to travel along the designated haul route on the airport-side of the levee to the chipping area.

Note that the plan specifies a 10' toe offset for equipment travel on the river-side of the dike, and a larger offset on the airport-side. Both offsets are to be visibly marked prior to construction. Further mitigation to protect underground utilities are detailed in the Underground Utilities section below.

The crane lift operation over the dike is a project mitigation feature intended to minimize the use of the Clark Dike for the project. Furthermore, each crane lift area includes timber mat bumper protection of the river-side section of the dike slope to prevent damage from the log hitches as they're lifted over the dike. In this manner, the use of the dike for heavy equipment access is limited to one-time access and one-time exit of the heavy equipment. Pickup trucks and all-terrain vehicle access will be necessary on a daily basis during the approximate 3-week project duration for labor access and equipment fueling.

Note that a more aggressive approach to the vegetation management was completed in the 1980s with full removal of the trees to ground level for most of the obstruction area. The target trees within the management areas are nearly all multiple-stemmed, reflecting the past cutting of each of the trees during earlier airport vegetation management efforts.

3.1.2 Equipment Details

Crane: The crane will not be traversing the Clark Dike, but shall remain on the airport-side of the dike. A typical mobile crane for this project would be similar to a Liebherr model LTM 1130-5.1 and would be stationed on level ground at the toe of the levee with the outriggers placed on pressure displacement matting.

Tracked Feller Buncher: The expected ground pressure from a tracked feller buncher will be within the range of 6.2 psi and 10.5 psi depending on make model and grouser configuration. Referencing the largest forestry equipment practical for use on this project, the ground pressures are less then what is typical of maintenance truck or car. John Deere feller buncher models 903M, 953M and 959M data with given ground pressures can be found attached to this submittal in Appendix A.

Shovel Logger: The expected ground pressure from a shovel logger will be within the range of 6.9 psi and 11.0 psi depending on make model and grouser configuration. Referencing the largest forestry equipment practical for use on this project, the ground pressures are less then what is typical of maintenance truck or car. John Deere shovel logger models 953ML and 959ML data with given ground pressures can be found attached to this submittal in Appendix A.

Log Forwarder: The expected ground pressure from a forwarder will be within the range of 9.8 psi and 10.4 psi unloaded and between 17.8 psi and 19.3 psi when fully loaded, depending on make model. Referencing the largest forestry equipment practical for use on this project, the ground pressures are less then what is typical of maintenance truck or car. John Deere forwarder models 1510G and 1910G data with given ground pressures can be found attached to this submittal in Appendix A. The calculations assumed a minimum tire width and banded tracks are being utilized. Banded tracks will be a requirement written into the technical specifications for the project.

3.1.3 General Construction Sequence

CAA will construct the proposed Project in a single stage, differing construction operations will take place concurrently. The following summarizes the activities generally expected to be required within the levee ROW:

1. Survey and stake the haul routes, crane platform areas, existing utility crossings, defined environmental resource areas, and vegetation removal boundaries.

2. Identify and mark areas or objects to be avoided or protected in the work areas or along the haul routes (e.g. environmental resource areas, utilities and levee infrastructure components).

3. Install timber mats at identified MDC and Buckeye Pipeline crossings as detailed on the plans and detail sheets. See Appendix C.

4. Mobilize forestry equipment at the MDC construction site. Forestry equipment will then travel the designated haul route south from the MDC property along the bottom toe of the landside levee road and over the up and down ramps located at levee Sta. 47+00S. Once the forestry equipment accesses the river side of the levee they will remain there until the work is completed (one time in, one time out). This will only change if the Connecticut River water reaches a level described in the Flood Contingency Plan which would require the forestry equipment evacuation.

5. Vegetation removal will start on the Runway 2 and Runway 29 ends first. The mechanized felling and climbing cut operations can take place concurrently and as outline in the previous section Summary of Construction Methods.

6. Once the mechanized felling at the Runway 2 and Runway 29 work areas are complete and the logs are staged at the crane pick points, the crane will be brought to the project site for the log transfer over the levee. The weather forecast and river levels will be monitored closely for the longest window possible of low river levels and minimal precipitation prior to mobilizing the crane. The crane will access the south crane platform area, stabilized with timber mats, from the Airport property. Prior to any log lifts the crane will place timber mats along the riverside levee to act as a protective bumper to the levee during the initial lifting of the log hitches. The crane will lift the log hitches to the airport/landside of the levee, load the logs onto a forwarder to be brought to the north chipping/processing area near Maxim Rd. (Airport Gate 1). Once all the log hitches are removed from the river side of the levee the crane will remove the timber mat bumpers and remobilize at the Runway 20 crane platform.

7. This process is repeated at the Runway 20 end until all required vegetation is cut and removed. To minimize the time the crane is onsite, mechanical felling of the Runway 20 end can happen concurrently with the crane lift operation at the Runway 2 and Runway 29 ends.

8. The forestry equipment will remove the temporary timber mats and any construction material along the haul routes as they exit the site. Existing access roads within the levee ROW will be restored to pre-existing conditions.

3.1.4 Anticipated Construction Schedule

2021/2022 Winter Season

Management of the target trees will take place under dry or frozen ground conditions, ideally in the winter months of January and February 2022. This project timing will maximize protection of soils, minimize impacts to vegetation and wildlife, and will promote maximum regrowth of cut stems to minimize the duration of the environmental impact. Winter timing is expected to be a condition of the wetland-related environmental permits that will be obtained for the project.

3.1.5 Underground Utilities

There are buried utilities beneath or in close proximity to the Projects access/haul routes.

Buckeye Pipeline Company

A field meeting with representatives from Stantec and Buckeye Pipeline inspected the obstruction removal work areas and construction access/haul routes in their entirety on August 5, 2021. Buckeye used a radio detection locator to determine the depth of the 12" diameter pipe. At the three (3) locations where the construction access/haul route crosses the Buckeye Pipeline, the depth to top of pipe was determined to be between 4' to 5'. Buckeye provided guidance in their Right-of Way Use Restrictions Specification for use of timber matting at the crossing locations.

Metropolitan District (MDC)

The proposed access/haul route crosses MDC's discharge pipe under the Clark Dike at levee Sta. 42+00S. CAA and Stantec have already established contact with MDC to coordinate the protection of the pipe and access to the levee ROW through the MDC construction site. It is anticipated that timber mats will also be used to protect this pipe during construction.

3.1.6 Construction Access and Required Work

During construction within the levee ROW all roads will be maintained, existing culverts and other underground infrastructure will be properly protected, and the contractor will be required to make sure the City of Hartford has the necessary access to operate and maintain the Flood Control System at all times. After construction is complete the roads and other affected areas within the levee ROW will be restored to their pre-existing condition.

Flood Contingency Plan

CAA understands that the City of Hartford may have to conduct flood fighting activities during the obstruction removal project. To accommodate the City's ability to perform flood operations a flood contingency plan has been developed as described below. The Flood Contingency Plan (FCP) is included as Appendix D of this Section 408 application. At this time the FCP is completed to the fullest extent possible, prior to having a contractor on board with names and associated contact information available.

Restoration

After construction is complete, the roads and other disturbed areas within the levee ROW will be regraded (if necessary), stabilized and revegetated to the City of Hartford's satisfaction and in compliance with all conditions of regulatory approvals and other state approvals.

As-built record construction documents will be disturbed to the City and USACE after completion of the project.

3.2 ENVIORNMENTAL COMPLIANCE

A finding of "No Significant Impact" for the Environmental Assessment (EA) associated with the obstruction removals was made by the FAA on August 1, 2017.

Listed below are the required environmental permits/agencies associated with this project:

CT DEEP Inland Wetlands and Watercourses Permit
CT DEEP Natural Diversity Database review for state-listed rare species
CT DEEP Water Quality Certification
Section 404 Federal Clean Water Act General Permit (#21)
Greater Hartford Flood Commission

3.3 EXECUTIVE ORDER 11988 CONSIDERATIONS

Executive Order 11988 requires federal agencies to avoid to the maximum extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The Project involves the removal of vegetative obstructions in protected airspace and does not support additional development activities in the floodplain in a direct or in-direct manor. The Project includes temporary access which will be removed following construction. This also will not encourage future use or development activities.

3.4 OPERATIONS AND MAINTENANCE

Based on Stantec's review of the project, it is our opinion that the removal of vegetative obstructions to protect HFD runway approaches by the CAA will not cause any changes in the way the City of Hartford will operate and/or maintain the flood control system.

APPENDIX

Appendix A

A. PROJECT INITIATION LETTER

Stantec Consulting Services, Inc.
136 West Street Suite 203, Northampton MA 01060-3711

July 27, 2021
File: 179450287

Attention: Mr. Nicholas Casparino – Civil Engineer
City of Hartford
Department of Public Works
50 Jennings Road
Hartford, CT 06120

Dear Mr. Casparino,

Reference: Hartford-Brainard Airport Obstruction Removal Project
Request for Statement of "No Objection" Letter – Section 408

The Connecticut Airport Authority (CAA) proposes the removal of vegetative obstructions from navigable airspace associated with the Hartford-Brainard Airport (HFD). This project has been the topic of several discussions between your office and CAA over the past several months and included a site review of the project limits in April 2021. Our interaction with your office and other involved agencies has identified the need for coordination with the U.S. Army Corps of Engineers (USACE) due to the proposed use of the Clark Dike system for equipment access into some of the airspace obstruction areas. As the dike was a part of a public civil works project completed by the USACE its use for access is subject to the provisions of Section 14 of the *Rivers and Harbors Appropriation Act of 1899*, as amended, and codified in 33 USC 408 (Section 408). This is commonly referred to as the "Section 408" process. The Section 408 coordination and permitting with the USACE is soon to be advanced by the CAA. As we have discussed, the Section 408 process is to be addressed concurrently with the permitting required by the Greater Hartford Flood Commission.

As you know, the Clark Dike and much of the area of vegetative airspace obstructions occurs on property of the City of Hartford. For the CAA to submit a complete Section 408 application to the USACE, a statement of "no objection" letter is required from the City since they are the local (non-federal) "sponsor" of the Clark Dike system. The CAA will function as the "requester" for the access activity over the dike during the construction period. The information in this letter combined with the attached plan set provides information necessary to determine the ability of your office to issue the requested statement.

Project Purpose and Need

The purpose of the proposed obstruction removal project is to promote public safety by bringing the airport into compliance with existing Federal Aviation Administration (FAA) design standards and regulations regarding clear airspace. The FAA has established airspace and design criteria to provide for safe aircraft operations. The CAA recently conducted an obstruction study to evaluate the airspace at the HFD relative to these existing FAA airspace directives. Based on the FAA design criteria, the results of this analysis identified existing safety deficiencies at HFD which include multiple acres of tree obstructions to the Federal Aviation Regulation (FAR) Part 77 surfaces, Terminal Instrument Procedures (TERPS), and Airport Design Standards. The results of this study identified that HFD does not provide adequate airspace surfaces to its

runways. To address this public safety deficiency identified by the FAA, the CAA has proposed the removal of obstructions from the approach surfaces. The project design seeks to address the obstructions and near-obstructions within the approaches with maximum attention to environmental sensitivity.

General Project Description

The work area on the airport-side of the Connecticut River involves approximately 30 acres of forested area within the 100-year floodplain of the river. Several areas of mature forest that are not within the runway approaches will be bypassed and protected during the work (as shown on the attached plan). The plan is color coded to depict the various vegetation management methods proposed for the project. Furthermore, tthree sets of arrows are included on the plan to denote travel routes by the various equipment. The limits of the approach surfaces at each runway end are also provided to demonstrate that vegetation management is limited to only those areas required by airport design criteria.

Management of the target trees will take place under dry or frozen ground conditions, ideally in the winter months of January and February. This project timing will maximize protection of soils, minimize impacts to vegetation and wildlife, and will promote maximum regrowth of cut stems to minimize the duration of the environmental impact. Winter timing is expected to be a condition of the wetland-related environmental permits that will be obtained for the project. Note that a more aggressive approach to the vegetation management was completed in the 1980s with full removal of the trees to ground level for most of the obstruction area. The target trees within the management areas are nearly all multiple-stemmed, reflecting the past cutting of each of the trees during earlier airport vegetation management efforts.

The project involves two types of vegetation management; mechanized felling (using heavy equipment) and climbing (using chainsaws). The mechanized felling involves two methods of feller-buncher work, flush cuts (within a foot of ground) and snag cuts (where the feller buncher will cut the tree as high as possible between 10' to 15' above the ground). Regrowth from the cut surfaces is anticipated for each of these options providing for rapid revegetation of the mechanical work areas. The cut wood generated from the mechanical felling operation will be collected and hauled off site. The climbing (non-mechanical) includes methods of cuts, topping which the climbers will cut the tree to a specific elevation, and pruning cuts which the climbers will take a certain amount off the top of the trees canopy with cuts being made at an appropriate notch, minimizing any damage to the tree. Full tree survivability is anticipated for all of the pruning areas, while some level of mortality is expected from the topping cuts. Where topping cuts result in a lost main stem, regrowth from the stump is anticipated for nearly all managed trees. The cut wood from climbing operations will be diced with chainsaws and scattered sufficiently to avoid the suppression of groundcover growth. This technique allows for the limitation of heavy equipment movement within the floodplain, restricting it to the limited area near each runway end. This approach also minimizes the amount of wood that must be collected and removed from the site, thus further limiting equipment operations within the floodplain and adjacent to the dike.

At each work area at the three runway ends 2, 20 and 29, the mechanical felling work will start from the wood line nearest the toe of the levee and work towards the river. The climbing work can take place concurrently with the mechanical felling. As the (tracked) feller buncher cuts the trees, small piles of logs will be made as feller buncher moves through the work zone. A forwarder will collect the small piles of logs and place them in a larger pile nearest the crane lift area; the forwarder will be specified in place of a standard skidder in order to maximize soil protection. A forwarder fully supports cut timber inside of a bunk during movement, as opposed to a skidder which drags the cut pieces over the exposed ground. Once a

sufficient log pile is created the crane is brought into place on the airport-side to lift log bundles over the levee. A shovel logger will assist in creating hitches out of the larger log piles and with overall management of the log staging areas. These hitches will be placed within the reach of the crane and of a safe lifting size and weight as determined by the crane operator. After the hitch is lifted over the levee to the land side, the logs will be transported to the chipping operation located at the Maxim Road Gate 1 staging area. The northern crane location will be adjacent to the chipping operation and no addition transportation is needed. The southern crane location will require loaded log trucks and/or forwarders to travel along the designated haul route on the airport-side of the levee to the chipping area.

Note that the plan specifies a 10' toe offset for equipment travel on the river-side of the dike, and a larger offset on the airport-side. Both offsets are to be visibly marked prior to construction. Further mitigation to protect underground utilities may be employed following further discussions with the utility owners.

The crane lift operation over the dike is a project mitigation feature intended to minimize the use of the Clark Dike for the project. Furthermore, each crane lift area includes timber mat bumper protection of the river-side section of the dike slope to prevent damage from the log hitches as they're lifted over the dike. In this manner, the use of the dike for heavy equipment access is limited to one-time access and one-time exit of the heavy equipment. Pickup trucks and all-terrain vehicle access will be necessary on a daily basis during the approximate 3-week project duration for labor access and equipment fueling.

Equipment Details

Crane: The crane will not be traversing the Clark Dike, but shall remain on the airport-side of the dike. A typical mobile crane for this project would be similar to a Liebherr model LTM 1130-5.1 and would be stationed on level ground at the toe of the levee with the outriggers placed on pressure displacement matting.

Tracked Feller Buncher: The expected ground pressure from a tracked feller buncher will be within the range of 6.2 psi and 10.5 psi depending on make model and grouser configuration. Referencing the largest forestry equipment practical for use on this project, the ground pressures are less then what is typical of maintenance truck or car. John Deere feller buncher models 903M, 953M and 959M data with given ground pressures can be found in an attachment.

Shovel Logger: The expected ground pressure from a shovel logger will be within the range of 6.9 psi and 11.0 psi depending on make model and grouser configuration. Referencing the largest forestry equipment practical for use on this project, the ground pressures are less then what is typical of maintenance truck or car. John Deere shovel logger models 953ML and 959ML data with given ground pressures can be found in an attachment.

Log Forwarder: The expected ground pressure from a forwarder will be within the range of 9.8 psi and 10.4 psi unloaded and between 17.8 psi and 19.3 psi when fully loaded, depending on make model. Referencing the largest forestry equipment practical for use on this project, the ground pressures are less then what is typical of maintenance truck or car. John Deere forwarder models 1510G and 1910G data with given ground pressures can be found in an attachment. The calculations assumed a minimum tire width and banded tracks are being utilized. Banded tracks will be a requirement written into the technical specifications for the project.

Reference: Hartford-Brainard Airport Obstruction Removal Project Request for Statement of "No Objection" Letter – Section 408

We hope this information is helpful for your office to start their review of the work relative to the protection of the Clark Dike system and associated works. We remain available to provide additional information as necessary to support your review and to further protect the flood control works on and adjacent to the project limits.

Please contact our office to discuss.

Regards,

Stantec Consulting Services, Inc.

Randall P. Christensen M.S.
Senior Environmental Scientist
Phone: 413387 4508
Fax: Fax Number
randy.christensen@stantec.com

Attachment: Equipment Access and Staging Plan
Photographs
Equipment Detail Sheets

c. CAA

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ATTACHMENT 1 – PHOTOGRAPHS

Typical multiple-trunked tree of the project management areas; evidence of past cutting and stump regrowth.

Runway 20 end (north) management area showing the section of the river-side condition of the dike and the staging area for the log pile.

Airport-side access route along the MDC property.

Turf access ramp over the dike to be used for equipment access

Photographs

Proposed crane pad site at the south end of the project. To be located between the two concrete bunkers.

Proposed crane pad site at the north end of the project

Photographs

Typical forestry management equipment anticipated for use on the HFD project:

Feller-Buncher (Top)

Log Forwarder (Center)

Shovel Logger (Bottom)

ATTACHMENT 2 – EQUIPMENT DETAILS

TRACKED FELLER BUNCHERS/HARVESTERS/ SHOVEL LOGGERS

JOHN DEERE

903M / 953M/MH/ML / 959M/MH/ML

Ground Pressure in PSI for typical Feller Bunchers and Shovel Loggers

Feller Bunchers, see highlighted box on page 20.
Models 903M, 953M and 959M have ground pressures ranging between 6.2psi and 10.5psi with varying grouser configurations.

Shovel Loggers, see highlighted box on page 28.
Models 953ML and 959ML have ground pressures ranging between 6.9psi and 11.0psi with varying grouser configurations.

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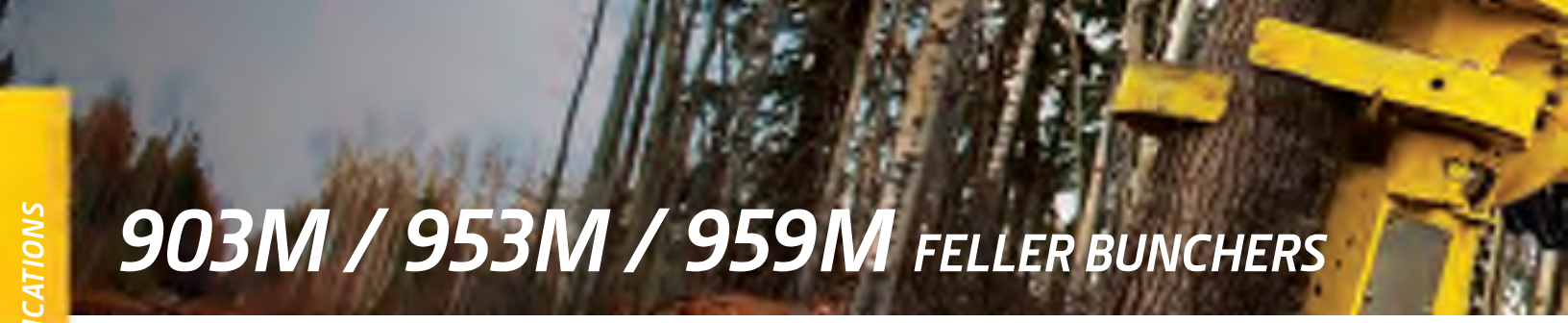
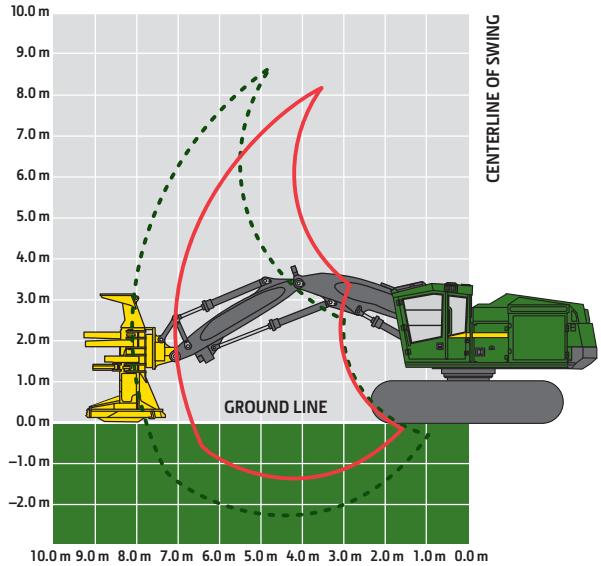


903M / 953M / 959M FELLER BUNCHERS

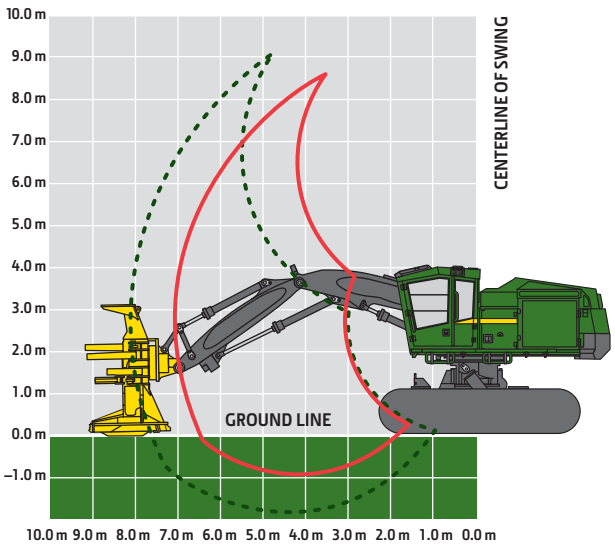
Engine	903M / 953M / 959M		
Manufacturer and Model	John Deere PowerTech™ Plus 6090PSS		
Non-Road Emission Standard	EPA Final Tier 4 / EU Stage V		
Displacement	9.0 L (549 cu. in.)		
Peak Power at 1,900 rpm	246 kW (330 hp)		
Net Peak Torque at 1,500 rpm	1392 Nm (1,027 lb.-ft.)		
Cooling			
Fan Type	Suction type, hydraulically driven, variable speed, reversing		
Hydraulics			
Closed center, pressure compensated, load sense			
Main Pump	Variable-displacement axial piston		
Maximum Rated Flow	532 L/min. (141 gpm)		
Continuous Saw Pump	Dedicated variable-displacement axial piston		
Maximum Rated Flow	114 L/min. (30 gpm)		
Attachment Pump	Dedicated variable-displacement axial piston		
Maximum Rated Flow	135 L/min. (36 gpm)		
Oil Filtration	□□PDLQ□UHWXUQ□□□WHUV□□□□PLFURQ□UHWXUQ□ZLWK□E\SDVV□RQH□FDVH□GUDLQ□WUDLQHU□□□□PLFURQ		
Electrical			
Voltage	24 volt		
Number of Batteries	2 x 12 volt		
Alternator Rating	200 amp		
Work Lights			
Standard	+D□RJHQ□□□□□RRG□□□□VSRW□		
Optional	/ (' □□□□□RRG□□□□VSRW□		
Service Lights			
Standard	Halogen (3)		
Optional	LED (3)		
Undercarriage	**903M**	**953M**	**959M**
Integral track guides, thick high-abrasion-resistant material, ramp angles, hydraulic track adjustment			
Track Size	U7 Extreme Duty (EXD)	U7 EXD	U7L EXD
Track Chain	215.9 mm (8.5 in.)	215.9 mm (8.5 in.)	215.9 mm (8.5 in.)
Number of Track Links (per side)	47	47	47
Lower Rollers (per side)	9	9	10
Carrier Slides / Rollers (per side)	2	2	2
Travel Performance			
Travel Speed, Forward and Reverse			
High	4.2 km/h (2.6 mph)	4.2 km/h (2.6 mph)	3.6 km/h (2.2 mph)
Low	2.1 km/h (1.3 mph)	2.1 km/h (1.3 mph)	1.7 km/h (1.0 mph)
Tractive Effort	322 kN (72,300 lbf)	322 kN (72,300 lbf)	373 kN (83,880 lbf)
Rotating Upper			
Swing System, Standard			
Swing Speed (maximum)	6.7 rpm	4.8 rpm	4.8 rpm
Swing Torque	80 170 Nm (59,130 lb.-ft.)	110 170 Nm (81,257 lb.-ft.)	110 170 Nm (81,257 lb.-ft.)
Swing Brake	Sealed wet multi-disc, manually applied/released		
Serviceability	**903M / 953M / 959M**		
Fuel Tank	1080 L (285 gal.)		
Diesel Exhaust Fluid (DEF) Tank	42 L (11 gal.)		
Ground Pressure *(SAE J1309)*	**903M**	**953M**	**959M**
,QF□XGHV□WDQGDUG□HTXLSPHQW□□□□□□P□ERRP□□KD□I□IX□□IXH□WDQN□□DQG□D□□□XLGV□□HVV□DWWDFKPHQW			
Undercarriage	U7 EXD	U7 EXD	U7L EXD
Counterweight	Small	Large	Medium
Boom	Standard	Power	Power
Double Grouser			
610 mm (24 in.)	59.9 kPa (8.7 psi)	63.8 kPa (9.3 psi)	72.6 kPa (10.5 psi)
762 mm (30 in.)	50.3 kPa (7.3 psi)	53.4 kPa (7.8 psi)	N/A
Single Grouser			
610 mm (24 in.)	59.8 kPa (8.7 psi)	63.6 kPa (9.2 psi)	72.4 kPa (10.5 psi)
711 mm (28 in.)	52.0 kPa (7.5 psi)	55.3 kPa (8.0 psi)	62.8 kPa (9.1 psi)
Triple Grouser (soft terrain only)			
914 mm (36 in.)	42.8 kPa (6.2 psi)	45.3 kPa (6.6 psi)	N/A

