

THE OHIO STATE UNIVERSITY AIRPORT (KOSU)

AIRPORT MASTER PLAN

2022

APPENDICES



THE OHIO STATE UNIVERSITY

AIRPORT

Appendix A - Glossary

The terms and definitions here are relevant to airport design standards and retrieved from AC 150/5300-13A, Airport Design.

A

Accelerate-Stop Distance Available (ASDA). See Declared Distances.

Air Traffic Control Facilities (ATC-F). Electronic equipment and buildings aiding air traffic control (ATC) – for communications, surveillance of aircraft including weather detection and advisory systems.

Aircraft. For this AC, the terms aircraft and airplane are synonymous, referring to all types of fixed-wing airplanes, including gliders. Powered lift (tilt-rotors) and helicopters are not included except where specifically noted.

Aircraft Approach Category (AAC). As specified in 14 CFR Part 97 § 97.3, Symbols and Terms Used in Procedures, a grouping of aircraft based on a reference landing speed (VREF), if specified, or if VREF is not specified, 1.3 times stall speed (VSO) at the maximum certificated landing weight. VREF, VSO, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry.

Airplane. A fixed-wing aircraft that is heavier than air, and is supported in flight by the dynamic reaction of the air against its wings (see Aircraft).

Airplane Design Group (ADG). A classification of aircraft based on wingspan and tail height. When the aircraft wingspan and tail height fall in different groups, the higher group is used.

Airport Elevation. The highest point on an airport's usable runways expressed in feet above mean sea level (MSL).

Airport Layout Plan (ALP). A scaled drawing (or set of drawings), in either traditional or electronic form, of current and future airport facilities that provides a graphic representation of the existing and long-term development plan for the airport and demonstrates the preservation and continuity of safety, utility, and efficiency of the airport to the satisfaction of the FAA.

Airport Reference Code (ARC). An airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely on the airport.

Airport Reference Point (ARP). The approximate geometric center of all usable runways at the airport.

Airport. An area of land that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

Aligned Taxiway. A taxiway with its centerline aligned with a runway centerline. Sometimes referred to as an "inline taxiway."

Approach Procedure with Vertical Guidance (APV). An Instrument Approach Procedure (IAP) providing both vertical and lateral electronic guidance.

Approach Reference Code (APRC). A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations.

Approach Surface Baseline (ASBL). A horizontal line tangent to the surface of the earth at the runway threshold aligned with the final approach course.

B

Blast Fence. A barrier used to divert or dissipate jet blast or propeller wash.

Blast Pad. A surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash. A blast pad is not a stopway.

Building Restriction Line (BRL). A line that identifies suitable and unsuitable locations for buildings on airports.

Bypass Taxiway. A taxiway used to reduce aircraft queuing demand by providing multiple takeoff points.

C

Category-I (CAT-I). An instrument approach or approach and landing with a Height Above Threshold (HATh) or minimum descent altitude not lower than 200 ft (60 m) and with either a visibility not less than ½ statute mile (800m), or a runway visual range not less than 1800 ft (550m).

Category-II (CAT-II). An instrument approach or approach and landing with a Height Above Threshold (HATh) lower than 200 ft (60 m) but not lower than 100 ft (30 m) and a runway visual range not less than 1200 ft (350m).

Category-III (CAT-III). An instrument approach or approach and landing with a Height Above Threshold (HATh) lower than 100 ft (30m), or no HATh, or a runway visual range less than 1200 ft (350m).

Circling Approach. A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable.

Clearway (CWY). A defined rectangular area beyond the end of a runway cleared or suitable for use in lieu of runway to satisfy takeoff distance requirements (see also Takeoff Distance Available [TODA]).

Cockpit to Main Gear Distance (CMG). The distance from the pilot's eye to the main gear turn center.

Compass Calibration Pad. An airport facility used for calibrating an aircraft compass.

Crossover Taxiway. A taxiway connecting two parallel taxiways (also referred to as a transverse taxiway).

D

Decision Altitude (DA). A specified altitude on a vertically-guided approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established. DA is referenced to mean sea level (MSL).

Declared Distances. The distances the airport owner declares available for a turbine powered aircraft's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

Takeoff Run Available (TORA) – the runway length declared available and suitable for the ground run of an aircraft taking off;

Takeoff Distance Available (TODA) – the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA; the full length of TODA may need to be reduced because of obstacles in the departure area;

Accelerate-Stop Distance Available (ASDA) – the runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff; and

Landing Distance Available (LDA) – the runway length declared available and suitable for landing an aircraft.

Departure Reference Code (DPRC). A code signifying the current operational capabilities of a runway with regard to takeoff operations.

Design Aircraft. An aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility (such as Engineered Materials Arresting System [EMAS]). This aircraft can be a specific aircraft model or a composite of several aircraft using, expected, or intended to use the airport or part of the airport. (Also called “critical aircraft” or “critical design aircraft.”)

Displaced Threshold. A threshold that is located at a point on the runway beyond the beginning of the runway.

E

End-Around Taxiway (EAT). A taxiway crossing the extended centerline of a runway, which does not require specific clearance from air traffic control (ATC) to cross the extended centerline of the runway.

Entrance Taxiway. A taxiway designed to be used by an aircraft entering a runway. Entrance taxiways may also be used to exit a runway.

Exit Taxiway. A taxiway designed to be used by an aircraft only to exit a runway:

F

Fixed-By-Function Navigation Aid (NAVAID). An air navigation aid that must be positioned in a particular location in order to provide an essential benefit for aviation is fixed-by-function. Table 6-1 gives fixed-by-function designations for various NAVAIDs as they relate to the Runway Safety Area (RSA) and Runway Object Free Area (ROFA). Some NAVAIDs that are not fixed-by-function in regard to the RSA or ROFA may be fixed-by-function in regard to the Runway Protection Zone (RPZ):

Frangible. Retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft. See AC 150/5220-23, Frangible Connections.

G

General Aviation. All non-scheduled flights other than military conducted by non-commercial aircraft. General aviation covers local recreational flying to business transport that is not operating under the FAA regulations for commercial air carriers.

Glide Path Angle (GPA). The GPA is the angle of the final approach descent path relative to the approach surface baseline.

Glide Path Qualification Surface (GQS). An imaginary surface extending from the runway threshold along the runway centerline extended to the Decision Altitude (DA) point.

Glideslope (GS). Equipment in an Instrument Landing System (ILS) that provides vertical guidance to landing aircraft.

H

Hazard to Air Navigation. An existing or proposed object that the FAA, as a result of an aeronautical study, determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

Height Above Airport (HAA). The height of the circling approach descent altitude (MDA) above the airport elevation.

Height Above Threshold (HATH). The height of the Decision Altitude (DA) or Minimum Descent Altitude (MDA) above the threshold.

Hot Spot. A location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.

I

Instrument Approach Procedure (IAP). A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

Instrument departure runway. A runway identified by the airport operator, through the appropriate FAA Airports Office, to the FAA Regional Airspace Procedures Team intended primarily for instrument departures.

Island. An unused paved or grassy area between taxiways, between runways, or between a taxiway and a runway. Paved islands are clearly marked as unusable, either by painting or the use of artificial turf.

J

Joint-Use Airport. An airport owned by the United States that leases a portion of the airport to a person operating an airport specified under Part 139.

L

Landing Distance Available (LDA). See Declared Distances.

Large Aircraft. An aircraft with a maximum certificated takeoff weight of more than 12,500 lbs (5670 kg).

Low Impact Resistant (LIR) Support. A support designed to resist operational and environmental static loads and fail when subjected to a shock load such as that from a colliding aircraft.

M

Main Gear Width (MGW). The distance from the outer edge to outer edge of the widest set of main gear tires.

Minimum Descent Altitude (MDA). The lowest authorized altitude on an approach that does not have vertical guidance. MDA is referenced to mean sea level (MSL).

Modification to Standards. Any approved nonconformance to FAA standards, other than dimensional standards for Runway Safety Areas (RSAs), applicable to an airport design, construction, or equipment procurement project that is necessary to accommodate an unusual local condition for a specific project on a case-by-case basis while maintaining an acceptable level of safety. See Order 5300.1.