Operating Weight	903M		953M	959M
Includes standard equipment, 7.01-m boom, 610-mm (24 in.) double-grouser tracks, half-full fuel tank, and all fluids, less attachment				
Undercarriage	U7 EXD		U7 EXD	U7L EXD
Counterweight	Small		Large	Medium
Boom	Standard		Power	Power
Approximate Weight — Base Machine	31 330 kg (69,080 lb.)		33 330 kg (73,490 lb.)	37 760 kg (83,260 lb.)
Boom Performance				
7.01-m Boom	With FR22B		With FR24B	With FR24B
Maximum Reach (to tip of saw blade)	8.88 m (29 ft. 1 in.)		8.88 m (29 ft. 1 in.)	8.88 m (29 ft. 1 in.)
Minimum Reach (to tip of saw blade)	4.87 m (15 ft. 11 in.)		4.87 m (15 ft. 11 in.)	4.87 m (15 ft. 11 in.)
Cutting Swath	4.01 m (13 ft. 2 in.)		4.01 m (13 ft. 2 in.)	4.01 m (13 ft. 2 in.)
Lift Option	*Standard without Rapid Cycle System (RCS)*	*High-Lift Option with RCS*	*Power-Lift Option with and without RCS*	*Power-Lift Option with and without RCS*
Lift Capacity, Bare Pin at Full Reach	5890 kg (12,990 lb.)	7260 kg (16,010 lb.)	7970 kg (17,570 lb.)	7970 kg (17,570 lb.)
Lift Capacity, Bare Pin at 6.1 m (20 ft.)	7680 kg (16,930 lb.)	9370 kg (20,660 lb.)	10 260 kg (22,620 lb.)	10 260 kg (22,620 lb.)
8.08-m Boom	With FR21B		N/A	N/A
Maximum Reach (to tip of saw blade)	9.82 m (32 ft. 3 in.)		N/A	N/A
Minimum Reach (to tip of saw blade)	4.64 m (15 ft. 3 in.)		N/A	N/A
Cutting Swath	5.18 m (17 ft. 0 in.)		N/A	N/A
Lift Option	*Standard with and without RCS*			
Lift Capacity, Bare Pin at Full Reach	4890 kg (10,780 lb.)		N/A	N/A
Lift Capacity, Bare Pin at 6.1 m (20 ft.)	7470 kg (16,470 lb.)		N/A	N/A

903M and 953M Tracked Feller Bunchers



959M Tracked Feller Buncher



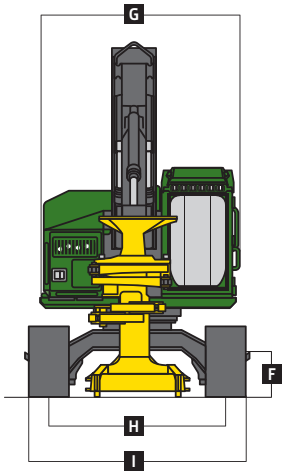
903M / 953M / 959M

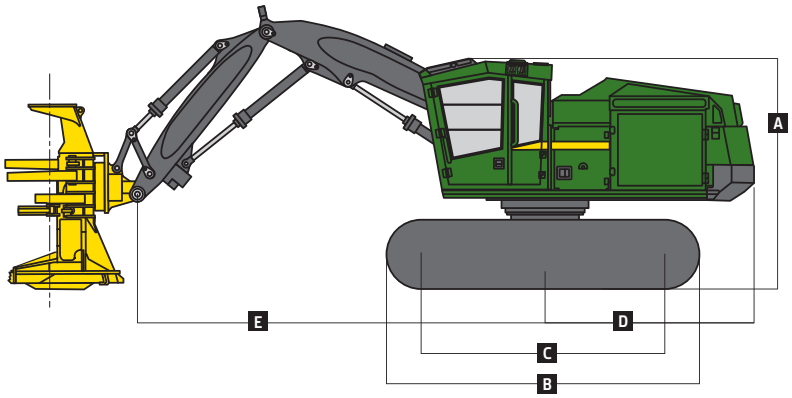
Attachment Information						
Attachment	*FR21B (8.08-m boom only)*	*FS22B (7.01-m boom only)*	*FR22B (7.01-m boom only)*	*FR24B*	*FS50 (7.01-m boom only)*	*FR50 (7.01-m boom only)*
Models	903M	903M, 953M, 959M	903M, 953M, 959M	953M, 959M	903M, 953M, 959M	903M, 953M, 959M
Maximum Cutting Capacity	545 mm (21.5 in.)	559 mm (22.0 in.)	559 mm (22.0 in.)	622 mm (24.5 in.)	508 mm (20.0 in.)	508 mm (20.0 in.)
Maximum Accumulation Capacity	0.46 m^2 (5.0 sq. ft.)	0.48 m^2 (5.2 sq. ft.)	0.48 m^2 (5.2 sq. ft.)	0.60 m^2 (6.4 sq. ft.)	0.64 m^2 (6.9 sq. ft.)	0.64 m^2 (6.9 sq. ft.)
Opening at Front of Housing	1180 mm (46.5 in.)	1280 mm (50.4 in.)	1280 mm (50.4 in.)	1372 mm (54.0 in.)	870 mm (34.0 in.)	870 mm (34.0 in.)
Blade Diameter	1372 mm (54.0 in.)	1422 mm (56.0 in.)	1422 mm (56.0 in.)	1549 mm (56.0 in.)	1346 mm (53.0 in.)	1346 mm (53.0 in.)
Number of Teeth	18	18	18	20	18	18
Saw rpm	1,150 rpm	1,150 rpm	1,150 rpm	1,150 rpm	1,250 rpm	1,250 rpm
Wrist Rotation	302 deg.	30 deg.	312 deg.	310 deg.	30 deg.	310 deg.
Width at Saw Housing	1550 mm (61.0 in.)	1620 mm (63.8 in.)	1620 mm (63.8 in.)	1737 mm (68.4 in.)	1660 mm (65.0 in.)	1660 mm (65.0 in.)
Height	2820 mm (111.0 in.)	3068 mm (120.8 in.)	3068 mm (120.8 in.)	3068 mm (120.8 in.)	2850 mm (112.0 in.)	2850 mm (112.0 in.)
Weight (including adapter and wrist)	3140 kg (6,920 lb.)	3550 kg (7,830 lb.)	3840 kg (8,470 lb.)	4020 kg (8,860 lb.)	3370 kg (7,430 lb.)	3660 kg (8,070 lb.)

Machine Dimensions	903M	953M	959M
Standard Undercarriage	U7 EXD	U7 EXD	U7L EXD
A Overall Height with 7.01-m Boom			
Top of Cab with Flat Skylight	3.55 m (11 ft. 8 in.)	3.55 m (11 ft. 8 in.)	4.03 m (13 ft. 3 in.)
Top of Cab with Peaked Skylight	3.77 m (12 ft. 4 in.)	3.77 m (12 ft. 4 in.)	4.24 m (13 ft. 11 in.)
Top of Boom, Extended, Attachment Vertical	3.86 m (12 ft. 8 in.)	3.86 m (12 ft. 8 in.)	4.07 m (13 ft. 4 in.)
B Overall Track Length	4.90 m (16 ft. 1 in.)	4.90 m (16 ft. 1 in.)	4.90 m (16 ft. 1 in.)
C Track Length (idler to sprocket center)	3.83 m (12 ft. 7 in.)	3.83 m (12 ft. 7 in.)	3.81 m (12 ft. 6 in.)
D Tail Swing (from swing center)	3.18 m (10 ft. 5 in.)	3.18 m (10 ft. 5 in.)	3.18 m (10 ft. 5 in.)
E Boom Reach (to attachment pin)			
Standard 7.01-m Boom			
Maximum	7.01 m (23 ft. 0 in.)	7.01 m (23 ft. 0 in.)	7.01 m (23 ft. 0 in.)
Minimum	3.00 m (9 ft. 10 in.)	3.00 m (9 ft. 10 in.)	3.00 m (9 ft. 10 in.)
Cutting Swath	4.01 m (13 ft. 2 in.)	4.01 m (13 ft. 2 in.)	4.01 m (13 ft. 2 in.)
Optional 8.08-m Boom			
Maximum	8.08 m (26 ft. 6 in.)	N/A	N/A
Minimum	2.90 m (9 ft. 6 in.)	N/A	N/A
Cutting Swath	5.18 m (17 ft. 0 in.)	N/A	N/A
F Ground Clearance			
Single Grouser	779 mm (31 in.)	779 mm (31 in.)	770 mm (30 in.)
Double Grouser	756 mm (30 in.)	756 mm (30 in.)	747 mm (29 in.)
Triple Grouser	738 mm (29 in.)	738 mm (29 in.)	N/A
G Upperstructure Width			
With Standard Walkway	N/A	N/A	3.20 m (10 ft. 6 in.)
Without Optional Walkway	3.05 m (10 ft. 0 in.)	3.05 m (10 ft. 0 in.)	N/A
With Optional Walkway	3.20 m (10 ft. 6 in.)	3.20 m (10 ft. 6 in.)	N/A
H Track Gauge	2.69 m (8 ft. 10 in.)	2.69 m (8 ft. 10 in.)	2.72 m (8 ft. 11 in.)
I Width Over Tracks			
610-mm (24 in.) Track Shoes	3.30 m (10 ft. 10 in.)	3.30 m (10 ft. 10 in.)	3.33 m (10 ft. 11 in.)
711-mm (28 in.) Track Shoes	3.40 m (11 ft. 2 in.)	3.40 m (11 ft. 2 in.)	3.43 m (11 ft. 3 in.)
760-mm (30 in.) Track Shoes	3.45 m (11 ft. 4 in.)	3.45 m (11 ft. 4 in.)	N/A
914-mm (36 in.) Track Shoes	3.61 m (11 ft. 10 in.)	3.61 m (11 ft. 10 in.)	N/A

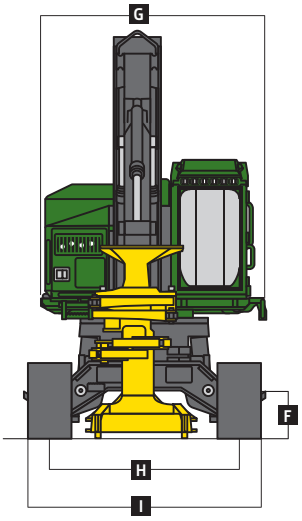
Machine Dimensions *(continued)* — 903M / 953M / 959M

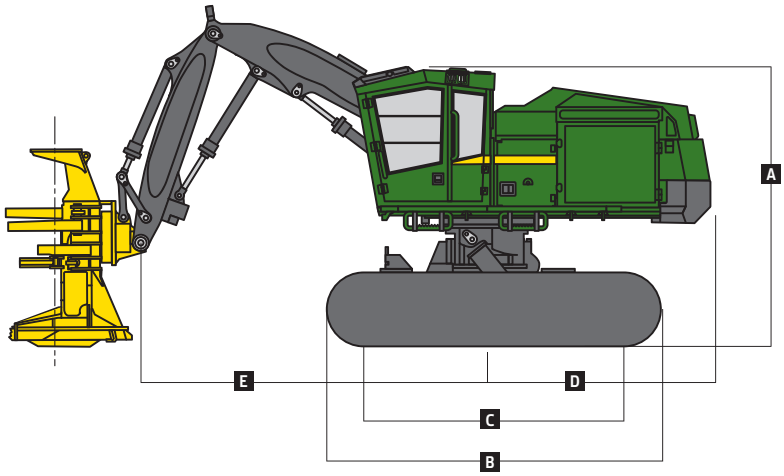
903M / 953M Tracked Feller Bunchers



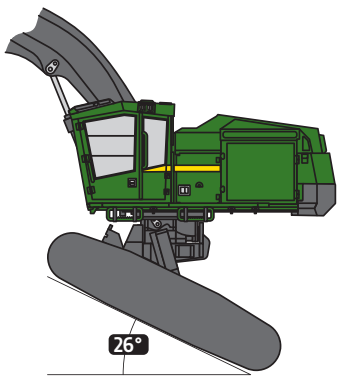


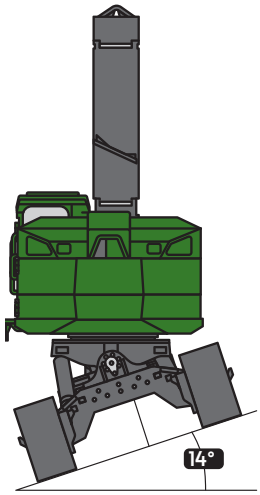
959M Tracked Feller Buncher





959M Leveling





959M Undercarriage-Leveling Mechanism	
Forward	26 deg.
Side to Side	14 deg.
Rearward	7 deg.

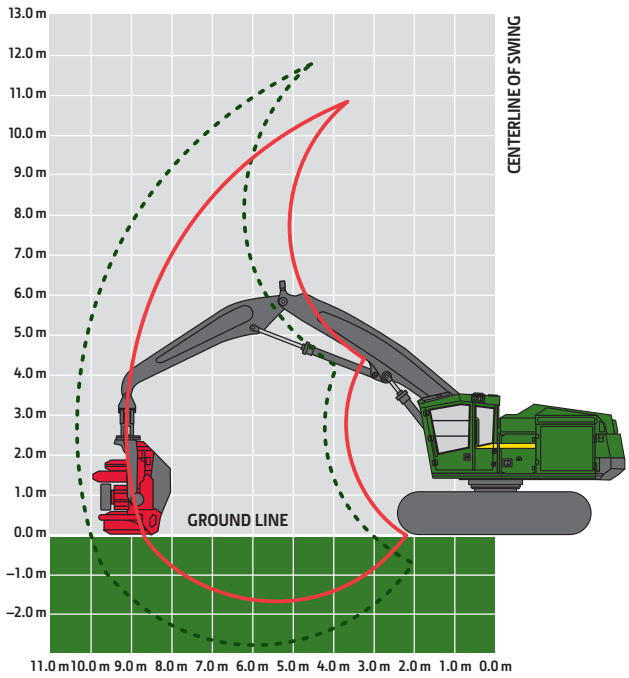
953MH / 959MH HARVESTERS

Engine	953MH / 959MH	
Manufacturer and Model	John Deere PowerTech™ Plus 6090PSS	
Non-Road Emission Standard	EPA Final Tier 4 / EU Stage V	
Displacement	9.0 L (549 cu. in.)	
Peak Power at 1,900 rpm	246 kW (330 hp)	
Net Peak Torque at 1,500 rpm	1392 Nm (1,027 lb.-ft.)	
Cooling		
Fan Type	Suction type, hydraulically driven, variable speed, reversing	
Hydraulics		
Closed center, pressure compensated, load sense		
Main Pump	Variable-displacement axial piston	
Maximum Rated Flow	532 L/min. (141 gpm)	
Attachment Pump	Dedicated variable-displacement axial piston	
Maximum Rated Flow	209 L/min. (55 gpm)	
Oil Filtration	□□PDLQ□UHWXUQ□□0WHUV□□□□PLFURQ□UHWXUQ□ZLWK□E\SDVV□□RQH□FDVH□GUDLQ□VWUDLQHU□□□□PLFURQ	
Electrical		
Voltage	24 volt	
Number of Batteries	2 x 12 volt	
Alternator Rating	200 amp	
Work Lights		
Standard	+D□RJHQ□□□□□RRG□□□□VSRW□	
Optional	/ (' □□□□□RRG□□□□VSRW□	
Service Lights		
Standard	Halogen (3)	
Optional	LED (3)	
Undercarriage	**953MH**	**959MH**
Integral track guides, thick high-abrasion-resistant material, ramp angles, hydraulic track adjustment		
Track Size	U7 Extreme Duty (EXD)	U7L EXD
Track Chain	215.9 mm (8.5 in.)	215.9 mm (8.5 in.)
Number of Track Links (per side)	47	47
Lower Rollers (per side)	9	10
Carrier Slides / Rollers (per side)	2	2
Travel Performance		
Travel Speed, Forward and Reverse		
High	4.2 km/h (2.6 mph)	3.6 km/h (2.2 mph)
Low	2.0 km/h (1.2 mph)	1.7 km/h (1.0 mph)
Tractive Effort	322 kN (72,300 lbf)	373 kN (83,880 lbf)
Rotating Upper		
Swing System, Standard		
Swing Speed (maximum)	4.8 rpm	4.8 rpm
Swing Torque	110 170 Nm (81,257 lb.-ft.)	110 170 Nm (81,257 lb.-ft.)
Swing Brake	Sealed wet multi-disc, manually applied/released	Sealed wet multi-disc, manually applied/released
Serviceability	**953MH / 959MH**	
Fuel Tank	1080 L (285 gal.)	
Diesel Exhaust Fluid (DEF) Tank	42 L (11 gal.)	
Ground Pressure *(SAE J1309)*	**953MH**	**959MH**
,QF□XGHV□VWDQGDUG□HTXLSPHQW□□□□□□P□KDUYHVWLQJ□ERRP□□KD0I□IX□□IXH□WDQN□□DQG□D□□□XLGV□□HVV□DWWDFKPHQW		
Undercarriage	U7 EXD	U7L EXD
Counterweight	Large	Medium
Double Grouser		
610 mm (24 in.)	62.3 kPa (9.0 psi)	71.1 kPa (10.3 psi)
Single Grouser		
610 mm (24 in.)	62.2 kPa (9.0 psi)	70.9 kPa (10.3 psi)
711 mm (28 in.)	54.0 kPa (7.8 psi)	61.5 kPa (8.9 psi)
Triple Grouser (soft terrain only)		
914 mm (36 in.)	44.3 kPa (6.4 psi)	N/A

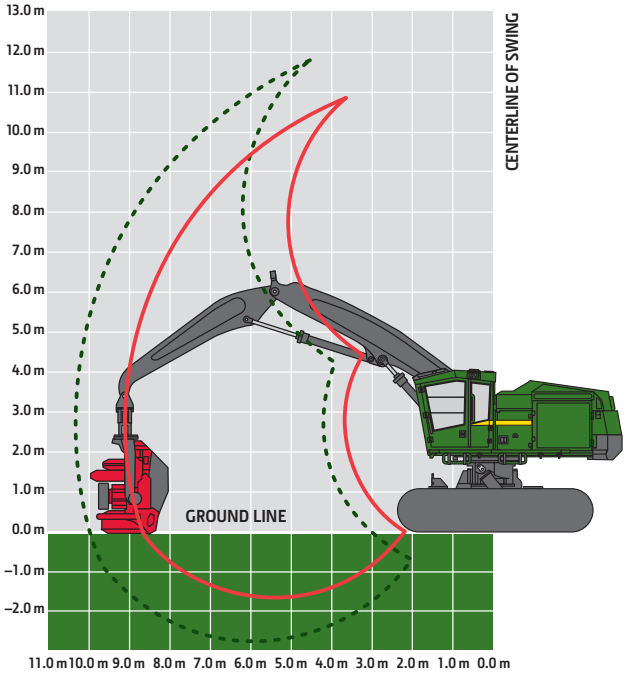
While general information, pictures, and descriptions are provided, some illustrations and text may include product options and accessories NOT AVAILABLE in all regions, and in some countries products and accessories PD\□UHTXLUH□PRGL□FDWLRQV□RU□DGGLWLRQV□WR□HQVXUH□FRPSLDQFH□ZLWK□WKH□RFD□UHJXODWLRQV□RI□WKRVH□FRXQWULHV□

Operating Weight	953MH	959MH
Includes standard equipment, 9.12-m harvesting boom, 610-mm (24 in.) double-grouser tracks, half-full fuel tank, and all fluids, less attachment		
Undercarriage	U7 EXD	U7L EXD
Counterweight	Large	Medium
Approximate Weight — Base Machine	32 600 kg (71,880 lb.)	37 000 kg (81,590 lb.)
Boom Performance	**953MH / 959MH**	
9.12-m Boom (5.44-m swath) with HTH624C		
Lift Option	*Standard with and without Rapid Cycle System (RCS)*	
Lift Capacity, Bare Pin at Full Reach	6170 kg (13,600 lb.)	
Lift Capacity, Bare Pin at 7.6 m (25 ft.)	8220 kg (18,130 lb.)	
10.34-m Boom (6.13-m swath) with HTH623C		
Lift Option	*Standard with and without RCS*	
Lift Capacity, Bare Pin at Full Reach	4860 kg (10,720 lb.)	
Lift Capacity, Bare Pin at 9.1 m (30 ft.)	5800 kg (12,790 lb.)	
Lift Capacity, Bare Pin at 7.6 m (25 ft.)	7300 kg (16,100 lb.)	