Movement Area. The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft including helicopters and tilt-rotors, exclusive of loading aprons and aircraft parking areas (reference Part 139).

Navigation Aid (NAVAID). Electronic and visual air navigation aids, lights, signs, and associated supporting equipment.

N

Non-movement area. The areas of an airport that are used for taxiing or hover taxiing, or air taxiing aircraft including helicopters and tilt-rotors, but are not part of the movement area (i.e., the loading aprons and aircraft parking areas).

Non-Precision Approach (NPA). For the purposes of this AC, a straight-in instrument approach procedure that provides course guidance, with or without vertical path guidance, with visibility minimums not lower than 3/4 mile (4000 RVR).

Non-Precision Runway. A runway (other than a precision runway) with at least one end having a non-precision approach procedure.

O

Object. Includes, but is not limited to, above ground structures, Navigational Aids (NAVAIDs), equipment, vehicles, natural growth, terrain, and parked or taxiing aircraft.

Object Free Area (OFA). An area centered on the ground on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

Obstacle. An existing object at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

Obstacle Clearance Surface (OCS). An evaluation surface that defines the minimum required obstruction clearance for approach or departure procedures.

Obstacle Free Zone (OFZ). The OFZ is the three-dimensional airspace along the runway and extended runway centerline that is required to be clear of obstacles for protection for aircraft landing or taking off from the runway and for missed approaches.

Obstruction to Air Navigation. An object of greater height than any of the heights or surfaces presented in Subpart C of Title 14 CFR Part 77, Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities.

P

Parallel Taxiway. A taxiway parallel to a runway:

- Dual Parallel Taxiways – Two side-by-side taxiways, parallel to each other and the runway.

- Full Parallel Taxiway – A parallel taxiway extending the full length of the runway.
- Partial Parallel Taxiway – A parallel taxiway extending less than full length of the runway.

Precision Approach (PA). For the purposes of this AC, an instrument approach procedure that provides course and vertical path guidance with visibility below 3/4 mile (4000 RVR).

Precision Runway. A runway with at least one end having a precision approach procedure.

R

Runway (RW). A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of aircraft.

Runway Design Code (RDC). A code signifying the design standards to which the runway is to be built.

Runway Incursion. Any occurrence at an airport involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft.

Runway Protection Zone (RPZ). An area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground.

Runway Safety Area (RSA). A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.

S

Shoulder. An area adjacent to the defined edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft and emergency vehicles deviating from the full-strength pavement; enhanced drainage; and blast protection.

Small Aircraft. An aircraft with a maximum certificated takeoff weight of 12,500 lbs (5670 kg) or less.

Stopway (SWY). An area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff. A blast pad is not a stopway.

T

Takeoff Distance Available (TODA). See Declared Distances.

Takeoff Run Available (TORA). See Declared Distances.

Taxilane (TL). A taxiway designed for low speed and precise taxiing. Taxilanes are usually, but not always, located outside the movement area, providing access from taxiways (usually an apron taxiway) to aircraft parking positions and other terminal areas.

Taxiway (TW). A defined path established for the taxiing of aircraft from one part of an airport to another.

Taxiway Design Group (TDG). A classification of airplanes based on outer to outer Main Gear Width (MGW) and Cockpit to Main Gear distance (CMG).

Taxiway Edge Safety Margin (TESM). The distance between the outer edge of the landing gear of an airplane with its nose gear on the taxiway centerline and the edge of the taxiway pavement.

Taxiway/Taxilane Safety Area (TSA). A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway.

Threshold (TH). The beginning of that portion of the runway available for landing. In some instances, the threshold may be displaced. "Threshold" always refers to landing, not the start of takeoff.

Threshold Crossing Height (TCH). For the purposes of this AC, the TCH is the theoretical height above the runway threshold at which the aircraft's glideslope (GS) antenna would be if the aircraft maintains the trajectory established by the Instrument Landing System (ILS) GS, or the height of the pilot's eye above the runway threshold based on a visual guidance system.

V

Visual Runway. A runway without an existing or planned instrument approach procedure.