953MH Tracked Harvester



959MH Tracked Harvester



953MH / 959MH

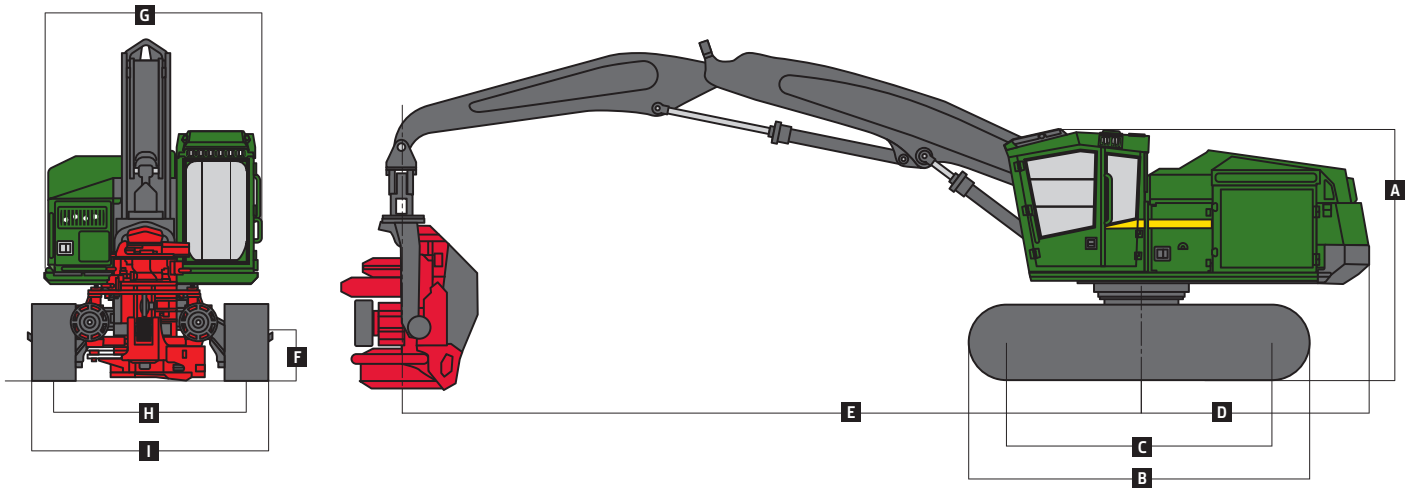
Attachment Information				
Attachment	*HTH622B*	*HTH623C*	*HTH624C*	*HTH625C*
Models	953MH, 959MH	953MH, 959MH	953MH, 959MH	953MH, 959MH
Maximum Cutting Capacity	750 mm (29.5 in.)	750 mm (29.5 in.)	810 mm (31.9 in.)	900 mm (35.4 in.)
Maximum Delimbing Capacity	640 mm (25.2 in.)	700 mm (27.6 in.)	760 mm (29.9 in.)	810 mm (31.9 in.)
Feeding Mechanism	3 rollers, fully synchronized hydraulic drive		3 rollers, fully synchronized hydraulic drive	
Dimensions				
Maximum Width (arms open)	1700 mm (66.9 in.)	2000 mm (78.7 in.)	2000 mm (78.7 in.)	2000 mm (78.7 in.)
Height (including rotator)	2700 mm (106.3 in.)	3000 mm (118.1 in.)	3000 mm (118.1 in.)	3250 mm (128.0 in.)
Weight (rotator and standard link)	2190 kg (4,830 lb.)	2870 kg (6,330 lb.)	3460 kg (7,630 lb.)	4270 kg (9,420 lb.)

See individual Harvesting Head brochure for more details.

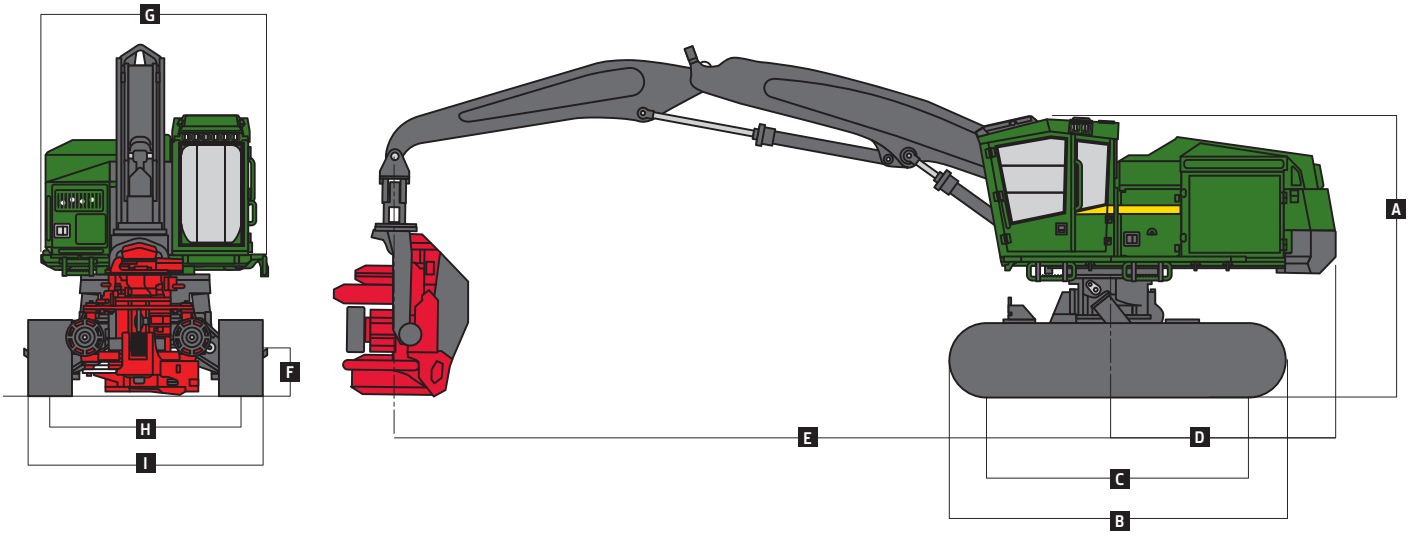
Machine Dimensions	953MH	959MH
Standard Undercarriage	U7 EXD	U7L EXD
A Overall Height with 9.12-m Boom		
Top of Cab with Flat Skylight	3.55 m (11 ft. 8 in.)	4.03 m (13 ft. 3 in.)
Top of Cab with Peaked Skylight	3.77 m (12 ft. 4 in.)	4.24 m (13 ft. 11 in.)
Top of Boom, Extended, Attachment Vertical	3.86 m (12 ft. 8 in.)	4.07 m (13 ft. 4 in.)
B Overall Track Length	4.90 m (16 ft. 1 in.)	4.90 m (16 ft. 1 in.)
C Track Length (idler to sprocket center)	3.83 m (12 ft. 7 in.)	3.81 m (12 ft. 6 in.)
D Tail Swing (from swing center)	3.18 m (10 ft. 5 in.)	3.18 m (10 ft. 5 in.)
E Boom Reach (to attachment pin)		
Standard 9.12-m Boom		
Maximum	9.12 m (29 ft. 11 in.)	9.12 m (29 ft. 11 in.)
Minimum	3.68 m (12 ft. 1 in.)	3.68 m (12 ft. 1 in.)
Cutting Swath	5.44 m (17 ft. 10 in.)	5.44 m (17 ft. 10 in.)
Optional 10.34-m Boom		
Maximum	10.34 m (33 ft. 11 in.)	10.34 m (33 ft. 11 in.)
Minimum	4.21 m (13 ft. 10 in.)	4.21 m (13 ft. 10 in.)
Cutting Swath	6.13 m (20 ft. 1 in.)	6.13 m (20 ft. 1 in.)
F Ground Clearance		
Single Grouser	779 mm (31 in.)	770 mm (30 in.)
Double Grouser	756 mm (30 in.)	747 mm (29 in.)
Triple Grouser	738 mm (29 in.)	N/A
G Upperstructure Width		
With Standard Walkway	N/A	3.20 m (10 ft. 6 in.)
Without Optional Walkway	3.05 m (10 ft. 0 in.)	N/A
With Optional Walkway	3.20 m (10 ft. 6 in.)	N/A
H Track Gauge	2.69 m (8 ft. 10 in.)	2.72 m (8 ft. 11 in.)
I Width Over Tracks		
610-mm (24 in.) Track Shoes	3.30 m (10 ft. 10 in.)	3.33 m (10 ft. 11 in.)
711-mm (28 in.) Track Shoes	3.40 m (11 ft. 2 in.)	3.43 m (11 ft. 3 in.)
760-mm (30 in.) Track Shoes	3.45 m (11 ft. 4 in.)	N/A
914-mm (36 in.) Track Shoes	3.61 m (11 ft. 10 in.)	N/A

Machine Dimensions *(continued)* 953MH / 959MH

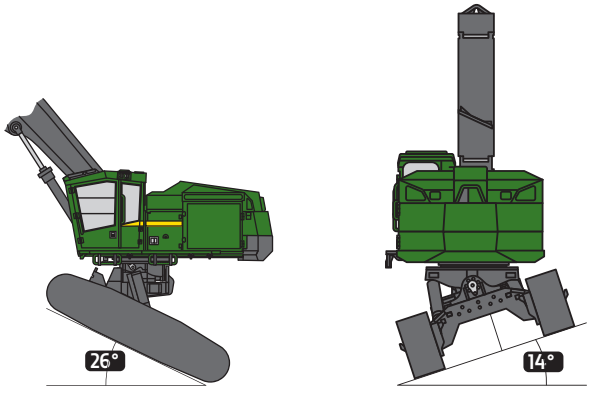
953MH Tracked Harvester



959MH Tracked Harvester



959MH Leveling



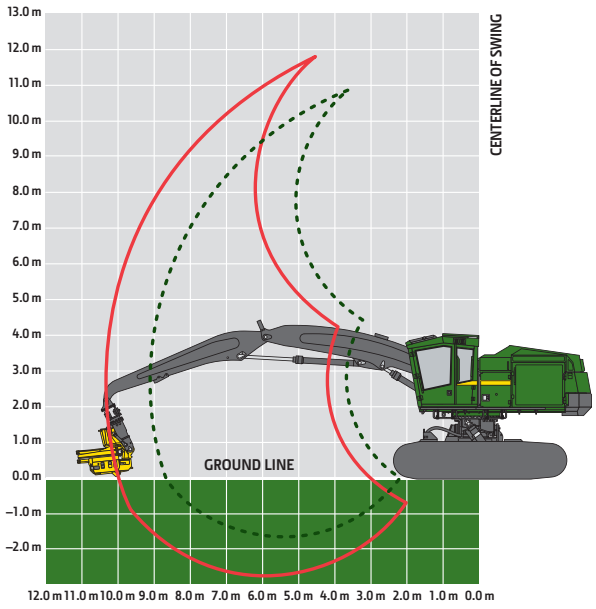
959MH Undercarriage-Leveling Mechanism	
Forward	26 deg.
Side to Side	14 deg.
Rearward	7 deg.

953ML SHOVEL LOGGER / 959ML DIRECTIONAL FELLER/SHOVEL LOGGER

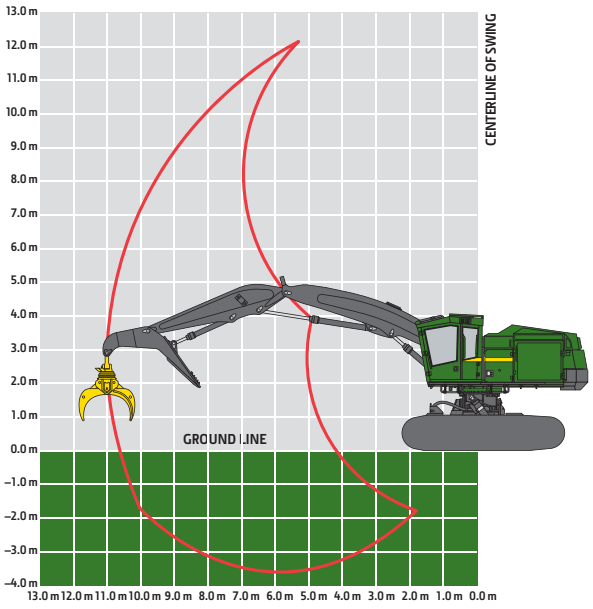
Engine	953ML Shovel Logger	959ML Directional Feller/Shovel Logger
Manufacturer and Model	John Deere PowerTech™ Plus 6090PSS	John Deere PowerTech Plus 6090PSS
Non-Road Emission Standard	EPA Final Tier 4 / EU Stage IV	EPA Final Tier 4 / EU Stage V
Displacement	9.0 L (549 cu. in.)	9.0 L (549 cu. in.)
Peak Power at 1,900 rpm	246 kW (330 hp)	246 kW (330 hp)
Net Peak Torque at 1,500 rpm	1527 Nm (1,126 lb.-ft.)	1527 Nm (1,126 lb.-ft.)
Cooling	**953ML Shovel Logger / 959ML Directional Feller/Shovel Logger**	
Fan Type	Suction type, hydraulically driven, variable speed, reversing	
Hydraulics		
Closed center, pressure compensated, load sense		
Main Pump	Variable-displacement axial piston	
Maximum Rated Flow	532 L/min. (141 gpm)	
Attachment Pump	Dedicated variable-displacement axial piston	
Maximum Rated Flow	209 L/min. (55 gpm)	
Oil Filtration	2 main return filters, 10-micron return with bypass, one case-drain strainer, 25 micron	
Electrical		
Voltage	24 volt	
Number of Batteries	2 x 12 volt	
Alternator Rating	200 amp	
Work Lights		
Standard	Halogen (8 flood, 5 spot)	
Optional	LED (11 flood, 3 spot)	
Optional Boom Lighting	LED (2 flood); live-heel shovel logger only	
Service Lights		
Standard	Halogen (3)	
Optional	LED (3)	
Undercarriage	**953ML Shovel Logger**	**959ML Directional Feller/Shovel Logger**
Integral track guides, thick high-abrasion-resistant material, ramp angles, hydraulic track adjustment		
Track Size	U7 Extreme duty (EXD)	U7L EXD
Track Chain	215.9 mm (8.5 in.)	215.9 mm (8.5 in.)
Number of Track Links (per side)	47	47
Lower Rollers (per side)	9	10
Carrier Slides / Rollers (per side)	2	2
Travel Performance		
Travel Speed, Forward and Reverse		
High	4.75 km/h (3.0 mph)	3.6 km/h (2.2 mph)
Low	2.2 km/h (1.4 mph)	1.7 km/h (1.0 mph)
Tractive Effort	321 kN (72,140 lbf)	373 kN (83,880 lbf)
Rotating Upper		
Swing System, Standard		
Swing Speed (maximum)	4.8 rpm	5.0 rpm
Swing Torque	110 174 Nm (81,260 lb.-ft.)	110 170 Nm (81,257 lb.-ft.)
Swing Brake	Sealed wet multi-disc, manually applied/released	Sealed wet multi-disc, manually applied/released
Serviceability	**953ML Shovel Logger / 959ML Directional Feller/Shovel Logger**	
Fuel Tank	1080 L (285 gal.)	
Diesel Exhaust Fluid (DEF) Tank	42 L (11 gal.)	
Ground Pressure *(SAE J1309)*	**953ML Shovel Logger**	**959ML Directional Feller/Shovel Logger**
Includes standard equipment, 11.0-m boom with heel, half-full fuel tank, and all fluids, less attachment		
Undercarriage	U7 EXD	U7L EXD
Counterweight	Large	Medium
Boom	Heel	Live heel
Track Shoes		
610-mm (24 in.) Double Grouser	N/A	75.6 kPa (11.0 psi)
610-mm (24 in.) Single Grouser	N/A	75.5 kPa (11.0 psi)
711-mm (28 in.) Single Grouser	N/A	65.4 kPa (9.5 psi)
914-mm (36 in.) Triple Grouser	47.6 kPa (6.9 psi)	N/A

Operating Weight	953ML Shovel Logger	959ML Directional Feller		959ML Shovel Logger
Includes standard equipment, flat skylight, half-full fuel tank, and all fluids, less attachment				
Track Shoes	914-mm (36 in.) triple-grouser tracks	610-mm (24 in.) single-grouser tracks		610-mm (24 in.) single-grouser tracks
Undercarriage	U7 EXD	U7L EXD		U7L EXD
Counterweight	Large	Medium		Medium
Boom	11.0-m Heel	9.12-m Power	10.34 m	11.0-m Live Heel
Approximate Weight — Base Machine	37 190 kg (82,000 lb.)	36 910 kg (81,390 lb.)	37 130 kg (81,870 lb.)	39 360 kg (86,790 lb.)
Boom Performance				
9.12-m Boom (5.44-m swath) with FL100				
Lift Option	N/A	*Power*		N/A
Lift Capacity, Bare Pin at Full Reach	N/A	6170 kg (13,600 lb.)		N/A
Lift Capacity, Bare Pin at 7.62 m (25 ft.)	N/A	8220 kg (18,130 lb.)		N/A
Lift Capacity, Bare Pin at 6.10 m (20 ft.)	N/A	10 670 kg (25,530 lb.)		N/A
10.34-m Boom (6.13-m swath) with FL100				
Lift Option	N/A	*Standard*		N/A
Lift Capacity, Bare Pin at Full Reach	N/A	4860 kg (10,720 lb.)		N/A
Lift Capacity, Bare Pin at 9.14 m (30 ft.)	N/A	5800 kg (12,790 lb.)		N/A
Lift Capacity, Bare Pin at 7.62 m (25 ft.)	N/A	7300 kg (16,100 lb.)		N/A
Lift Capacity, Bare Pin at 6.10 m (20 ft.)	N/A	9460 kg (20,860 lb.)		N/A
11.0-m Boom (6.23-m swath)				
Lift Option	*Standard, Including Heel*	N/A		*Standard, Including Live Heel*
Lift Capacity, Bare Pin at Full Reach	4360 kg (9,610 lb.)	N/A		4360 kg (9,610 lb.)
Lift Capacity, Bare Pin at 9.14 m (30 ft.)	6240 kg (13,760 lb.)	N/A		6250 kg (13,790 lb.)
Lift Capacity, Bare Pin at 7.62 m (25 ft.)	7750 kg (17,090 lb.)	N/A		7700 kg (16,980 lb.)
Lift Capacity, Bare Pin at 6.10 m (20 ft.)	9850 kg (21,720 lb.)	N/A		9690 kg (21,360 lb.)

959ML Directional Feller



953ML / 959ML Shovel Loggers



953ML / 959ML

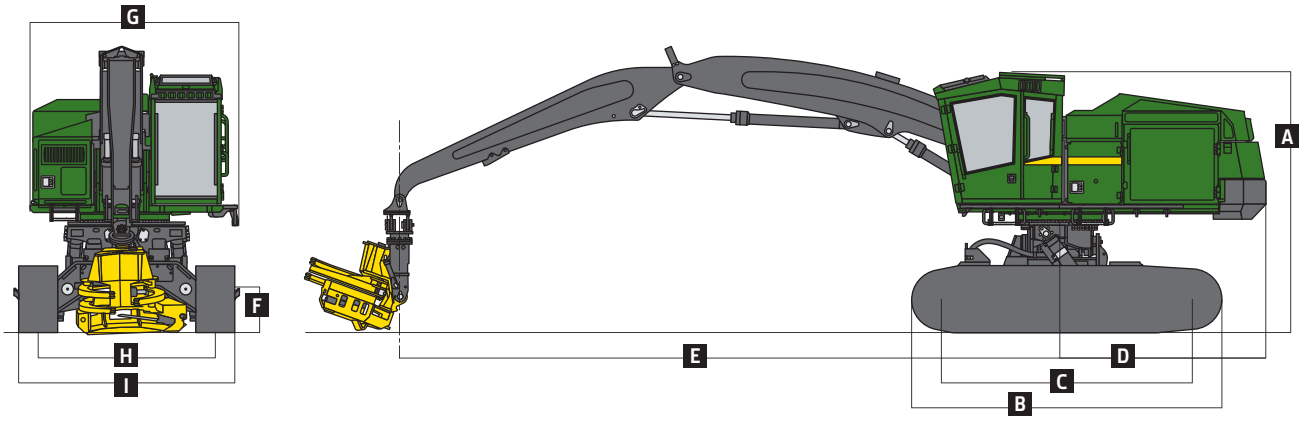
Attachment Information	FL100*		
Dimensions		Rotator	
Height (to boom pin)	2420 mm (95.3 in.)	Rotation	Continuous
Width (arms open)	2270 mm (89.4 in.)	Rotate Motors	2
Depth (arms open)	1995 mm (78.5 in.)	Grapple Arms	
Weight	2995 kg (6,600 lb.)	Maximum Opening	1470 mm (57.9 in.)
Cutting		Minimum Closed Diameter	110 mm (4.3 in.)
Saw Bar	1140 mm (45 in.)	Grapple Capacity	0.77 m^2 (8.4 sq. ft.)
Saw Motor	50 cc	Cylinders	
Chain Tension	Auto (standard)	Grapple Arms	110-mm (4.3. in.) cushioned (2)
Maximum Cut	1000 mm (39.3 in.)	Tilt	90 mm (3.5 in.) (2)
Chain	19-mm (0.75 in.) pitch	Configuration	959ML Directional Feller
Chain Oil Capacity	35 L (9.2 gal.)		

**FL100 available on the 959ML Directional Feller only.*

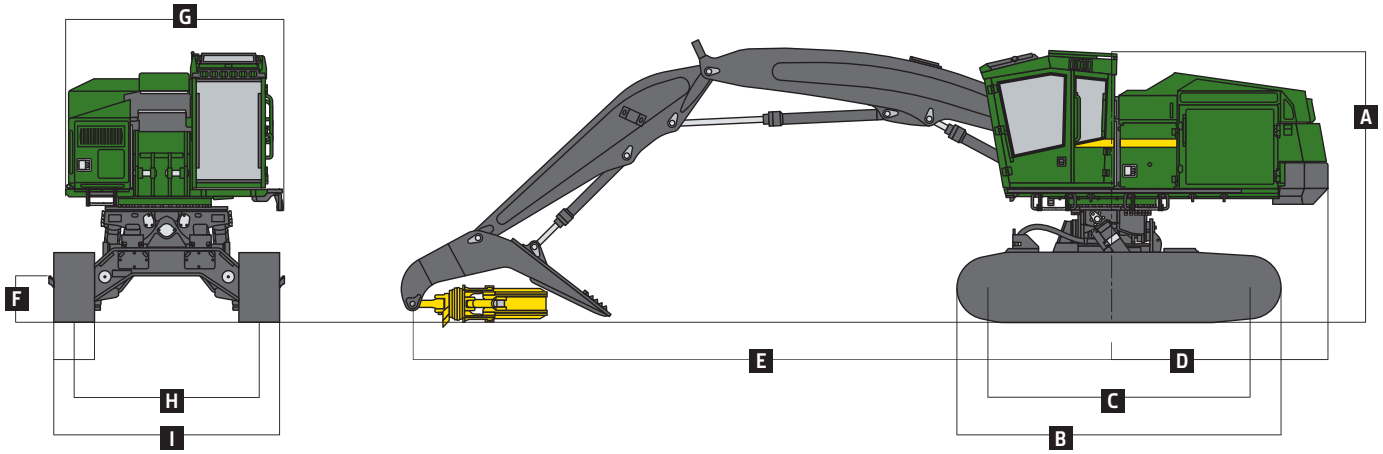
Machine Dimensions	953ML Shovel Logger	959ML Directional Feller	959ML Shovel Logger
Standard Undercarriage	U7 EXD	U7L EXD	U7L EXD
A Overall Height (standard configurations)	With 11.00-m (36 ft. 1 in.) heel shovel logger boom	With 10.34-m (33 ft. 11 in.) directional feller boom	With 11.00-m (36 ft. 1 in.) live heel shovel logger boom
Top of Cab with Flat Skylight	3.55 m (11 ft. 8 in.)	4.03 m (13 ft. 3 in.)	4.03 m (13 ft. 3 in.)
Top of Cab with Peaked Skylight	3.77 m (12 ft. 4 in.)	4.24 m (13 ft. 11 in.)	4.24 m (13 ft. 11 in.)
Top of Boom, Extended, Attachment Vertical	4.37 m (14 ft. 4 in.)	4.56 m (15 ft. 0 in.)	4.56 m (15 ft. 0 in.)
B Overall Track Length	4.90 m (16 ft. 1 in.)	4.90 m (16 ft. 1 in.)	4.90 m (16 ft. 1 in.)
C Track Length (idler to sprocket center)	3.83 m (12 ft. 7 in.)	3.81 m (12 ft. 6 in.)	3.81 m (12 ft. 6 in.)
D Tail Swing (from swing center)	3.18 m (10 ft. 5 in.)	3.18 m (10 ft. 5 in.)	3.18 m (10 ft. 5 in.)
E Boom Reach (to attachment pin)			
9.12-m Boom	N/A		
Maximum	N/A	9.12 m (29 ft. 11 in.)	N/A
Minimum	N/A	3.68 m (12 ft. 1 in.)	N/A
Cutting Swath	N/A	5.44 m (17 ft. 10 in.)	N/A
10.34-m Boom	N/A		
Maximum	N/A	10.34 m (33 ft. 11 in.)	N/A
Minimum	N/A	4.21 m (13 ft. 10 in.)	N/A
Cutting Swath	N/A	6.13 m (20 ft. 1 in.)	N/A
11.0-m Boom with Heel			
Maximum	11.00 m (36 ft. 1 in.)	N/A	11.00 m (36 ft. 1 in.)
Minimum	5.10 m (16 ft. 9 in.)	N/A	4.77 m (15 ft. 8 in.)
Cutting Swath	5.90 m (19 ft. 4 in.)	N/A	6.23 m (20 ft. 5 in.)
F Ground Clearance			
Single Grouser	779 mm (31 in.)	770 mm (30 in.)	770 mm (30 in.)
Double Grouser	756 mm (30 in.)	747 mm (29 in.)	747 mm (29 in.)
Triple Grouser	738 mm (29 in.)	N/A	N/A
G Upperstructure Width			
With Standard Walkway	N/A	3.20 m (10 ft. 6 in.)	3.20 m (10 ft. 6 in.)
Without Optional Walkway	3.05 m (10 ft. 0 in.)	N/A	N/A
With Optional Walkway	3.20 m (10 ft. 6 in.)	N/A	N/A
H Track Gauge	2.69 m (8 ft. 10 in).	2.72 m (8 ft. 11 in.)	2.72 m (8 ft. 11 in.)
I Width Over Tracks			
610-mm (24 in.) Track Shoes	N/A	3.33 m (10 ft. 11 in.)	3.33 m (10 ft. 11 in.)
711-mm (28 in.) Track Shoes	N/A	3.43 m (11 ft. 3 in.)	3.43 m (11 ft. 3 in.)
914-mm (36 in.) Track Shoes	3.61 m (11 ft. 10 in.)	N/A	N/A

Machine Dimensions *(continued)* 953ML / 959ML

959ML Directional Feller



953ML / 959ML Shovel Loggers



DKD900M Litho in U.S.A. (20-11)

G-SERIES

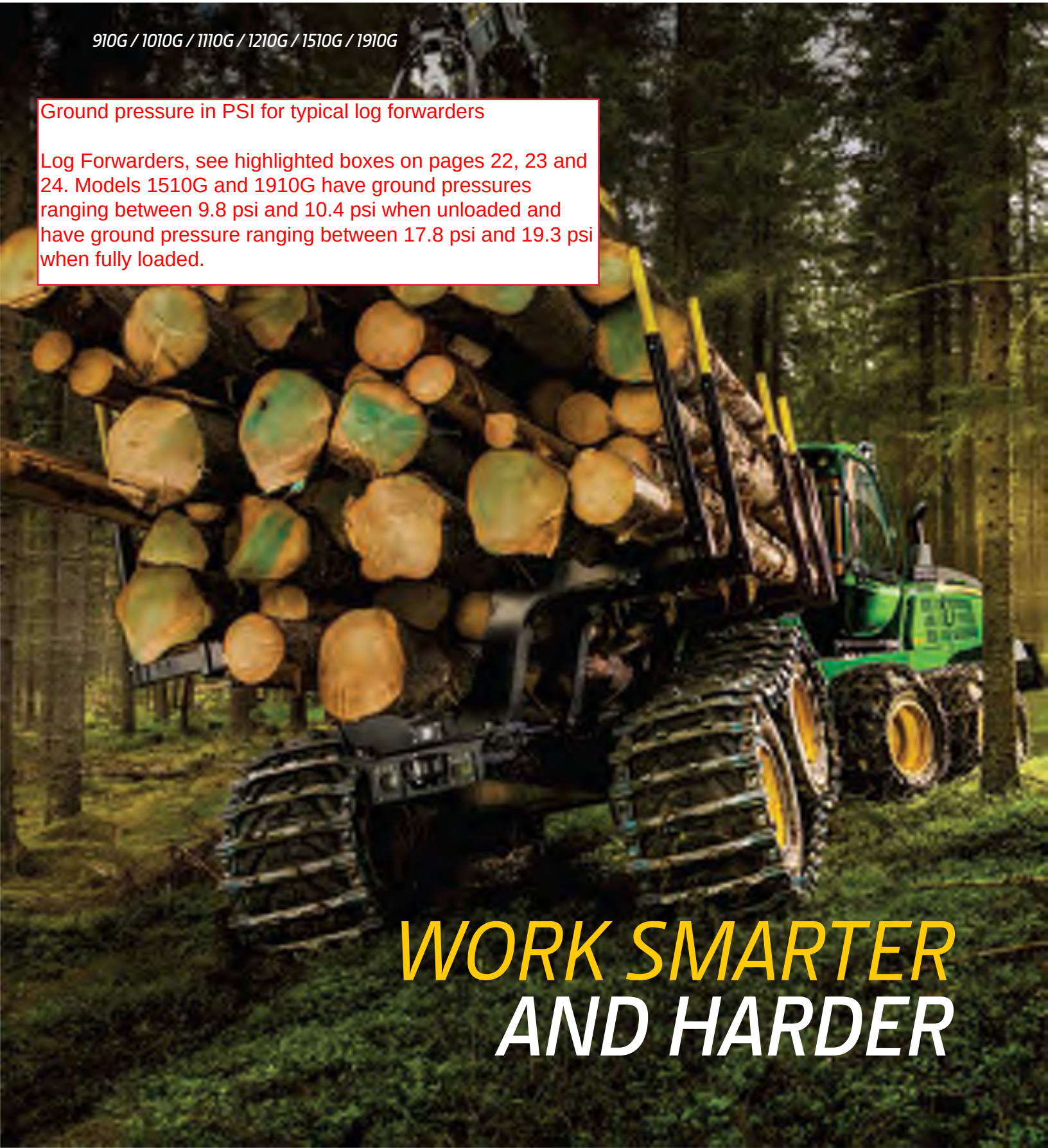
FORWARDERS

JOHN DEERE

910G / 1010G / 1110G / 1210G / 1510G / 1910G

Ground pressure in PSI for typical log forwarders

Log Forwarders, see highlighted boxes on pages 22, 23 and 24. Models 1510G and 1910G have ground pressures ranging between 9.8 psi and 10.4 psi when unloaded and have ground pressure ranging between 17.8 psi and 19.3 psi when fully loaded.



WORK SMARTER AND HARDER

WON'T LET UP — OR LET YOU DOWN

Lower the boom on downtime.

When you work in remote areas, downtime is never an option. G-Series Forwarders are built forest-tough, with durable booms, axles, and electrical components.

Dependable booms

Optional IBC system features sensors that dampen boom movements, protecting boom structures, for longer life.

Robust axles

Duraxle™ heavy-duty (HD) bogie axles — available in the 1210G, 1510G, and 1910G — are designed to carry hefty loads over long distances. Robust axles together with increased diesel power deliver solid tractive performance in every operating condition.

Tough brakes

Hydraulically actuated, oil-immersed, multi-disc service brakes provide dependable stopping power.

4IMPLI□ED□ELECTRICAL□SYSTEM

More reliable electrical architecture VLPS0L□HV□ZLULQJ□KDUQHVVHV□DQG□ minimizes the number of fuses, relays, and electrical connectors.

Grouped service points

Grouped checkpoints and optional central lubrication system speed daily checks and greasing.

Servicing at full tilt

Operator station can be tilted in minutes, for wide-open access to internal components.

Common components

5H0LDE0H0DQG0H[LE\1QWHUFKDQJHDE0H0 electronic components help reduce machine downtime. Commonality among the basic components of all John Deere Forestry equipment lowers your investment in service parts.

Run longer for less

Standard service intervals of 1,500 and 3,000 hours with intermediate service at 750 hours keep you running longer, at lower cost.

NO PAIN. K

'UEL□EF□CIENT□HYDRAULIC□ DRIVEN□FAN

Hydraulic-driven variable-speed fan — available in the 1110G, 1210G, 1510G, and 1910G — runs only as needed, reducing IXH□FRQVXPSWLRQ□DQG□GHEULV□□RZ□ WKURXJK□WKH□FRR□HU□FRUHV□□3URJUDP□ it to reverse at periodic intervals to clear core-clogging buildup.

More power and torque

3RZHU7HFK□□3□XV□GLHVH□V□GH□LYHU□ more power and torque at low rpm compared to previous John Deere models, for excellent performance DQG□IXH□HI□FLHQF\□□

4ELF□CLEANING□□LTER

6H□I□F□HDQLQJ□HQJLQH□DLU□□WHU□ H[WHQGV□□WHU□FKDQJH□LQWHUYD□V□ and wear life, while lowering daily operating expenses.

NOW GAIN.

910G / 1010G

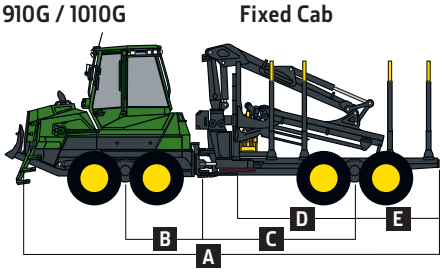
Engine	910G	1010G
Load Rating	9000 (19,842 lb.) / 10 000 kg (22,046 lb.)	11 000 kg (24,251 lb.)
Manufacturer and Model	John Deere PowerTech™ Plus 4045	John Deere PowerTech Plus 4045
Non-Road Emissions Standard	EPA Final Tier 4/EU Stage V	EPA Final Tier 4/EU Stage V
Net Peak Power	118 kW (160 hp) at 1,900 rpm	131 kW (178 hp) at 1,900 rpm
Net Peak Torque	650 Nm (479 ft.-lb.) at 1,400–1,600 rpm	730 Nm (538 ft.-lb.) at 1,400–1,600 rpm
Fuel Tank Capacity	150 L (39.6 gal.)	150 L (39.6 gal.)
Transmission		
Hydrostatic-mechanical, 2-speed gearbox		
Tractive Force	150 kN (33,721 lbf.) with 24.5 tires / 110 kN (24,729 lbf.) with 22.5 tires	150 kN (33,721 lbf.) with 24.5 tires / 160 kN (35,969 lbf.) with 26.5 tires
Travel Speed		
Gear 1	0–7.5 km/h (0–4.7 mph)	0–7.5 km/h (0–4.7 mph)
Gear 2	0–23 km/h (0–14.3 mph)	0–23 km/h (0–14.3 mph)
Steering	**910G / 1010G**	
Proportional steering with electrical joystick		
Turning Angle	44 deg.	
Brakes		
Service	Hydraulically actuated, oil-immersed, multi-disc	
Parking/Emergency	Spring actuated	
Frame	Automated	
Axles/Bogies		
Hydromechanical differential lock in front and rear		
Axles		
Front	Single rigid axle, non-balanced- or balanced-gear bogie axle	
Rear	Balanced-gear bogie axle or unbalanced long bogie (LGP) (available only with 26.5 axles)	
Electrical		
Voltage	24 volt	
Batteries	115 Ah	
Alternator	150 A	
Lights	Halogen or LED	
Hydraulics		
Load sensing		
Pump Capacity	120 cm^3 (7.3 cu. in.)	
Operating Pressure	24 MPa (3,480 psi)	
Hydraulic Tank	150 L (39.6 gal.)	

Boom	910G		1010G
Type	CF1	CF5	CF5
Maximum Reach Lengths	9.8 m (32.2 ft.)	8.5 m (27.9 ft.) / 10 m (32.8 ft.)	8.5 m (27.9 ft.) / 10 m (32.8 ft.)
Gross Lifting Torque	76 kNm (56,000 ft.-lb.)	102 kNm (75,000 ft.-lb.)	102 kNm (75,000 ft.-lb.)
Slewing Torque	19 kNm (14,000 ft.-lb.)	24 kNm (18,000 ft.-lb.)	24 kNm (18,000 ft.-lb.)
Slewing Angle	380 deg.	380 deg.	380 deg.

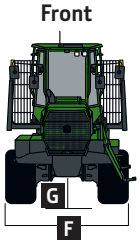
Cabin	910G / 1010G
Type	Fixed, rotating, or rotating and leveling
Rotating Angle	290 deg.
Tilt	
Sideways	10 deg.
Forward and Backward	6 deg.
Control System	
Windows®-based TimberMatic™ F-16 with high performance / Standard PC	
Boom Control Aid	
Standard	Smooth Boom Control (SBC) algorithm
Optional	Intelligent Boom Control (IBC) on CF5

Measurements	910G	1010G
A Length		
Short Wheelbase	8655 mm (28.4 ft.)	8655 mm (28.4 ft.)
Medium Wheelbase	9055 mm (29.7 ft.)	9055 mm (29.7 ft.)
Long Wheelbase	N/A	9455 mm (31.0 ft.)
B Bogie Center – Middle Joint	1900 mm (5.9 ft.)	1900 mm (5.9 ft.)
C Middle Joint – Bogie Center		
Short Wheelbase	2600 mm (8.5 ft.)	2600 mm (8.5 ft.)
Medium Wheelbase	3000 mm (9.8 ft.)	3000 mm (9.8 ft.)
Long Wheelbase	N/A	3400 mm (11.2 ft.)
Wheelbase (B+C)		
Short	4400 mm (14.4 ft.)	4400 mm (14.4 ft.)
Medium	4800 mm (15.7 ft.)	4800 mm (15.7 ft.)
Long	N/A	5200 mm (17.1 ft.)
D Headboard – Bogie Center		
Short Wheelbase	1790 mm (5.9 ft.)	1790 mm (5.9 ft.)
Medium Wheelbase	2190 mm (7.2 ft.)	2190 mm (7.2 ft.)
Long Wheelbase	N/A	2590 mm (8.5 ft.)
E Bogie Center – Rear	1905 mm (6.3 ft.)	1905 mm (6.3 ft.)
F Width		
600-Series Tires	2553 mm (8.4 ft.) with 22.5 tires / 2570 mm (8.4 ft.) with 24.5 tires	2570 mm (8.4 ft.) with 24.5 tires / 2600 mm (8.5 ft.) with 26.5 tires
710-Series Tires	2703 mm (8.9 ft.) with 22.5 tires / 2780 mm (9.1 ft.) with 24.5 tires	2780 mm (9.1 ft.) with 24.5 tires / 2790 mm (9.2 ft.) with 26.5 tires
800-Series Tires	N/A	2940 mm (9.6 ft.)
Turning Angle	44 deg.	44 deg.
Outer Turning Radius – 710 x 24.5-Series Tires		
Short	7096 mm (23.3 ft.)	7096 mm (23.3 ft.)
Medium	7664 mm (25.1 ft.)	7664 mm (25.1 ft.)
Long	N/A	8234 mm (27.0 ft.)
Inner Turning Radius – 710 x 24.5-Series Tires		
Short	3874 mm (12.7 ft.)	3874 mm (12.7 ft.)
Medium	4288 mm (14.1 ft.)	4288 mm (14.1 ft.)
Long	N/A	4702 mm (15.4 ft.)
Transport Height	3672 mm (12.0 ft.) with 22.5 tires / 3685 mm (12.1 ft.) with 24.5 tires	3685 mm (12.1 ft.)with 24.5 tires / 3712 mm (12.2 ft.) with 26.5 tires
G Ground Clearance – 8W	625 mm (24.6 in.) with 22.5 tires / 638 mm (25.0 in.) with 24.5 tires	638 mm (25.0 in.) with 24.5 tires / 665 mm (26.0 in.) with 26.5 tires
Tires		
Front – 6W / 8W	34–14 / 22.5–20/24.5–20	34–14 / 24.5–20/26.5–20
Rear	22.5–20/24.5–20	24.5–20/26.5–20
Minimum Machine Weight		
6W	14 700 kg (32,408 lb.)	14 950 kg (32,959 lb.)
8W	14 950 kg (32,959 lb.)	16 050 kg (35,384 lb.)
Approach Angle	37 deg. with 22.5 tires / 38 deg. with 24.5 tires	38 deg. with 24.5 tires / 40 deg. with 26.5 tires
Load-Space Options*		
Length (D+E)		
Short Wheelbase	3690 mm (12.1 ft.)	3690 mm (12.1 ft.)
Medium Wheelbase	4090 mm (13.4 ft.)	4090 mm (13.4 ft.)
Long Wheelbase	N/A	4490 mm (14.7 ft.)
Load-Space Width		
Minimum / Maximum	2500 mm (8.2 ft.) / 2700 mm (8.9 ft.)	2500 mm (8.2 ft.) / 2700 mm (8.9 ft.)
Cross-Sectional Area	3.5–4.0 m^2 (37.7–43.1 sq. ft.)	3.5–4.0 m^2 (37.7–43.1 sq. ft.)

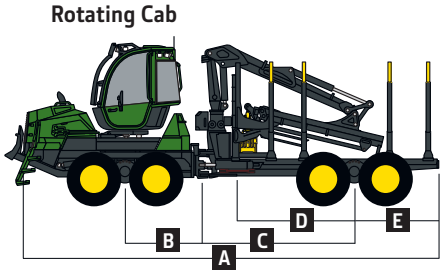
910G / 1010G **Fixed Cab**



Front



Rotating Cab



Front

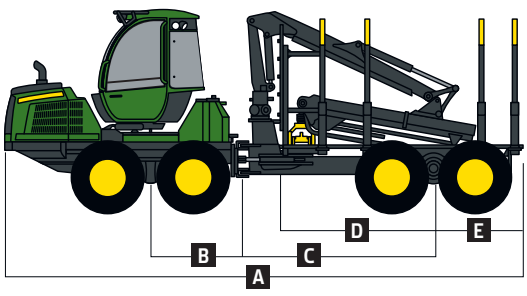
*Please note: Measurements are guidelines only and may vary depending on production tolerances. Machine not exactly as shown. Illustrations for dimensioning purposes only.

1110G / 1210G

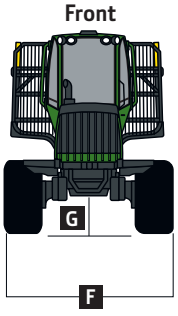
Engine	1110G		1210G
Load Rating	12 000 kg (26,455 lb.)		13 000 kg (28,660 lb.)
Manufacturer and Model	John Deere PowerTech™ Plus 6068		John Deere PowerTech Plus 6068
Non-Road Emissions Standard	EPA Final Tier 4/EU Stage V / Tier 2/Stage II		EPA Final Tier 4/EU Stage V / Tier 2/Stage II
Net Peak Power	145 kW (194 hp) at 1,600–1,900 rpm		156 kW (209 hp) at 1,600–1,900 rpm
Net Peak Torque	865 Nm (638 ft.-lb.) at 1,300–1,600 rpm		935 Nm (690 ft.-lb.) at 1,300–1,500 rpm
Fuel Tank Capacity	167 L (44 gal.)		167 L (44 gal.)
Transmission			
Hydrostatic-mechanical, 2-speed gearbox			
Tractive Force	160 kN (35,968 lbf.)		175 kN (39,340 lbf.)
Travel Speed			
Gear 1	0–7.5 km/h (0–4.3 mph)		0–7.5 km/h (0–4.3 mph)
Gear 2	0–23 km/h (0–14.3 mph)		0–23 km/h (0–14.3 mph)
Steering			
Proportional steering with electrical joystick			
Turning Angle	44 deg.		44 deg.
Brakes	**1110G / 1210G**		
Service	Hydraulically actuated, oil-immersed, multi-disc		
Parking/Emergency	Spring actuated		
Frame	Automated		
Axles/Bogies	**1110G**		**1210G**
Hydromechanical differential lock in front and rear			
Axles			
Front	Single rigid axle, non-balanced- or balanced-gear bogie axle		Single rigid axle, non-balanced- or balanced-gear heavy-duty (HD) bogie axle
Rear	Balanced-gear bogie axle or unbalanced long bogie (LGP)		Balanced-gear HD bogie axle or unbalanced long bogie (LGP)
Electrical	**1110G / 1210G**		
Voltage	24 volt		
Batteries	145 Ah		
Alternator	150 A		
Lights	Halogen		
Hydraulics	**1110G**		**1210G**
Load sensing			
Pump Capacity	140 cm^3 (9.0 cu. in.)		160 cm^3 (10.0 cu. in.)
Operating Pressure	24 MPa (3,480 psi)		24 MPa (3,480 psi)
Hydraulic Tank	161 L (43 gal.)		161 L (43 gal.)
Boom			
Type	CF5	CF7	CF7
Maximum Reach Lengths	8.5 m (27.9 ft.) / 10 m (32.8 ft.)	8.5 m (27.9 ft.) / 10 m (32.8 ft.)	8.5 m (27.9 ft.) / 10 m (32.8 ft.)
Gross Lifting Torque	102 kNm (75,000 ft.-lb.)	125 kNm (92,000 ft.-lb.)	125 kNm (92,000 ft.-lb.)
Slewing Torque	24 kNm (18,000 ft.-lb.)	32 kNm (24,000 ft.-lb.)	32 kNm (24,000 ft.-lb.)
Slewing Angle	380 deg.		380 deg.
Cabin	**1110G / 1210G**		
Type	Fixed, rotating, or rotating and leveling		
Rotating Angle	290 deg.		
Tilt			
Sideways	10 deg.		
Forward and Backward	6 deg.		
Control System			
PC / Windows®-based TimberMatic™ F-16			
Boom Control Aid			
Standard	Smooth Boom Control (SBC) algorithm		
Optional	Intelligent Boom Control (IBC) on CF5 and CF7		

Measurements	1110G	1210G
A Length		
Short / Medium Wheelbase	9820 mm (32.2 ft.)	9820 mm (32.2 ft.)
Long Wheelbase	10 820 mm (35.5 ft.)	10 820 mm (35.5 ft.)
B Bogie Center – Middle Joint	1900 mm (6.2 ft.)	1900 mm (6.2 ft.)
C Middle Joint – Bogie Center		
Short Wheelbase	3000 mm (9.8 ft.)	3000 mm (9.8 ft.)
Medium Wheelbase	3400 mm (11.2 ft.)	3400 mm (11.2 ft.)
Long Wheelbase	3800 mm (12.5 ft.)	3800 mm (12.5 ft.)
Wheelbase (B+C)		
Short	4900 mm (16.1 ft.)	4900 mm (16.1 ft.)
Medium	5300 mm (17.4 ft.)	5300 mm (17.4 ft.)
Long	5700 mm (18.7 ft.)	5700 mm (18.7 ft.)
D Headboard – Bogie Center		
Short Wheelbase	2200 mm (7.2 ft.)	2200 mm (7.2 ft.)
Medium Wheelbase	2600 mm (8.5 ft.)	2600 mm (8.5 ft.)
Long Wheelbase	3000 mm (9.8 ft.)	3000 mm (9.8 ft.)
E Bogie Center – Rear		
Short Wheelbase	2300 mm (7.5 ft.)	2300 mm (7.5 ft.)
Medium Wheelbase	1900 mm (6.2 ft.)	1900 mm (6.2 ft.)
Long Wheelbase	2500 mm (8.2 ft.)	2500 mm (8.2 ft.)
F Width		
600-Series Tires	2700 mm (8.9 ft.)	2746 mm (9.0 ft.)
700-Series Tires	2890 mm (9.5 ft.)	2956 mm (9.7 ft.)
800-Series Tires	2990 mm (9.8 ft.)	3086 mm (10.1 ft.)
Turning Angle	44 deg.	44 deg.
Outer Turning Radius – 700-Series Tires		
Short	7835 mm (25.7 ft.)	7870 mm (25.8 ft.)
Medium	8400 mm (27.6 ft.)	8440 mm (27.7 ft.)
Long	8980 mm (29.5 ft.)	9010 mm (29.6 ft.)
Inner Turning Radius – 700-Series Tires		
Short	4400 mm (14.4 ft.)	4380 mm (14.4 ft.)
Medium	4820 mm (15.8 ft.)	4790 mm (15.7 ft.)
Long	5230 mm (17.2 ft.)	5200 mm (17.1 ft.)
Transport Height	3870 mm (12.7 ft.)	3800 mm (12.5 ft.)
G Ground Clearance – 8W	660 mm (26.0 in.)	660 mm (26.0 in.)
Tires		
Front – 6W / 8W	34–14 / 26.5–20	34–14 / 26.5–20
Rear	26.5–20	26.5–20
Minimum Machine Weight		
6W	15 330 kg (33,797 lb.)	16 180 kg (35,671 lb.)
8W	17 130 kg (37,765 lb.)	18 080 kg (39,860 lb.)
Approach Angle – 8W	35 deg.	35 deg.
Load-Space Options*		
Load Space Length (D+E)		
Short / Medium Wheelbase	4500 mm (14.8 ft.)	4500 mm (14.8 ft.)
Long Wheelbase	5500 mm (18.0 ft.)	5500 mm (18.0 ft.)
Variable Load Space (VLS)	N/A	4500 mm (14.8 ft.)
Load-Space Width		
Minimum / Maximum	2700 mm (8.9 ft.) / 3149 mm (10.3 ft.)	2663 mm (8.7 ft.) / 3406 mm (11.2 ft.)
VLS	N/A	2760–3300 mm (9.0–10.8 ft.)
Cross-Sectional Area	4.0–4.6 m^2 (43.0–49.5 sq. ft.)	4.0–5.3 m^2 (43.0–57.0 sq. ft.)
VLS	N/A	4.1–5.1 m^2 (44.1–55.0 sq. ft.)