W

Wingspan. The maximum horizontal distance from one wingtip to the other wingtip, including the horizontal component of any extensions such as winglets or raked wingtips.

Appendix B – Airport Obligations/Assurances



ASSURANCES

Airport Sponsors

A. General.

1. These assurances shall be complied with in the performance of grant agreements for airport development, airport planning, and noise compatibility program grants for airport sponsors.
2. These assurances are required to be submitted as part of the project application by sponsors requesting funds under the provisions of Title 49, U.S.C., subtitle VII, as amended. As used herein, the term "public agency sponsor" means a public agency with control of a public-use airport; the term "private sponsor" means a private owner of a public-use airport; and the term "sponsor" includes both public agency sponsors and private sponsors.
3. Upon acceptance of this grant offer by the sponsor, these assurances are incorporated in and become part of this grant agreement.

B. Duration and Applicability.

1. **Airport development or Noise Compatibility Program Projects Undertaken by a Public Agency Sponsor.**

The terms, conditions and assurances of this grant agreement shall remain in full force and effect throughout the useful life of the facilities developed or equipment acquired for an airport development or noise compatibility program project, or throughout the useful life of the project items installed within a facility under a noise compatibility program project, but in any event not to exceed twenty (20) years from the date of acceptance of a grant offer of Federal funds for the project. However, there shall be no limit on the duration of the assurances regarding Exclusive Rights and Airport Revenue so long as the airport is used as an airport. There shall be no limit on the duration of the terms, conditions, and assurances with respect to real property acquired with federal funds. Furthermore, the duration of the Civil Rights assurance shall be specified in the assurances.

2. **Airport Development or Noise Compatibility Projects Undertaken by a Private Sponsor.**

The preceding paragraph 1 also applies to a private sponsor except that the useful life of project items installed within a facility or the useful life of the facilities developed or equipment acquired under an airport development or noise compatibility program project shall be no less than ten (10) years from the date of acceptance of Federal aid for the project.

3. Airport Planning Undertaken by a Sponsor.

Unless otherwise specified in this grant agreement, only Assurances 1, 2, 3, 5, 6, 13, 18, 25, 30, 32, 33, and 34 in Section C apply to planning projects. The terms, conditions, and assurances of this grant agreement shall remain in full force and effect during the life of the project; there shall be no limit on the duration of the assurances regarding Airport Revenue so long as the airport is used as an airport.

C. Sponsor Certification.

The sponsor hereby assures and certifies, with respect to this grant that:

1. General Federal Requirements.

It will comply with all applicable Federal laws, regulations, executive orders, policies, guidelines, and requirements as they relate to the application, acceptance and use of Federal funds for this project including but not limited to the following:

Federal Legislation

- a. Title 49, U.S.C., subtitle VII, as amended.
- b. Davis-Bacon Act - 40 U.S.C. 276(a), et seq.¹
- c. Federal Fair Labor Standards Act - 29 U.S.C. 201, et seq.
- d. Hatch Act – 5 U.S.C. 1501, et seq.²
- e. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 Title 42 U.S.C. 4601, et seq.^{1 2}
- f. National Historic Preservation Act of 1966 - Section 106 - 16 U.S.C. 470(f).¹
- g. Archeological and Historic Preservation Act of 1974 - 16 U.S.C. 469 through 469c.¹
- h. Native Americans Grave Repatriation Act - 25 U.S.C. Section 3001, et seq.
- i. Clean Air Act, P.L. 90-148, as amended.
- j. Coastal Zone Management Act, P.L. 93-205, as amended.
- k. Flood Disaster Protection Act of 1973 - Section 102(a) - 42 U.S.C. 4012a.¹
- l. Title 49, U.S.C., Section 303, (formerly known as Section 4(f))
- m. Rehabilitation Act of 1973 - 29 U.S.C. 794.
- n. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- o. Americans with Disabilities Act of 1990, as amended, (42 U.S.C. § 12101 et seq.), prohibits discrimination on the basis of disability).
- p. Age Discrimination Act of 1975 - 42 U.S.C. 6101, et seq.
- q. American Indian Religious Freedom Act, P.L. 95-341, as amended.
- r. Architectural Barriers Act of 1968 -42 U.S.C. 4151, et seq.¹
- s. Power plant and Industrial Fuel Use Act of 1978 - Section 403- 2 U.S.C. 8373.¹
- t. Contract Work Hours and Safety Standards Act - 40 U.S.C. 327, et seq.¹
- u. Copeland Anti-kickback Act - 18 U.S.C. 874.1
- v. National Environmental Policy Act of 1969 - 42 U.S.C. 4321, et seq.¹
- w. Wild and Scenic Rivers Act, P.L. 90-542, as amended.
- x. Single Audit Act of 1984 - 31 U.S.C. 7501, et seq.²
- y. Drug-Free Workplace Act of 1988 - 41 U.S.C. 702 through 706.