1110G / 1210G



Front



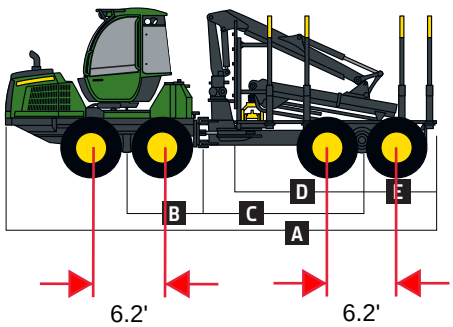
*Please note: Measurements are guidelines only and may vary depending on production tolerances. Machine not exactly as shown. Illustrations for dimensioning purposes only.

1510G / 1910G

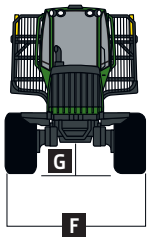
Engine	1510G	1910G
Load Rating	15 000 kg (33,069 lb.)	19 000 kg (41,888 lb.)
Manufacturer and Model	John Deere PowerTech™ Plus 6068	John Deere PowerTech Plus 6090
Non-Road Emissions Standard	EPA Final Tier 4/EU Stage V / Tier 3/Stage IIIA / Tier 2/Stage II	EPA Final Tier 4 (FT4)/EU Stage V
Net Peak Power	164 kW (220 hp) at 1,700–1,900 rpm	200 kW (268 hp) at 1,600–1,900 rpm
Net Peak Torque	978 Nm (721 ft.-lb.) at 1,200–1,500 rpm	1315 Nm (970 ft.-lb.) at 1,400 rpm
Fuel Tank Capacity	167 L (44 gal.)	184 L (49 gal.)
Transmission		
Hydrostatic-mechanical, 2-speed gearbox		
Tractive Force	185 kN (41,588 lbf.)	230 kN (51,704 lbf.)
Travel Speed		
Gear 1	0–7.5 km/h (0–4.3 mph)	0–7 km/h (0–4.3 mph)
Gear 2	0–23 km/h (0–14.3 mph)	0–21 km/h (0–13.0 mph)
Steering		
Proportional steering with electrical joystick		
Turning Angle	44 deg.	42 deg.
Brakes	**1510G / 1910G**	
Service	Hydraulically actuated, oil-immersed, multi-disc	
Parking/Emergency	Spring actuated	
Frame	Automated	
Axles/Bogies	**1510G**	**1910G**
Hydromechanical differential lock in front and rear		
Axles		
Front	Single rigid axle, non-balanced- or balanced-gear heavy-duty (HD) bogie axle	Single rigid axle or balanced-gear HD bogie axle
Rear	Balanced-gear HD bogie axle or unbalanced long bogie (LGP)	Balanced-gear HD bogie axle
Electrical		
Voltage	24 volt	24 volt
Batteries	145 Ah	149 Ah
Alternator	150 A	150 A
Lights	Halogen	Halogen
Hydraulics		
Load sensing		
Pump Capacity	180 cm^3 (11.0 cu. in.)	180 cm^3 (11.0 cu. in.)
Operating Pressure	24 MPa (3,480 psi)	24 MPa (3,480 psi)
Hydraulic Tank	161 L (43 gal.)	185 L (49 gal.)
Boom		
Type	CF7/CF7S	CF8
Maximum Reach Lengths	8.5 m (27.9 ft.) / 10 m (32.8 ft.)	7.3 m (23.9 ft.) / 8.5 m (27.9 ft.)
Gross Lifting Torque	125 kNm (92,000 ft.-lb.) / 143 kNm (105,500 ft.-lb.)	151 kNm (111,000 ft.-lb.)
Slewing Torque	32 kNm (24,000 ft.-lb.)	41 kNm (30,000 ft.-lb.)
Slewing Angle	380 deg.	380 deg.
Cabin		
Type	Fixed, rotating, or rotating and leveling	Fixed or rotating and leveling
Rotating Angle	290 deg.	290 deg.
Tilt		
Sideways	10 deg.	10 deg.
Forward and Backward	6 deg.	6 deg.
Control System		
Type	PC / Windows®-based TimberMatic™ F-16	PC / Windows-based TimberMatic F-16
Boom Control Aid		
Standard	Smooth Boom Control (SBC) algorithm	
Optional	Intelligent Boom Control (IBC) on CF7, CF7S, and CF8	

Measurements	1510G	1910G
A Length		
Short Wheelbase	9820 mm (32.2 ft.)	10 567 mm (34.7 ft.)
Long Wheelbase	11 020 mm (36.1 ft.)	11 467 mm (37.6 ft.)
B Bogie Center – Middle Joint	1900 mm (6.2 ft.)	2150 mm (7.1 ft.)
C Middle Joint – Bogie Center		
Short Wheelbase	3400 mm (11.2 ft.)	3600 mm (11.8 ft.)
Long Wheelbase	4000 mm (13.1 ft.)	4100 mm (13.4 ft.)
Wheelbase (B+C)		
Short	4900 mm (16.1 ft.)	N/A
Medium	5300 mm (17.4 ft.)	5750 mm (18.9 ft.)
Long	5900 mm (19.4 ft.)	6250 mm (20.5 ft.)
D Headboard – Bogie Center		
Short Wheelbase	2600 mm (8.5 ft.)	2635 mm (8.6 ft.)
Long Wheelbase	3200 mm (10.5 ft.)	3135 mm (10.3 ft.)
E Bogie Center – Rear		
Short Wheelbase	1900 mm (6.2 ft.)	2100 mm (6.9 ft.)
Long Wheelbase	2500 mm (8.2 ft.)	2500 mm (8.2 ft.)
F Width		
700-Series Tires	2956 mm (9.7 ft.)	3090 mm (10.1 ft.)
800-Series Tires	3086 mm (10.1 ft.)	N/A
Turning Angle	44 deg.	42 deg.
Outer Turning Radius – 700-Series Tires		
Short	8180 mm (26.8 ft.)	9422 mm (30.9 ft.)
Medium	8764 mm (28.7 ft.)	N/A
Long	9652 mm (31.7 ft.)	10 160 mm (33.3 ft.)
Inner Turning Radius – 700-Series Tires		
Short	4700 mm (15.4 ft.)	3090 mm (10.1 ft.)
Medium	5140 mm (16.9 ft.)	N/A
Long	5804 mm (19.0 ft.)	6222 mm (20.4 ft.)
Transport Height	3800 mm (12.5 ft.)	4039 mm (13.2 ft.)
G Ground Clearance – 8W	660 mm (26.0 in.)	803 mm (31.6 in.)
Tires		
Front – 6W / 8W	34–14 / 26.5–20	34–16 / 26.5–20
Rear	26.5–20	26.5–20
Minimum Machine Weight		
6W	16 330 kg (36,001 lb.)	19 485 kg (42,957 lb.)
8W	18 230 kg (40,190 lb.)	22 227 kg (49,002 lb.)
Approach Angle – 8W	35 deg.	39 deg.
Load-Space Options*		
Length (D+E)		
Short Wheelbase	4500 mm (14.8 ft.)	5635 mm (18.5 ft.)
Long Wheelbase	5700 mm (18.7 ft.)	4735 mm (15.5 ft.)
Variable Load Space (VLS)	4500 mm (14.8 ft.)	4735 mm (15.5 ft.)
Load-Space Width		
Minimum / Maximum	2700 mm (8.9 ft.) / 3406 mm (11.2 ft.)	2950 mm (9.7 ft.) / 3610 mm (11.8 ft.)
VLS	2750–3390 mm (9.0–11.1 ft.)	2963–3603 mm (9.7–11.8 ft.)
Cross-Sectional Area	4.0–5.3 m^2 (43.0–57.0 sq. ft.)	5.5–6.8 m^2 (59.2–73.2 sq. ft.)
VLS	4.3–5.3 m^2 (46.3–57.0 sq. ft.)	5.4–6.6 m^2 (58.1–71.0 sq. ft.)

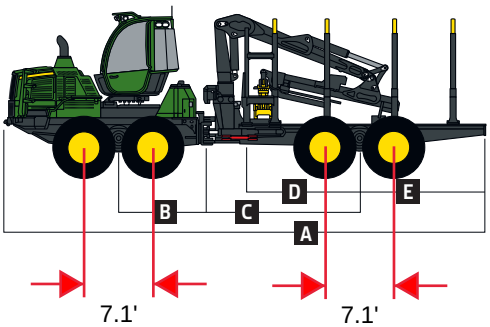
1510G



Front



1910G



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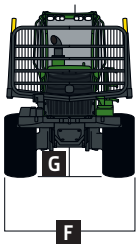


*Please note that measurements are guidelines only and may vary depending on production tolerances. Machine not exactly as shown. Illustrations for planning purposes only.


Ground contact of equipment:
Banded tracks - length from axle to axle
Assume smallest width tires at 28" (2.3')
1510G: 6.2' x 2.3' = 14.26sf x 2 sets = 28.52sf (4,107sq. in)
1910G: 7.1' x 2.3' = 16.33sf 2 sets = 32.66sf (4,703sq. in)
JOHN DEERE
JohnDeere.com/forestry
Ground pressure unloaded and loaded:
1510G unloaded: 40,190# / 4,107sq. in = 9.8 psi
1510G loaded: (40,190# + 33,069#) / 4,107sq. in = 17.8 psi
1910G unloaded: 49,002# / 4,703sq. in = 10.4 psi
1910G loaded: (49,002# + 41,888#) / 4,703sq. in = 19.3 psi
TO FIND SUCCESS IN THE FOREST,
YOU CAN WAIT FOR THE PERFECT SET OF CONDITIONS.
Or give yourself every advantage to create your own.
Productive machines. Innovative technology. Useful insights. Dependable support.
The obstacles to success are many. John Deere helps you
OUTRUN™ THEM ALL.
DKB5056 Litho in U.S.A. (19-06)

Appendix B

A. STATEMENT OF "NO OBJECTION"

GREATER HARTFORD FLOOD COMMISSION

50 Jennings Road, 2nd Floor
Hartford, Connecticut 06103
Telephone: (860) 757-9975 Fax: (860) 722-6251

August 4, 2021

Kevin J. DiRocco, P.E.
Levee Safety Program Manager
U.S. Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742

RE: USACE Section 408 - Statement of No Objection
Connecticut Airport Authority
Hartford – Brainard Airport Vegetation Clearing Activities

Dear Mr. DiRocco;

The section 408 approval process which allows for alterations to a flood reduction system constructed by the United States Army Corps of Engineers (USACE) requires a statement of no objection from the local sponsor. The Greater Hartford Flood Commission (GHFC) / City of Hartford, which is the local sponsor for the Connecticut River Right Bank System, has been approached by the Connecticut Airport Authority (CAA) concerning a safety related project which will have impacts on the operation and maintenance of the flood reduction system.

The CAA is seeking permission to remove vegetative obstructions from navigable air space associated with the Hartford-Brainard Airport (HFD). The removal of the vegetative obstructions is required to meet Federal Aviation Administration's (FAA) regulations which will improve the operational safety at the airport. The CAA is seeking permission to utilize a portion of the Clark Dike and its associated right of way for vehicle access required to remove areas of vegetation located at multiple areas along the Clark Dike. The area of vegetation removal involves approximately 30 acres of forested land within the Connecticut River flood plain. Elements of the work will occur within the flood reduction system right of way. The vegetation removal will consist of three main work types including: mechanical tree felling utilizing flush and snag cuts (trees cut at 10' to 15' heights) as well as non-mechanical topping / trimming of trees. No grubbing operations of tree stumps / roots or herbicide applications are currently being proposed. The CAA's contractor will utilize elements of the levee system right of way to access the work areas, as well as remove and dispose of the cut vegetation.

The GHFC understands and appreciates the public benefit of the project to improve the safety of the airport operations. Based on information provided by the CAA, the GHFC has no objections with beginning the required Section 408 approval process associated with the vegetation obstruction removal efforts. The statement of no objection does not relieve the applicant for the need to secure all of the necessary Federal, State and local permits. It is anticipated that a formal application to the GHFC and a certificate of approval will be required for the project. Any approval by the GHFC will be contingent on the applicant incorporating the appropriate measures to protect the flood reduction system and secure the appropriate legal rights to access the levee system.

We envision that any GHFC approval process would be conducted concurrently with the USACE's Section 408 approval process. The applicant should contact the Connecticut Department of Energy and Environmental Protection Dam Safety (CT DEEP Dam Safety) unit to determine if a dam safety permit is required. The GHFC will coordinate our review and approval process with the USACE and the CT DEEP Dam Safety.

Do not hesitate to contact our office if you require any additional information from the GHFC in order to commence the Section 408 process. The GHFC appreciates your continued cooperation on matters related to the flood reduction system and public safety improvements.

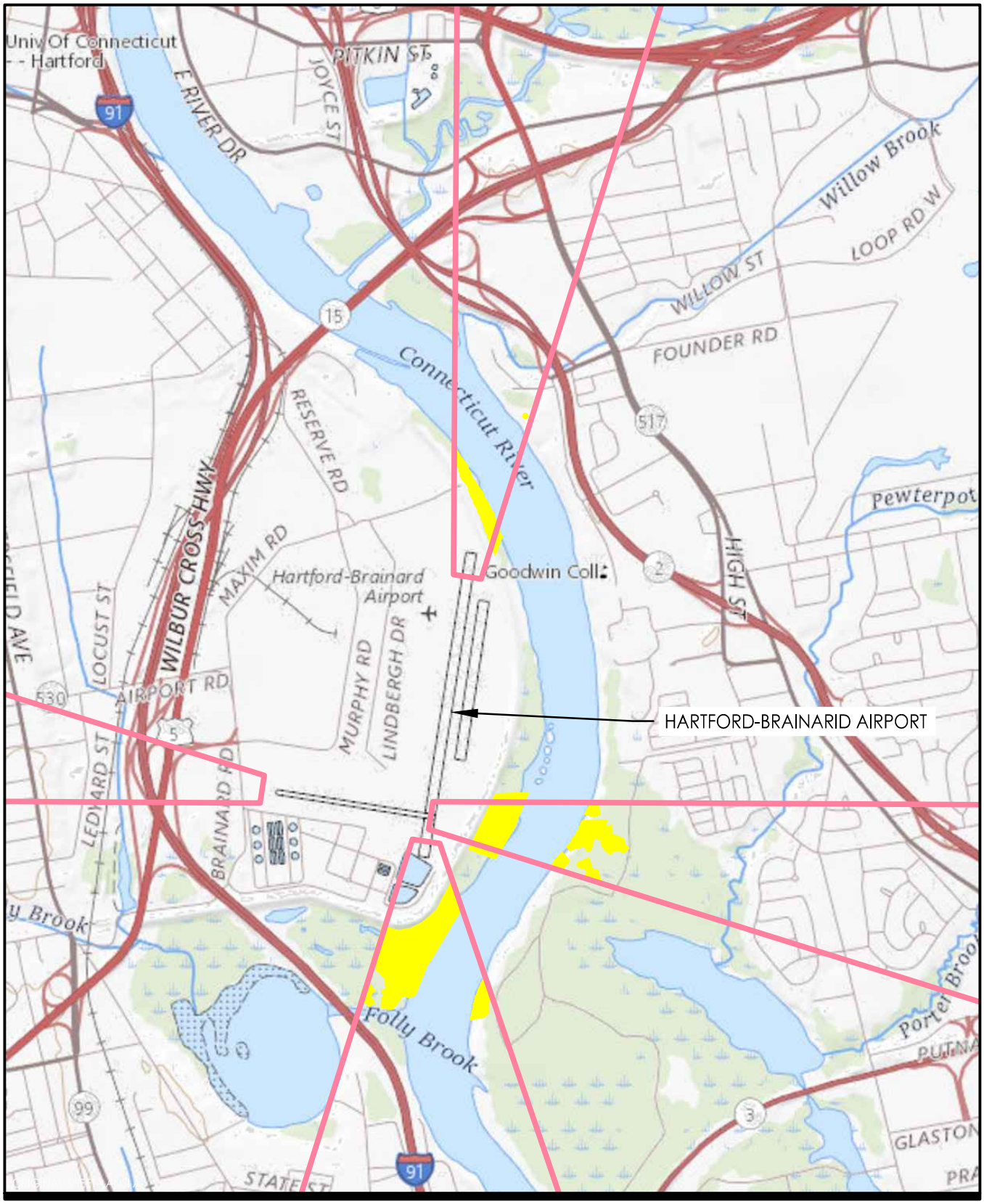
Sincerely,

Frank Dellaripa, P.E.
City Engineer / Director, Greater Hartford Flood Commission

cc: Mike McGarry, Chairmen Greater Hartford Flood Commission
Charles Lee, Assist. Director Bureau of Water Protection & Land Reuse, CT DEEP
Randall Christensen, Senior Environmental Scientist, Stantec
Molly Guyer, Connecticut Airport Authority
Jim Del Visco, Assistant Corporation Counsel, City of Hartford

Appendix C

A. DRAWINGS AND TYPICAL CONSTRUCTION DETAILS



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7/26/2021 3:27 PM

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0 2000' 4000'

CAA
CONNECTICUT AIRPORT AUTHORITY

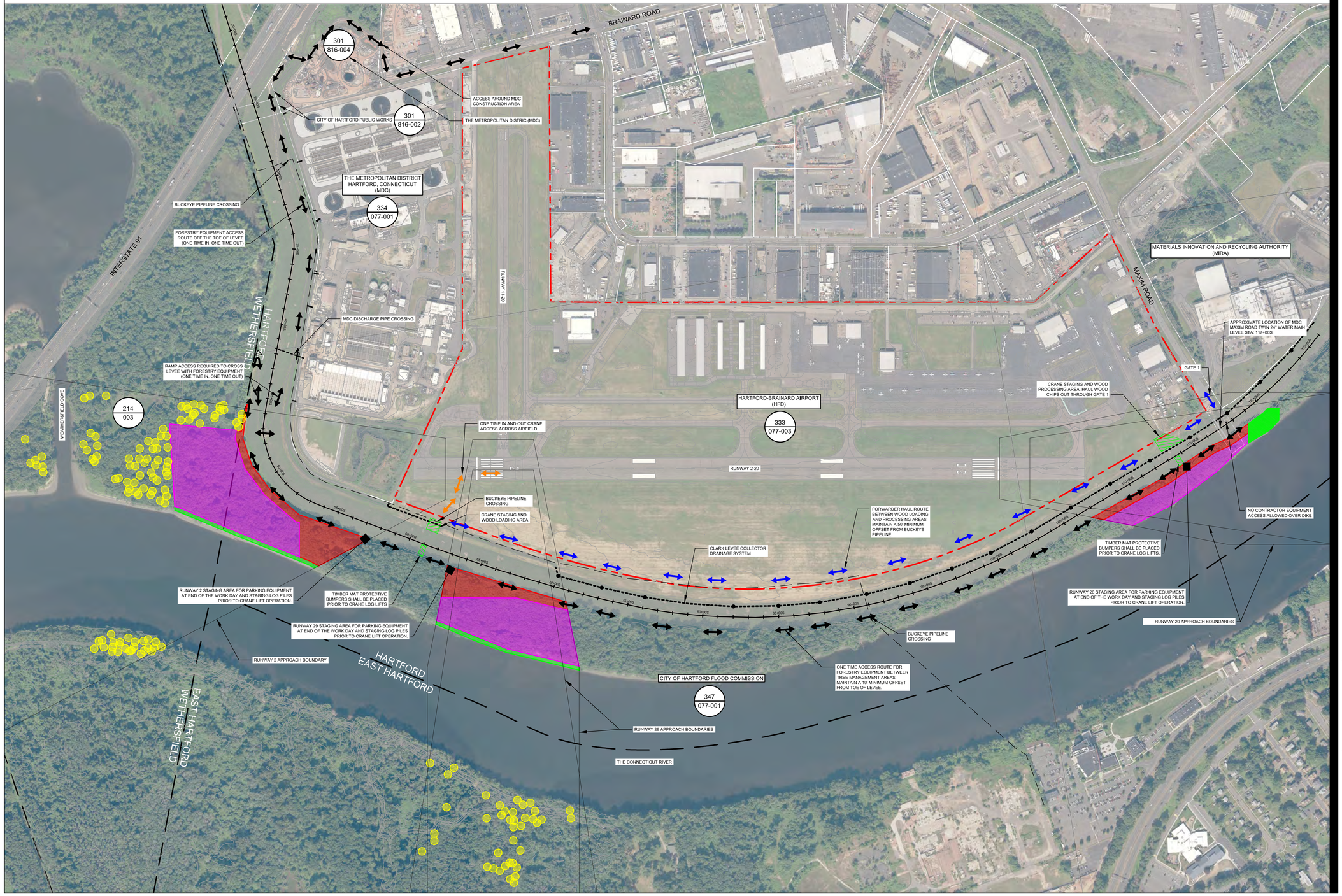
Client/Project
HARTFORD-BRAINARD AIRPORT
2021 - PROJECT SKETCH

Figure No.
1.0

Title
OBSTRUCTION REMOVALS

NOTES:

1. THE ENTIRE AIRPORT PROPERTY AND CITY OF HARTFORD PROPERTY SHOWN ON THIS PLAN ALONG WITH ALL WORK AREAS AND ACCESS/HAUL ROUTES ARE WITHIN "LAND AREA BELOW ELEVATION 30.0 FT NGVD CONNECTICUT RIVER FLOOD ZONE A (100 YEAR)" ACCORDING TO THE CITY OF HARTFORD FLOOD CONTROL MAP.
2. BLUESKY INTERNATIONAL LTD. PREPARED TOPOGRAPHIC MAPPING USING HIGH RESOLUTION DIGITAL STEREO AERIAL PHOTOGRAPHY. DATUMS: HORIZONTAL CONNECTICUT STATE PLANE NAD 83 (NSRS 2011), VERTICAL NAVD88 GEIOD 12B. UNITS: US SURVEY FEET.
3. ALL UTILITY CROSSINGS WILL BE PROTECTED TO THE OWNERS SPECIFICATIONS.



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LEGEND

- AIRPORT PROPERTY LINE
- ABUTTER PROPERTY LINE
- TOWN/CITY LINE
- MECHANIZED FELLING - FLUSH CUT 6.1 ACRES
- MECHANIZED FELLING - SNAG CUT 17.6 ACRES
- CLIMBING - TOPPING 1.8 ACRES
- CLIMBING - PRUNE CUT
- ACCESS ROUTE: FORESTRY EQUIPMENT - BLACK; CRANE - ORANGE; FORWARDERS - BLUE
- CONTRACTOR STAGING AREA
- 123 / 456-789 PARCEL I.D.

N

0 300' 600'

Revision	By	Appd.	YY.MM.DD

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File Name: Equipment Access and Layout Plan.dwg — Dwn. | Chkd. | Dsgn. | YY.MM.DD

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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
EQUIPMENT ACCESS AND STAGING PLAN FOR VEGETATION REMOVAL

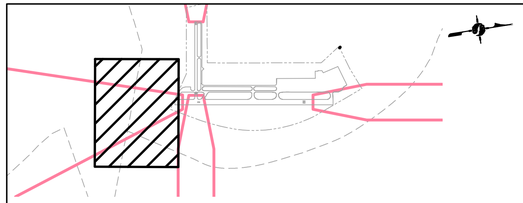
Project No. 179450287

Scale AS NOTED

Sheet 1 of 1

Revision

ORIGINAL SHEET - ARCH D



KEY PLAN
SCALE: 1"=2,000'

THE METROPOLITAN DISTRICT
HARTFORD, CONNECTICUT
(MDC)

HARTFORD-BRAINARD AIRPORT
(HFD)

45+00S

50+00S

55+00S

60+00S

HARTFORD
WETHERSFIELD

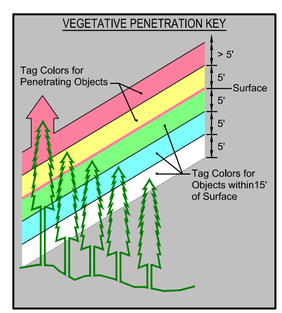
HARTFORD
EAST HARTFORD

US ARMY CORPS OF ENGINEERS
SLARK DIKE

25' WIDE VEGETATION
REMOVAL ZONE

AIRSPACE ANALYSIS
20:1 OFFSET TERPS APPROACH
SURFACE

VEGETATIVE PENETRATION KEY



LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- MECHANIZED FELLING - FLUSH CUT AREA 2.8 ACRES
- MECHANIZED FELLING - SNAG CUT AREA 9.0 ACRES
- CLIMBING - TOPPING AREA 0.6 ACRES
- CLIMBING - PRUNING TREE COUNT
- D — AS DIRECTED BY EASEMENT LANGUAGE
- STATE WETLAND
- FEDERAL AND STATE WETLAND

0 100' 200'

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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 2

VEGETATION MANAGEMENT PLAN

Project No.	Scale	
179450287	AS NOTED	
	Sheet	Revision
	1 of -	

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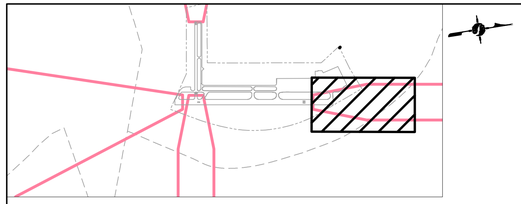


KEY PLAN
SCALE: 1"=2,000'

HARTFORD-BRAINARD AIRPORT
(HFD)

115+00S
120+00S
125+00S
110+00S
105+00S
100+00S

HARTFORD
EAST HARTFORD

50' WIDE VEGETATION REMOVAL ZONE

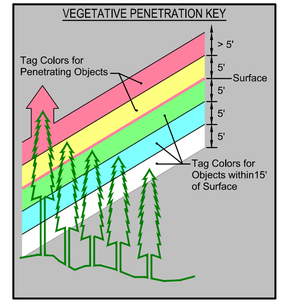
AIRSPACE GEOMETRY DIFFERENCE BETWEEN SITING AND TERPS SURFACE TYPICAL OF BOTH SIDES

AIRSPACE ANALYSIS
20:1 TREPS SURFACE

AIRSPACE ANALYSIS
20:1 SITING APPROACH SURFACE

US ARMY CORPS OF ENGINEERS
CLARK DIKE

VEGETATIVE PENETRATION KEY



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LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- MECHANIZED FELLING - FLUSH CUT AREA 1.3 ACRES
- MECHANIZED FELLING - SNAG CUT AREA 2.6 ACRES
- CLIMBING - TOPPING AREA 0.6 ACRES
- CLIMBING - PRUNING
- STATE WETLAND
- FEDERAL AND STATE WETLAND

0 100' 200'

Revision	By	Appd.	YY.MM.DD

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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 20

VEGETATION MANAGEMENT PLAN

Project No.
179450287

Scale
AS NOTED

Sheet

Revision

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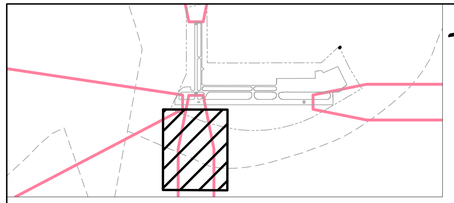


KEY PLAN
SCALE: 1"=2,000'

HARTFORD-BRAINARD AIRPORT
(HFD)

75+00S

70+00S

60+00S

65:20

HARTFORD
EAST HARTFORD

25' WIDE VEGETATION REMOVAL ZONE

AIRSPACE ANALYSIS
20:1 TERPS SURFACE

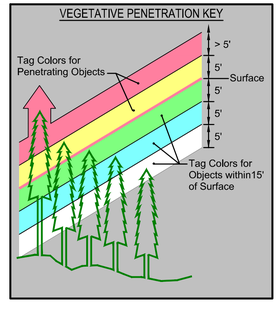
50' WIDE VEGETATION REMOVAL ZONE

US ARMY CORPS OF ENGINEERS
CLARK DIKE

AIRSPACE ANALYSIS
20:1 OBSTACLE SITING SURFACE

AIRSPACE GEOMETRY DIFFERENCE BETWEEN OBSTACLE SITING AND TERPS SURFACE. TYPICAL BOTH SIDES

VEGETATIVE PENETRATION KEY



ORIGINAL SHEET - ARCH D

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LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- MECHANIZED FELLING - FLUSH CUT AREA 2.0 ACRES
- MECHANIZED FELLING - SNAG CUT AREA 6.0 ACRES
- CLIMBING - TOPPING AREA 0.6 ACRES
- CLIMBING - PRUNING
- STATE WETLAND
- FEDERAL AND STATE WETLAND

N

0 100' 200'

Revision	By	Appd.	YY.MM.DD

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HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

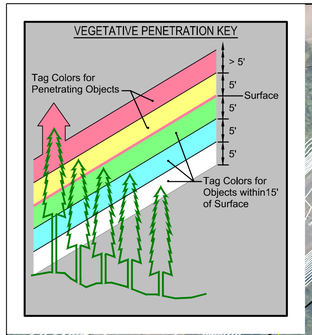
Title
RUNWAY 29

VEGETATION MANAGEMENT PLAN

Project No.
179450287

Scale
AS NOTED

Sheet | Revision



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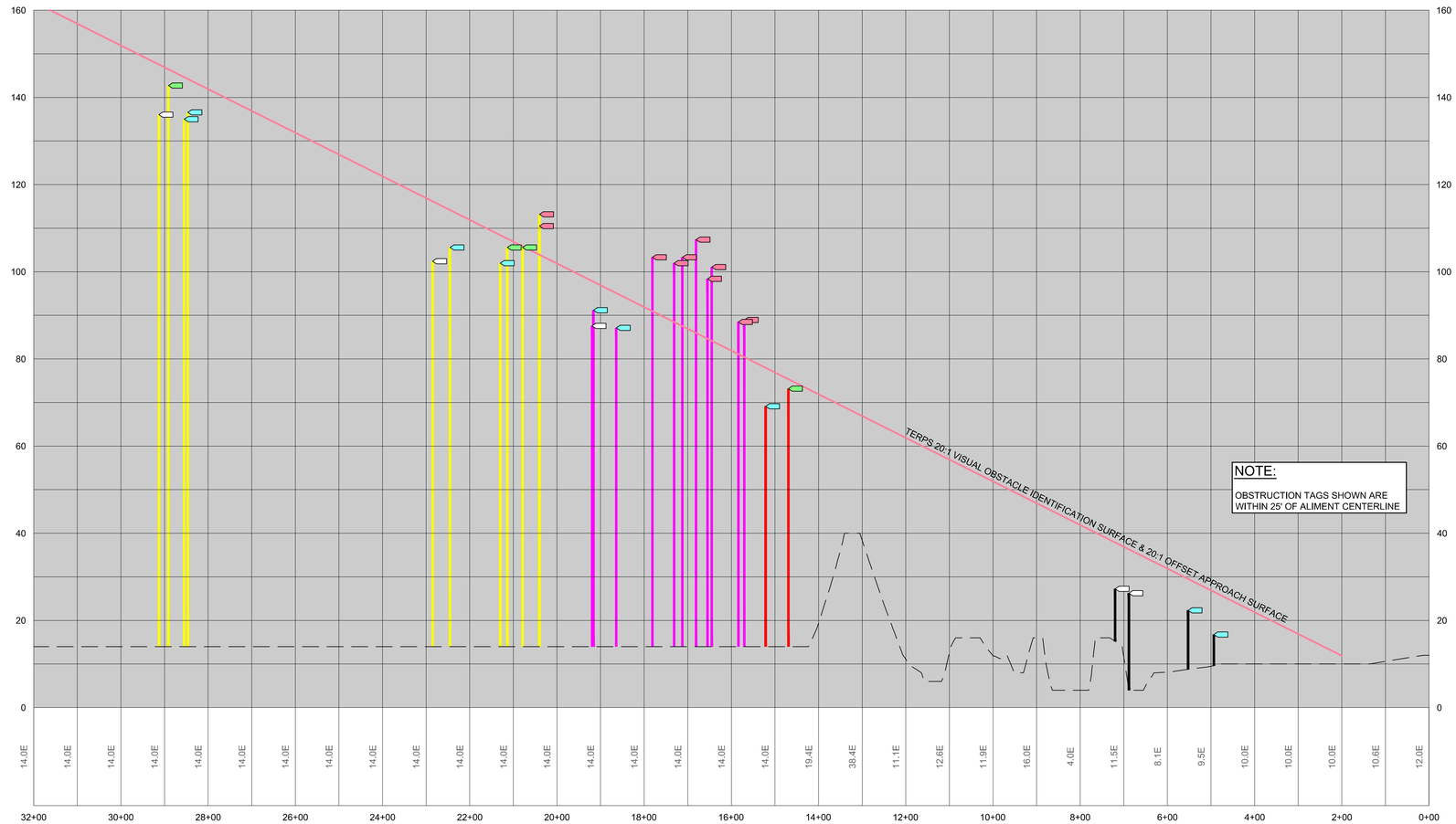

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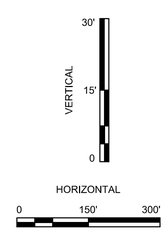

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LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- EXISTING CONTOUR
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- MECHANIZED FELLING - FLUSH CUT
- MECHANIZED FELLING - SNAG CUT
- CLIMBING - TOPPING
- CLIMBING - PRUNING
- 214/03 PROPOSED EASEMENT (MAP/LOT)

0 150' 300'

Revision	By	Appd.	YY.MM.DD
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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 2
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 1 OF 3

Project No. 195211210
Scale AS NOTED
Sheet
Revision

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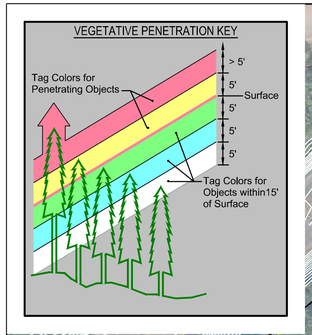

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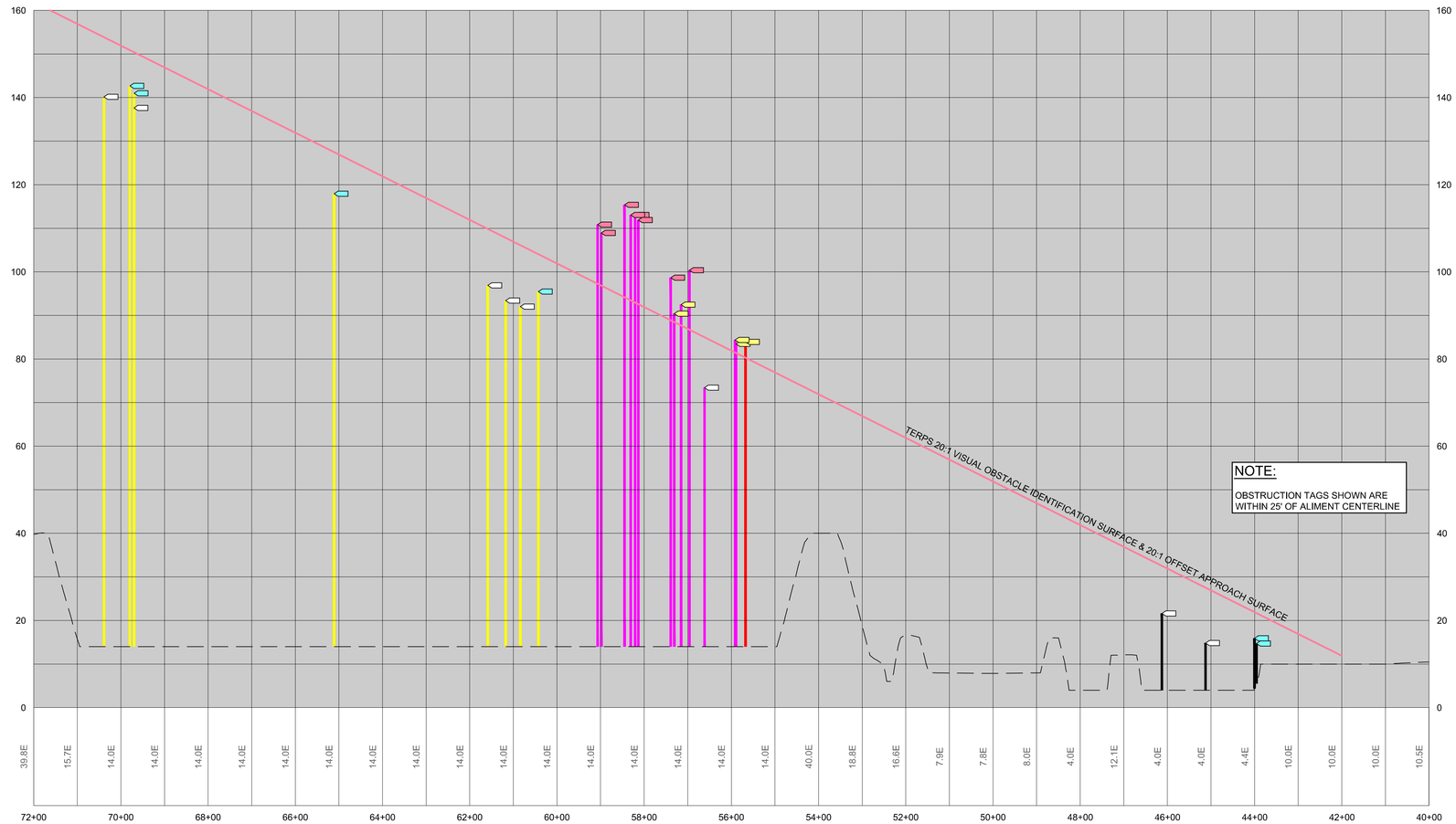

RUNWAY 2 - 200' RIGHT PROFILE

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LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- EXISTING CONTOUR
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- MECHANIZED FELLING - FLUSH CUT
- MECHANIZED FELLING - SNAG CUT
- CLIMBING - TOPPING
- CLIMBING - PRUNING
- 214/03 PROPOSED EASEMENT (MAP/LOT)

0 150' 300'

Revision	By	Appd.	YY.MM.DD
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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 2
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 2 OF 3

Project No. 195211210
Scale AS NOTED
Sheet
Revision

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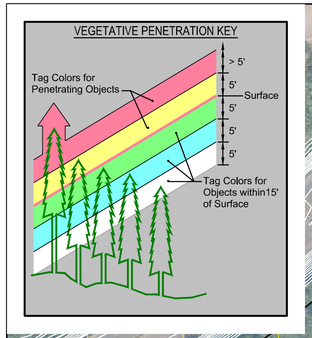

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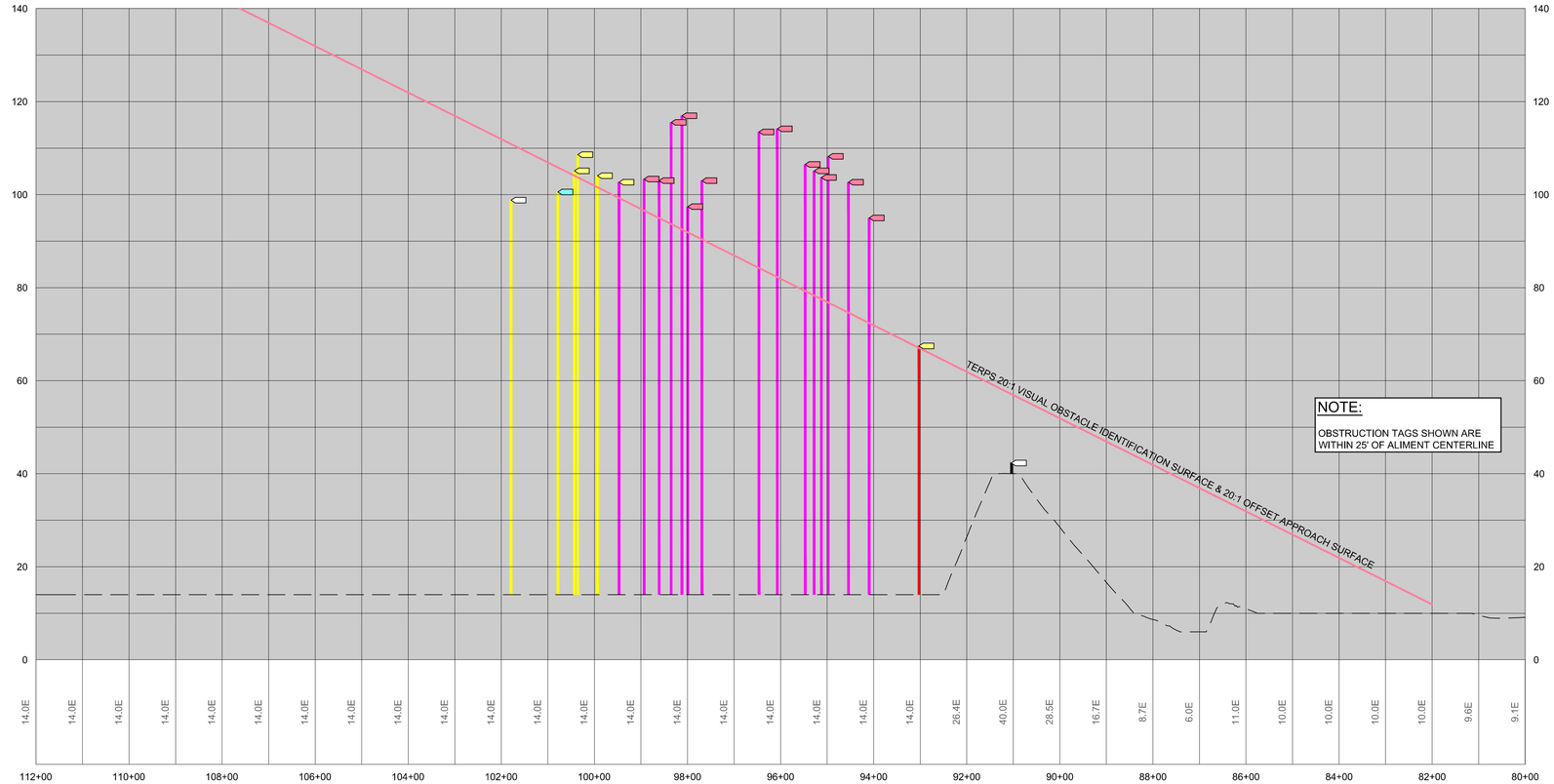

RUNWAY 2 - 200' LEFT PROFILE

LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- EXISTING CONTOUR
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- MECHANIZED FELLING - FLUSH CUT
- MECHANIZED FELLING - SNAG CUT
- CLIMBING - TOPPING
- CLIMBING - PRUNING
- 214/03 PROPOSED EASEMENT (MAP/LOT)

0 150' 300'

ORIGINAL SHEET - ARCH D

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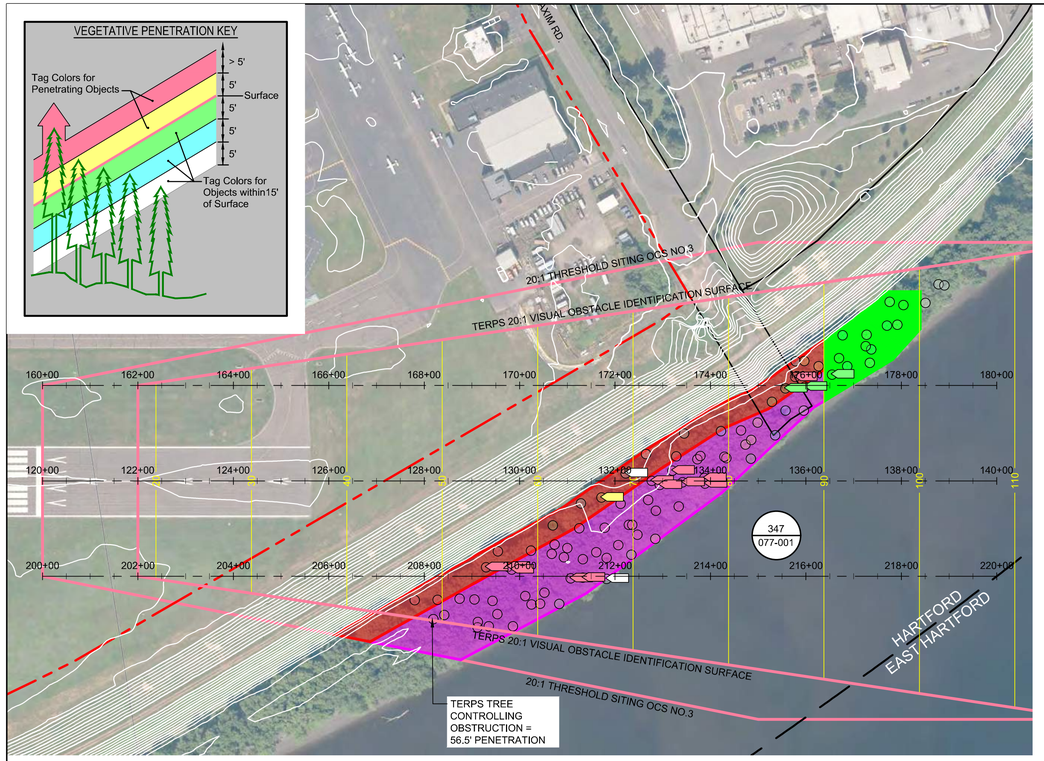
Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 2
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 3 OF 3

Project No. 195211210
Scale AS NOTED
Sheet
Revision



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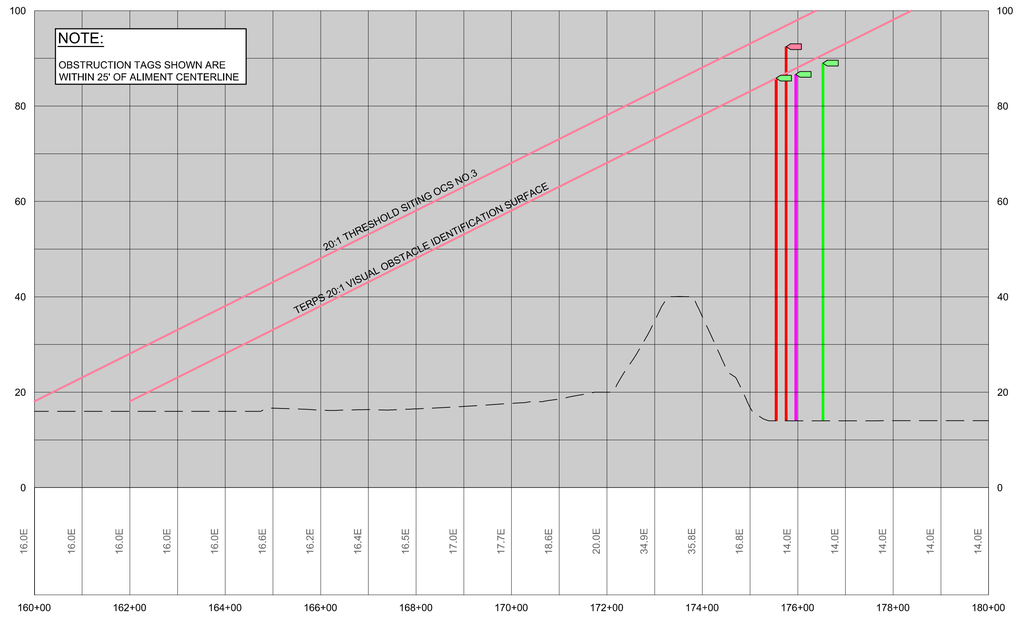

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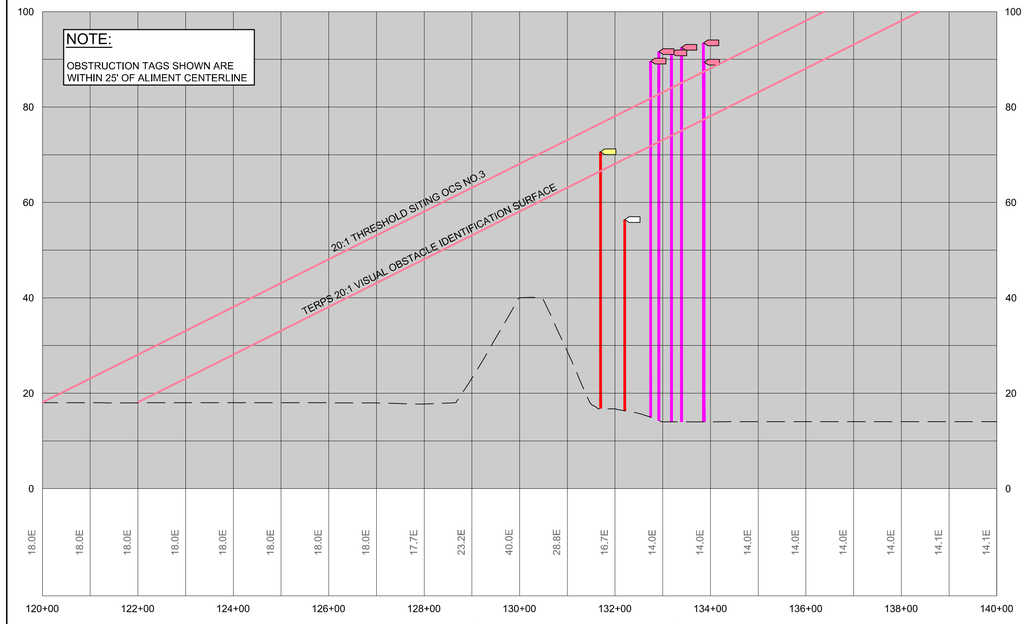

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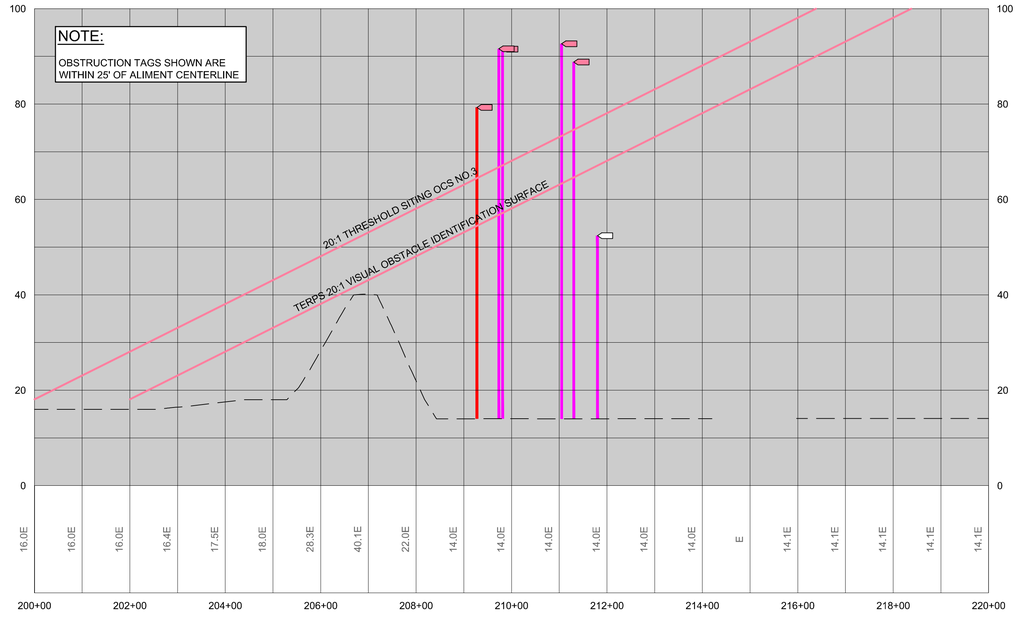

RUNWAY 20 - 200' RIGHT PROFILE

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LEGEND
- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- EXISTING CONTOUR
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- MECHANIZED FELLING - FLUSH CUT
- MECHANIZED FELLING - SNAG CUT
- CLIMBING - TOPPING
- CLIMBING - PRUNING
- 214/03 PROPOSED EASEMENT (MAP/LOT)

N

0 150' 300'

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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 20
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 1OF 1

Project No. 195211210
Scale AS NOTED
Sheet
Revision

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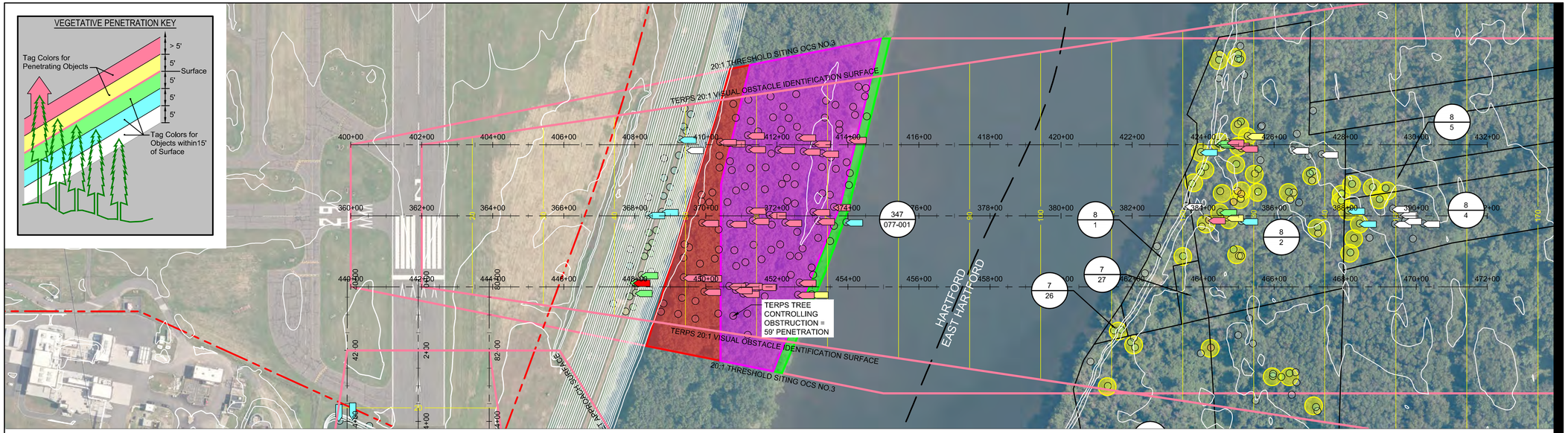

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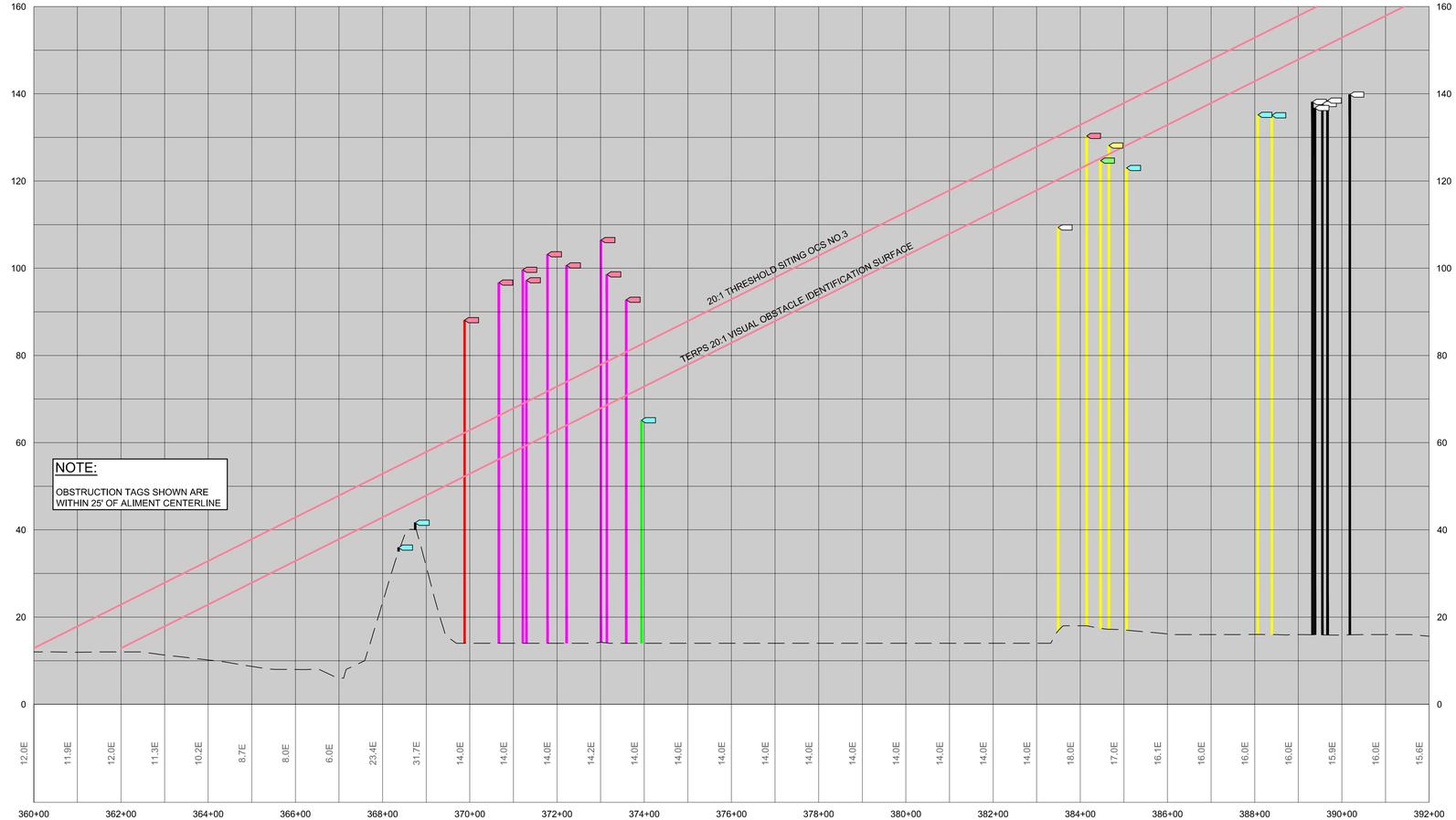

RUNWAY 29 - CENTERLINE PROFILE

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- MECHANIZED FELLING - SNAG CUT
- CLIMBING - TOPPING
- CLIMBING - PRUNING
- 214 / 03 — PROPOSED EASEMENT (MAP/LOT)

N

0 150' 300'

Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD

File Name: sht_01_to_08_terps_pln_n_profile.dwg — Dwn. Chkd. Dsgn. YY.MM.DD

Permit-Seal

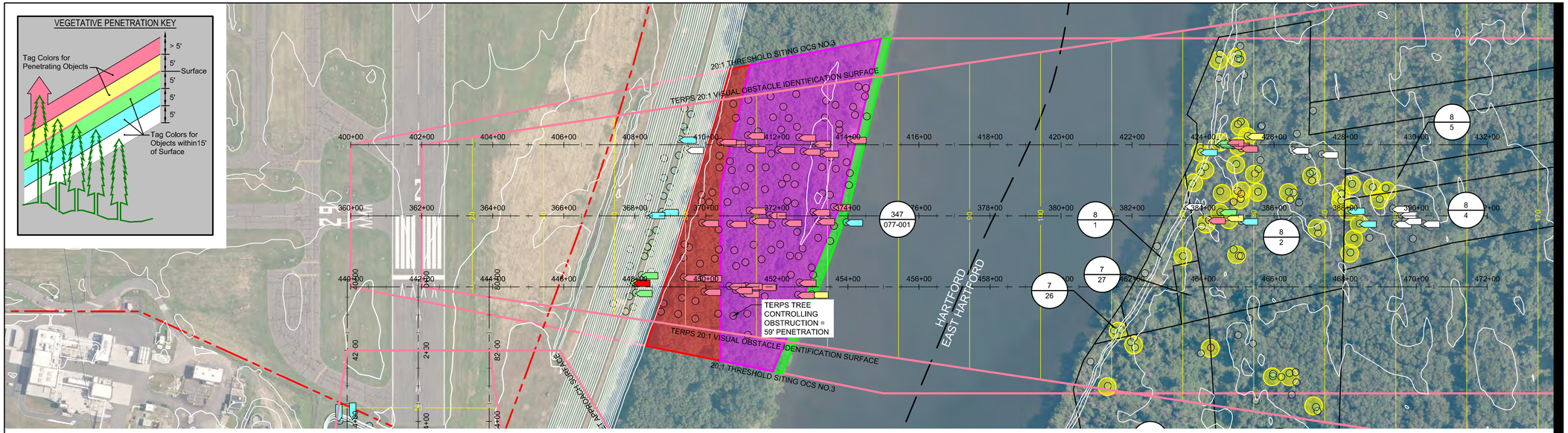
Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

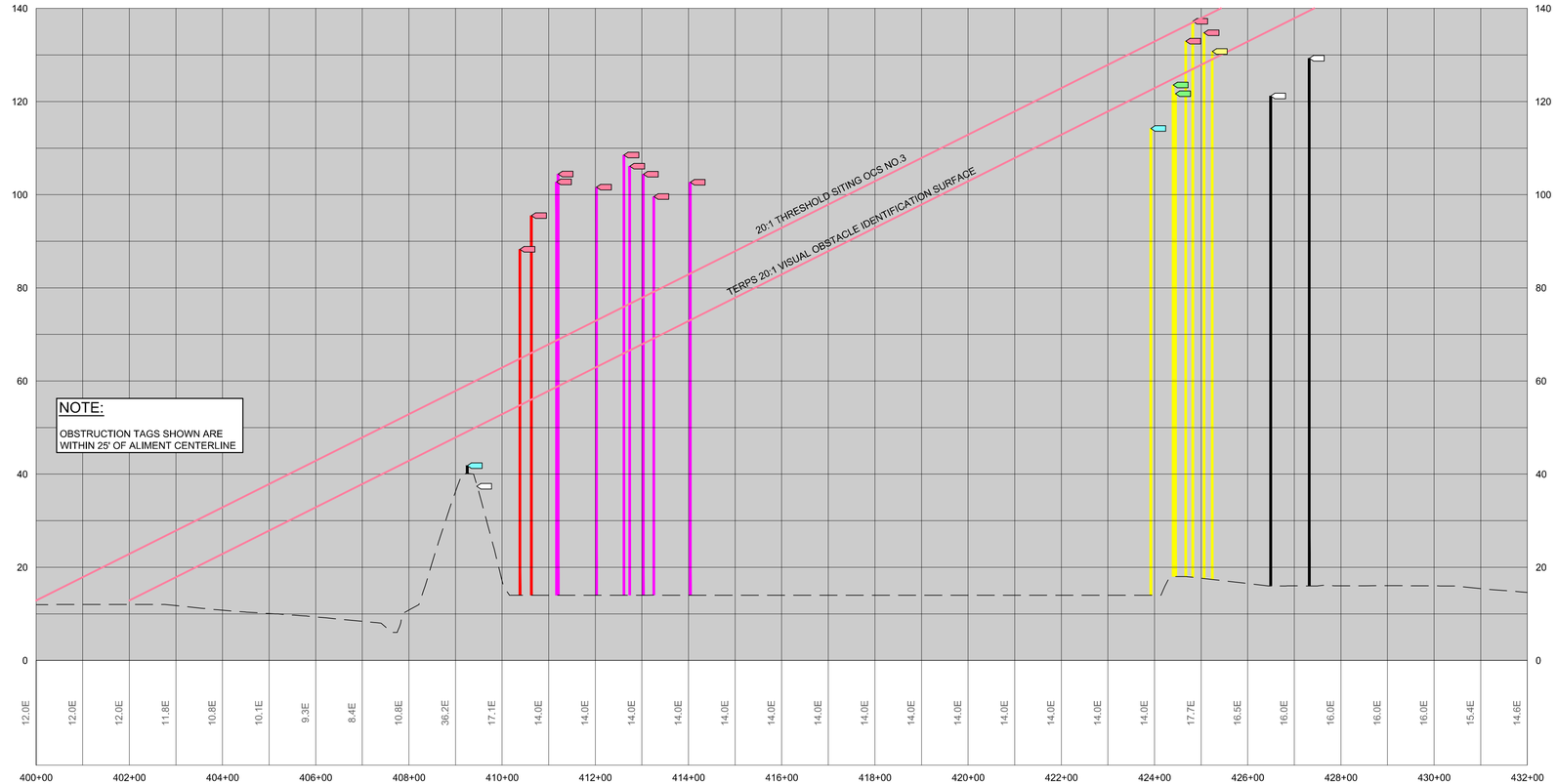
Title
RUNWAY 29
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 1 OF 3

Project No. 195211210
Scale AS NOTED
Sheet
Revision

ORIGINAL SHEET - ARCH D



RUNWAY 29



RUNWAY 29 - 200' LEFT PROFILE

Stantec

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482 Payne Road
Scarborough ME 04074 U.S.A.
Tel. 207.883.3355
Fax. 207.883.3376
www.stantec.com

Consultants

LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- EXISTING CONTOUR
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- MECHANIZED FELLING - FLUSH CUT
- MECHANIZED FELLING - SNAG CUT
- CLIMBING - TOPPING
- CLIMBING - PRUNING
- 214/03 PROPOSED EASEMENT (MAP/LOT)

N

0 150' 300'

Revision	By	Appd.	YY.MM.DD
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File Name: sht_01_to_08_terps_pln_n_profile.dwg
Dwn. Chkd. Dsgn. YY.MM.DD

Permit-Seal

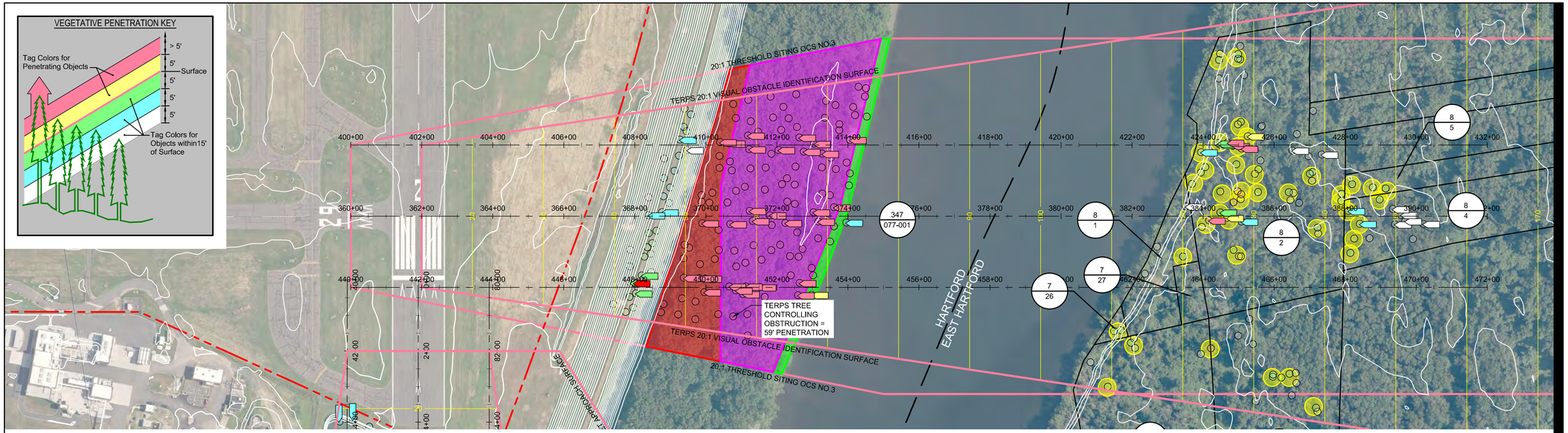
Client/Project
HARTFORD-BRAINARD AIRPORT

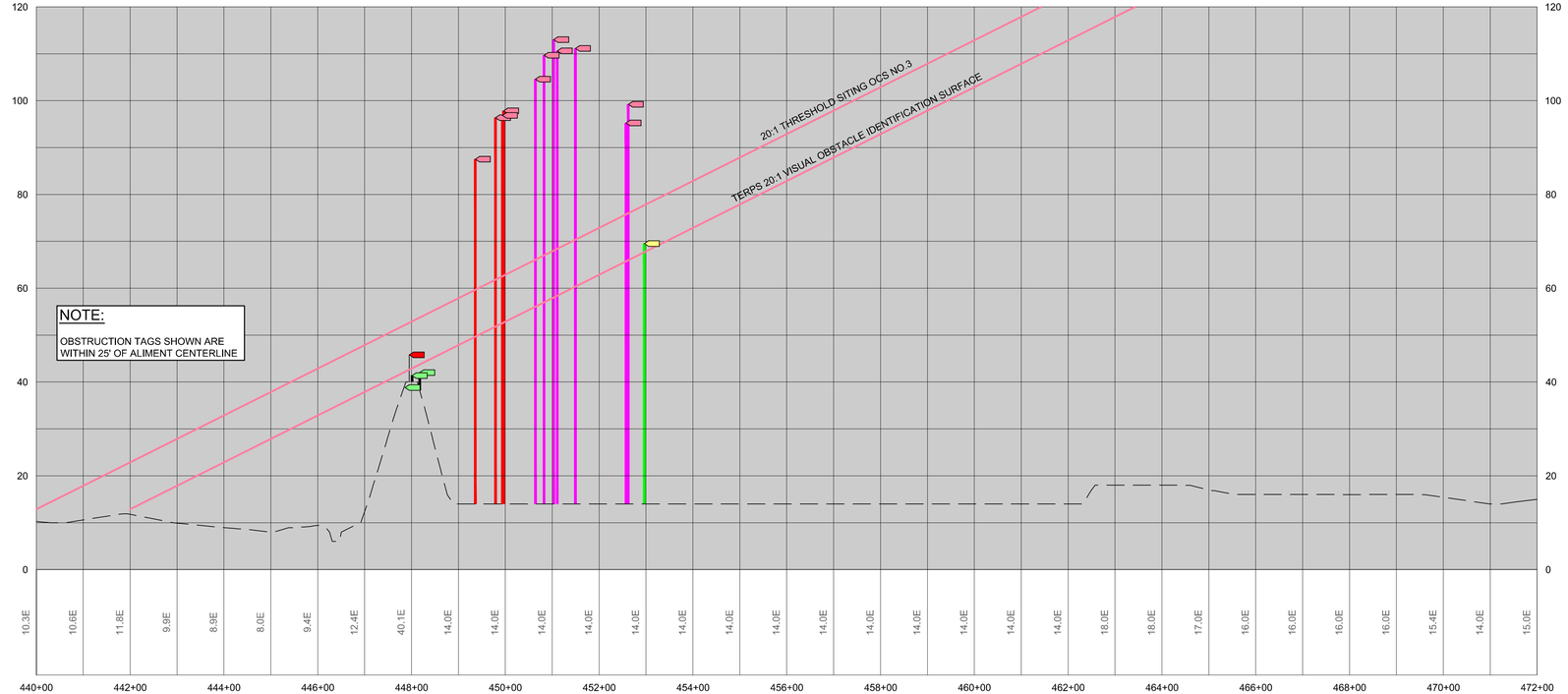
HARTFORD, CONNECTICUT

Title
RUNWAY 29
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 2 OF 3

Project No. 195211210
Scale AS NOTED
Sheet Revision

ORIGINAL SHEET - ARCH D





RUNWAY 29 - 200' RIGHT PROFILE

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LEGEND

- AIRPORT PROPERTY LINE
- ABUTTERS PROPERTY LINE
- TOWNLINE
- EXISTING CONTOUR
- AIRSPACE SURFACE
- AIRSPACE SURFACE CONTOUR
- VEGETATIVE OBSTRUCTION ID TAG (REFER TO VEGETATIVE PENETRATION KEY)
- NON-VEGETATIVE OBSTRUCTION ID TAG (ACTUAL OBSTRUCTIONS > 0' ABOVE SURFACE)
- MECHANIZED FELLING - FLUSH CUT
- MECHANIZED FELLING - SNAG CUT
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- CLIMBING - PRUNING
- 214/03 PROPOSED EASEMENT (MAP/LOT)

N

0 150' 300'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: sht_01_to_08_terps_pln_n_profile.dwg
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Permit-Seal

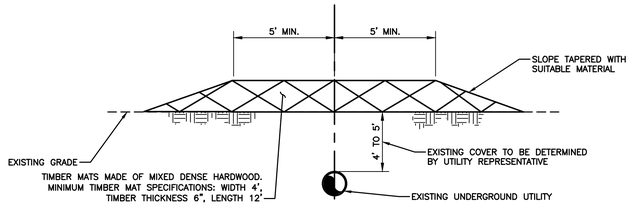
Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
RUNWAY 29
TERPS 20:1 VISUAL AREA OBSTACLE IDENTIFICATION SURFACE (VA-OIS)
PLAN AND PROFILE - SHEET 3 OF 3

Project No. 195211210
Scale AS NOTED
Sheet
Revision

ORIGINAL SHEET - ARCH D

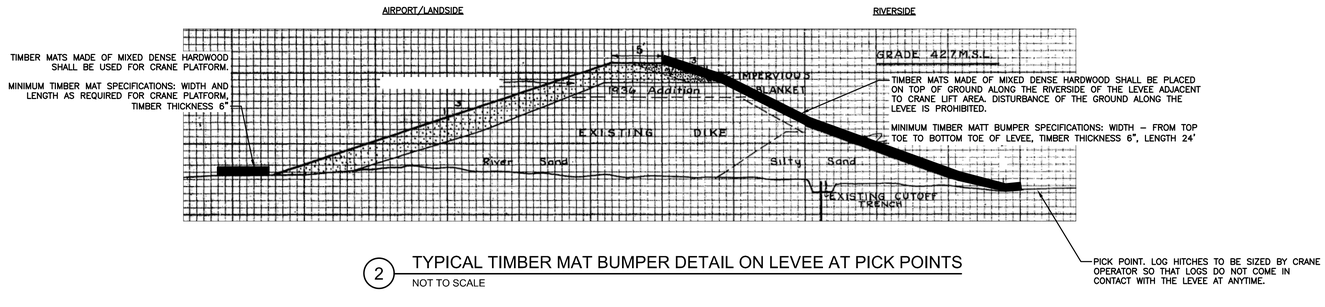


1 TEMPORARY CONSTRUCTION RAMP OVER UTILITIY PIPELINE

NOT TO SCALE

NOTES:

1. RAMP SHALL BE 15 FOOT PLUS/MINUS WIDE WITH SIDES TAPERED ON A MINIMUM 1:1 SLOPE.



2 TYPICAL TIMBER MAT BUMPER DETAIL ON LEVEE AT PICK POINTS

NOT TO SCALE

ORIGINAL SHEET - ARCH D

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Client/Project
HARTFORD-BRAINARD AIRPORT

HARTFORD, CONNECTICUT

Title
DETAILS

Project No.
179450287

Scale
AS NOTED

Sheet

Revision

Appendix D

A. FLOOD CONTINGENCY PLAN

Flood Contingency Plan

Removal of Vegetative Obstructions at
Hartford-Brainard Airport

Hartford, CT

August 2021

Prepared for:

Connecticut Airport Authority (CAA)
334 Ella Grasso Turnpike
Windsor Locks, CT 06096

Prepared by:

Stantec Consulting Services, Inc.
3 Columbia Circle, Suite 6
Albany, NY 12203-5158

Table of Contents

LIST OF APPENDICES

1.0 PURPOSE AND OVERVIEW

The Connecticut Airport Authority's (CAA) selected construction CONTRACTOR (insert CONTRACTOR name), hereafter "CONTRACTOR", is required to submit a completed Flood Contingency Plan (FCP or Plan) prior to start of construction.

This FCP has been developed for use during construction in order to minimize the potential for damage to the City of Hartford's (City's) flood control system, and minimize impairment of the City's ability to control flooding that may occur during the completion of the Vegetation Removal Project (Project). During a flood event, excavations within the levee right-of-way (ROW) may result in a shortened seepage path, and thus the potential for boils or seepage to appear within these excavations is typically the primary area of concern addressed in a FCP. This Project has no existing or proposed excavations and therefore, the FCP primary area of concern addressed in this FCP is construction access.

The CAA's hired CONTRACTOR shall construct the Project, and to whom various responsibilities will be assigned under the terms of the construction contract, and as outlined in this FCP.

This project will require vegetation removal work within the Floodway of the Connecticut River. Access to the vegetation removal areas will be via access roads within the levee ROW, or outside the levee ROW but are used and maintained by the City.

The object of this FCP is to minimize the potential for construction activities to create additional flood risks within the levee protected area or damage the levee system as a result of construction access, vegetation removal and other construction activities.

Vegetation removal will consist of four different removal techniques depending on the tree location relative to the trees encroachment to the Airport's approach surfaces. These techniques include mechanical felling at flush cut and snag cut. The flush cut being within a foot of ground level and snag cut which leaves a standing stump 12' to 15' above the ground. Forestry climbing techniques of topping and prune cuts will also be utilized.

This FCP is an integral part of the construction contract for the CAA's Vegetation Removal Project, and its requirements will be carried by the parties designated herein.

2.0 ROLES AND RESPONSIBILITIES

Connecticut Airport Authority (CAA)

CAA is the owner of the Hartford-Brainard Airport that will be sponsoring the Vegetation Removal Project, and the permittee under the USACE Section 408 process and CT DEEP.

- CAA will assign certain responsibilities herein to, and will ensure that, the selected CONTRACTOR(s) follow the requirements of all permit approvals and the requirements/conditions of this Plan.

- CAA will provide engineering/construction monitoring services in accordance with permit conditions. The engineering/construction monitoring firms or employees will observe the work performed by the CONTRACTOR and will report relevant data to CAA, City of Hartford, USACE and CT DEEP.

- CAA will coordinate with the City regarding implementation of this Plan, and will convey all reasonable requests made by the City to its CONTRACTOR.

- CAA may seek assistance with certain responsibilities from its Engineer (currently Stantec Consultants) or other consultants as outlined in this plan and in the USACE 408 application documents.

(*Insert* CONTRACTOR) "CONTRACTOR"
CONTRACTOR is responsible for constructing the Vegetation Removal Project.

- CONTRACTOR will inform all SUBCONTRACTORs about this FCP and ensure they work with the CONTRACTOR's team to meet their requirements.

- CONTRACTOR will provide training to key supervisory personnel who will be overseeing the construction activities within and adjacent to the flood control system. Training will include an overview of the FCP, designated on-site location of the FCP and the flood contingency measures described in this FCP.

- CONTRACTOR will conduct daily monitoring of river stage and weather conditions as described in this FCP.

- CONTRACTOR will coordinate activities at the levee to ensure that work does not interfere with City of Hartford's operation of the levee.

- CONTRACTOR will use the River Monitoring program as described in this FCP to avoid working in, or the movement of equipment and materials into areas within the levee ROW that are flooded or could reasonably be expected to become flooded prior to the completion of the proposed construction activities in that area.

- CONTRACTOR will be prepared to move materials and equipment in response to flooding per this FCP and at the direction of CAA and/or its engineering inspectors.

City of Hartford Public Works Department
The City of Hartford owns and operates the flood control levee system. This FCP does not supersede any aspect of the City Plan's for disaster response, including flooding events.

- The City Hartford will conduct monitoring and notifications in accordance with standard procedures for the levee.

- City of Hartford will inform CAA of its access needs, and the need to conduct monitoring and flood fighting activities.

- The CONTRACTOR will comply with all directives issued by the City of Hartford with respect to flood-related precautionary or emergency measures.

3.0 PROJECT COORDINATION, ACCESS, AND CONTINGENCY PLANNING

CONTRACTOR and CAA will coordinate with City Hartford staff concerning all logistics relevant to the Vegetation Removal project within the levee ROW, construction activities that may affect City flood control operations, and construction access issues which could impact the ability of City staff to access any part of the flood control system. This coordination will include:

- Providing and maintaining current site-specific contact information for the Project CONTRACTOR's Project Manager and Site Foreman as well as relevant SUBCONTRACTORs;
- Providing and maintaining a current schedule for work;
- Providing a list of equipment and major materials to be used by CONTRACTORs;
- Coordinating with City staff about maintaining unobstructed access to the flood control system, except where specifically permitted; and
- As work progresses, the point of contact for the CONTRACTOR will inform CAA and the City of any changes in the work schedule and when portions of the Project have been completed.

The Project requires construction access at the Metropolitan District (MDC) property at the end of Brainard Road. From the MDC property construction access enters City of Hartford Property at the Clark Dike station 25+00S a short paved section exists before turning into a gravel/dirt road along the landside toe of the levee. The access route continues along the landside toe until approximately station 42+00S at which time the route goes up the ramp to cross over the levee. The up ramp on the land side of the levee reaches the top of the levee at approximately station 47+25S. The access route then follows the down ramp to the river side of the levee at a switchback from station 47+25S to station 43+00S. The construction equipment will then access the vegetation management areas beyond the levee's river side toe from the existing turf/dirt road running parallel with the levee toe of slope to perform the daily construction activities. The construction personnel and resident inspectors will exit the work areas along the same route but in reverse and the forestry equipment will be parked on the river side of the levee at the end of each day. Because the eventual route for construction equipment to access this section of the Project will be via roads also used by the City, coordination will be required in the event of flooding to ensure levee operation can continue. Demobilization of equipment and material from the vicinity of the levee will be required of the CONTRACTOR if it is necessary.

Flood contingency planning will include monitoring Connecticut River stage levels to ensure that equipment and materials can be safely removed from the area in flood conditions. Timber matting and log piles will be secured. The elevation of the ground near the vegetation removal areas is approximately 5-11 ft (NGVD 29), so the work area would likely be inaccessible in a Level 1 Flood Surveillance event. If this area is expected to flood, temporary removal of equipment and material and other elements which could be dislodged in flood events will be required of the CONTRACTOR.

No excavation or soil stockpiles are proposed.

1. River Level Monitoring

A. At any time that men and equipment are on the river side of the levee, in the floodway, CONTRACTOR staff will monitor river levels using the links contained in Section 5. Using this method, CONTRACTOR will have the ability to obtain flood stage data on an advance basis that will allow CONTRACTOR personnel sufficient time to secure the site, implement flood contingency measures (see Sections 6), and assist with worker safety issues.

B. Training will be provided for key supervisory personnel who will be overseeing the monitoring and inspection. Training will include an overview of the FCP, designated on-site location of the FCP itself, and the Flood Contingency Measures described in this plan.

2. Response Action Levels

Table 1 identifies the flood response action levels and summarizes the activities associated with each level. These action levels will be based on the actual and forecasted water level and performance of the flood control system.

Table 1 – Flood Response Action Levels

Action Level	*Connecticut River stage at Bulkeley Bridge (NGVD29)*	*Monitoring Effort*
Monitoring	All	Monitoring of the river level forecast should be conducted daily
Alert	Forecast indicates potential for river to exceed Action Stage (El. 12 NGVD29)	Planning and preparation for flood fighting activity
Surveillance Level 1	River exceeds Flood Stage (El. 16 NGVD29)	Physical inspection of entire system and reporting once every 24 hours
Surveillance Level 2	River exceeds Moderate Flood Stage (El. 24 NGVD29)	Physical inspection of entire system and reporting once every 8 hours
Surveillance Level 3	River exceeds Major Flood Stage (El. 28 NGVD29)	Physical inspection of entire system and reporting once every 4 hours
Cessation	River drops below flood stage (El. 16 NGVD29) and risk of flood damage has passed	Systematic inspection and summary of repair needs (if any)

Table 2 identifies CONTRACTOR'S flood response action levels and summarizes the activities associated with each level.

Table 2 – Contractor Flood Response Action Levels

Action Level	*Connecticut River stage at Bulkeley Bridge (NGVD29)*	*Monitoring Effort*
Monitoring	Monitoring of the river level forecast and weather conditions will be conducted daily.	The Connecticut River stage at the Bulkeley Bridge in Hartford is available at: http://water.weather.gov/ahps2/hydrograph.php?gage=hfdc3&wfo=box or http://waterdata.usgs.gov/ct/nwis/uv/?site_no=01190070&PARAmeter_cd=00065,00060 The National Weather Service's daily briefing available at: http://www.weather.gov/briefing/

		The US Army Corps of Engineers operates flood control reservoirs in the Connecticut River Basin. Information regarding river stage and storage is available at: http://www.nae.usace.army.mil/Missions/Reservoir-Control-Center/
Alert	Forecast indicates potential for river to exceed Action Stage (El. 12 NGVD29)	Planning and preparation for flood fighting activity
Surveillance Level 1	River exceeds Flood Stage (El. 16 NGVD29)	Physical inspection of entire system and reporting once every 24 hours
Surveillance Level 2	River exceeds Moderate Flood Stage (El. 24 NGVD29)	Physical inspection of entire system and reporting once every 8 hours
Surveillance Level 3	River exceeds Major Flood Stage (El. 28 NGVD29)	Physical inspection of entire system and reporting once every 4 hours
Cessation	River drops below flood stage (El. 16 NGVD29) and risk of flood damage has passed	Systematic inspection and summary of repair needs (if any)

3. Minimum Flood Mitigation Response Actions

Action Stage (El. 12 NGVD29)
CONTRACTOR will take the following steps when the Connecticut River is in the Action Stage:

- Based on actual and forecasted conditions of river stage and weather, determine what active tasks can be completed before river reaches flood stage and what tasks may need to be delayed;
- No excavations in this project, therefore all work is to be delayed.
- Stabilize work areas and begin demobilization of equipment and materials; and
- Coordinate all efforts with the City.

Flood Stage (El. 16 NGVD29)
CONTRACTOR will take the following steps when the Connecticut River is in the Flood Stage:

- Remove equipment, materials and personnel from the floodplain;
- Demobilization will be coordinated with the City to ensure that activities don't interfere with pump station operation and flood fighting efforts;
- Secure any materials that are to remain in floodplain so that that are not displaced by flood waters; and
- Coordinate all efforts with the City.

Moderate Flood Stage (El. 24 NGVD29)
As the Connecticut River approaches moderate flood stage, CONTRACTOR should have completed the following:

- Install stabilization measures to minimize erosion/scour;
- Securing of all active construction accesses and removal of all materials and equipment from the flood zone;

APPENDIX

Appendix A

PROJECT COORDINATION CONTACT LIST

Project Coordination Contact List will be provided to USACE and City of Harford upon selection of CONTRACTOR for this project.

Appendix E

A. COORDINATION ACTIVITY NOTES

Meeting Notes

Hartford-Brainard Airport – Obstruction Removal Project – Flood Control Dike Discussion

HFD / 195211210

Date/Time:	April 6, 2021 / 1:00 PM
Place:	Site Visit at HFD
Next Meeting:	Not Specified
Attendees:	Molly Parsons CAA Colin Goegel CAA Barry Pallanck CAA Bob Pellegrino CAA Frank.Dellaripa Hartford DPW Nicholas.Casparino Hartford DPW Alex.R.Garneau USACE (Concord, MA Office) Randy Christensen Stantec
Distribution:	CAA and Stantec Attendees

Item: **Action:**

RW20 End

Purpose of the site visit was to investigate the tree removal methods that may involve usage of the dike for transport of the wood off of the site.

The group met at the RW20 end and proceeded up onto the dike to review the northernmost clearing area. Discussion focused on how to get the equipment to the clearing sites and how to get the wood out of the work areas without impact to the dike (including the 15' level area from the toe of the dike towards the river). For the northern clearing area, we discussed passing the wood over the top of the dike using forestry shovels (large equipment with a boom and grapple for handling/passing logs). Discussion focused on:

1. How to get the equipment to the work areas without traversing the sides of the dike.
2. How to protect the top of the dike for equipment movement (timber mats were the central focus of this discussion)
3. Additional protection needed for the several utility crossings (sewer, water, drainage and fuel utilities). Both DPW and USACE said to work with them on the entities involved with the utilities.
4. Chipping on the site (as an alternative to wood removal) was discussed and dismissed due to the eventual loss of the chips to the river during the next flood event. All seemed to be agreement that loss of wood downriver was not an acceptable event.
5. The top gravel cap of the dike is a processed material and would be needed for any repairs to vehicle ruts. Hartford DPW could provide the gravel spec.

Need dike plans from USACE and Hartford DPW – Start email train on this issue.

Need utility plans from several entities. Work with Hartford and USACE on the utility list.

Need to include utilities on the clearing plans

Need load calculations for the clearing equipment on the timber mats.

Need gravel specification from Hartford DPW for our bid package.

The group then walked to the RW29 and RW2 end work areas.

RW29 and RW2 Ends

While walking the top of the dike to the RW29/2 ends the discussion focused on the permitting/approvals necessary for the use of the dike in the wood removal process. The focus of the discussion with Alex and Nicholas included:
1. Section 408 permission for use of the dike will be necessary through the USACE. USACE's procedures for reviewing requests for Section 408 permission is contained in Engineer Circular (EC) 1165-2-220. Sec. 408 process a minimum of 4 months and likely a 6-month review process. No filing fee involved. Need an Emergency Access Plan as a part of the package that includes fuel spill prevention, control and countermeasures plan. The Sec. 408 process requires completion of a NEPA EA. Our existing project EA may be suitable for this purpose but may need amendments to reflect the advanced project design.
2. Hartford Flood Commission (HFC) application will likely be the same material/package provided to the USACE under Sec. 408. Submit to the HFC and Hartford DPW concurrently with the USACE submission. The HFC approval will likely only be issued after USACE review under Sec. 408.
3. It's probable that the CTDEEP Office of Dam Safety will require a submission as well. The Sec. 408 package will likely suffice. File with Dam Safety concurrently with the HFC and the USACE submissions. It's not clear at this point if Dam Safety will be involved; we need to follow-up with Dam Safety.
4. Equipment access to the RW29/2 ends may be easier through the Metro District Commission (MDC) property rather than access from the RW20 end. Need to work with MDC on this access issue.
5. Use of the down-ramp in the dike at the RW2 end will likely be our only access point to all of the clearing areas for equipment and wood removal. Will need timber mats along the entire down-ramp. Daily fueling of equipment needs to be addressed.
6. The part of the Folly Brook Natural Area in Wethersfield may require additional access permissions from the Nature Conservancy since Hartford DPW has no jurisdiction over that area.

Work with Alex to obtain info/direction on the Sec. 408 application. Alex to provide examples of prior applications that used timber mats.

Need to start investigation of likely equipment to be used for the project and collect information on full operational weights. Will need load calcs for each on timber mats.

Communicate CTDEEP Dam Safety to determine the need for a permit.

Need to start MDC coordination.

Need contact with the Nature Conservancy to address wetland delineation access to the Folly Brook Natural Area.

Next Steps

The primary focus of the discussions was the access issue using the top of the dike and the mitigation measures needed to protect the flood control system. This issue will be addressed through the combined Section 408 / Flood Commission / Dam Safety review process. These processes will likely involve the same package of information with a focus on dike protection. We need to advance the design and plan set before setting another group meeting. Advancing the design will include location of pertinent utilities in the dike, collection of load information for the machinery to be used in the project, development of load calcs using timber mats, and the development of an emergency action plan to address potential issues during construction.

Setting up communications with the MDC, CTDEEP Office of Dam Safety and the Nature Conservancy are all immediate needs.

The meeting adjourned at 3:40 PM.

The foregoing is considered to be a true and accurate record of the items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Services, Inc.

Randall P. Christensen M.S.
Senior Environmental Scientist

Phone: 413387 4508
Fax: n/a
randy.christensen@stantec.com

c. CAA and Stantec Attendees

Meeting Notes

Hartford-Brainard Airport (HFD)

Airport Obstruction Removal Project

Buckeye Pipeline Site Meeting

Date/Time:	August 5, 2021 / 9:00 AM
Place:	HFD
Attendees:	Peter Enzien (Stantec), Mike Musumeci (Buckeye), Matt Krom (Buckeye)
Distribution:	CAA Team Attendees

Met Mike Musumeci and Matt Krom from Buckeye Partners, L.P. at Gate 1 at the east end of Maxim Road at 9:00 AM.

Bob Pellegrino (HFD) made arrangements for our access through Gate 1 and notified ATC that we would have two (2) vehicles on top of the levee access road. The Stantec vehicle was equipped with a flashing beacon, sign placards and an airport radio.

I gave Mike and Matt a brief project overview while referencing a full-size drawing of the "Equipment Access and Staging Plan". Mike said he read through the package of information we shared via email and was familiar with the low-ground pressure forestry equipment we were proposing for this project.

We stopped at Sta. 91+00S which is where the pipeline turns east, crosses the levee, and continues under the CT river. The contractor will need to cross the pipeline on the river side toe of the levee in-order-to travel between the RW 29 and RW 20 vegetation management areas. Mike used a radio detection locator to determine the depth of pipe. Where the 12" pipe crossed the levee access road there was only 10" of cover. At this location the road was mounded and there was a concrete cap. Mike also checked the depth of pipe at the river side toe of slope where the depth of cover was 5 feet. Where the pipeline runs parallel to the levee between Stations 60+00S to 91+00S Mike said the depth of cover would be consistently between 4 and 5 feet.

Mike said Buckeye would like to see timber mats placed at all pipeline crossings. The detail should be consistent with the guidance provided in their Right-of Way Use Restrictions Specifications. This document was already provided to Stantec by Emily Litwa of Buckeye. No formal application process is required by Buckeye. Mike asked that we keep them informed through the design process and provide a set of final plans for review prior to bid. All coordination can be handled through their local Wethersfield office.

Next, we stopped at Sta. 61+00S to review the crane staging area. Mike said the crane should also be placed on timber matting. I explained that the forwarders would maintain a minimum 50' offset to the west side of the pipeline when traveling between the craning area and the wood processing area at Maxim Road. Mike said the 50' offset was more than adequate.

Finally, we stopped at Sta. 29+00S where the pipeline crosses to the south back under the levee and heads towards I-91. The pipe at this location also crosses the up/down ramp near the MDC

construction area. Mike could not locate the pipe at the ramp crossing. He was able to locate the pipe approximately 25' to the south (still on top of levee) with a 2' depth of cover. We then drove to the MDC side toe of levee and measured the depth of cover at the gravel access road. The cover ranged between 3' and 4'. We then went to the fenced in valve chamber (Sta. 31+00S) where you could physically see the 12" pipeline. Depth of cover was measured at approx. 3'.

The site meeting concluded at approx. 10:30 am. Stantec and Buckeye exited the site through the MDC construction site on Brainard Road. I notified Bob Pellegrino that we were off the airfield and had concluded our site visit.

STANTEC CONSULTING SERVICES INC.

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Senior Associate
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