- z. The Federal Funding Accountability and Transparency Act of 2006, as amended (Pub. L. 109-282, as amended by section 6202 of Pub. L. 110-252).

Executive Orders

- a. Executive Order 11246 - Equal Employment Opportunity¹
- b. Executive Order 11990 - Protection of Wetlands
- c. Executive Order 11998 – Flood Plain Management
- d. Executive Order 12372 - Intergovernmental Review of Federal Programs
- e. Executive Order 12699 - Seismic Safety of Federal and Federally Assisted New Building Construction¹
- f. Executive Order 12898 - Environmental Justice

Federal Regulations

- a. 2 CFR Part 180 - OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement).
- b. 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. [OMB Circular A-87 Cost Principles Applicable to Grants and Contracts with State and Local Governments, and OMB Circular A-133 - Audits of States, Local Governments, and Non-Profit Organizations].^{4, 5, 6}
- c. 2 CFR Part 1200 – Nonprocurement Suspension and Debarment
- d. 14 CFR Part 13 - Investigative and Enforcement Procedures 14 CFR Part 16 - Rules of Practice For Federally Assisted Airport Enforcement Proceedings.
- e. 14 CFR Part 150 - Airport noise compatibility planning.
- f. 28 CFR Part 35- Discrimination on the Basis of Disability in State and Local Government Services.
- g. 28 CFR § 50.3 - U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964.
- h. 29 CFR Part 1 - Procedures for predetermination of wage rates.¹
- i. 29 CFR Part 3 - Contractors and subcontractors on public building or public work financed in whole or part by loans or grants from the United States.¹
- j. 29 CFR Part 5 - Labor standards provisions applicable to contracts covering federally financed and assisted construction (also labor standards provisions applicable to non-construction contracts subject to the Contract Work Hours and Safety Standards Act).¹
- k. 41 CFR Part 60 - Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor (Federal and federally assisted contracting requirements).¹
- l. 49 CFR Part 18 - Uniform administrative requirements for grants and cooperative agreements to state and local governments.³
- m. 49 CFR Part 20 - New restrictions on lobbying.
- n. 49 CFR Part 21 – Nondiscrimination in federally-assisted programs of the Department of Transportation - effectuation of Title VI of the Civil Rights Act of 1964.
- o. 49 CFR Part 23 - Participation by Disadvantage Business Enterprise in Airport Concessions.

- p. 49 CFR Part 24 – Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs.^{1 2}
- q. 49 CFR Part 26 – Participation by Disadvantaged Business Enterprises in Department of Transportation Programs.
- r. 49 CFR Part 27 – Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance.¹
- s. 49 CFR Part 28 – Enforcement of Nondiscrimination on the Basis of Handicap in Programs or Activities conducted by the Department of Transportation.
- t. 49 CFR Part 30 - Denial of public works contracts to suppliers of goods and services of countries that deny procurement market access to U.S. contractors.
- u. 49 CFR Part 32 – Governmentwide Requirements for Drug-Free Workplace (Financial Assistance)
- v. 49 CFR Part 37 – Transportation Services for Individuals with Disabilities (ADA).
- w. 49 CFR Part 41 - Seismic safety of Federal and federally assisted or regulated new building construction.

Specific Assurances

Specific assurances required to be included in grant agreements by any of the above laws, regulations or circulars are incorporated by reference in this grant agreement.

Footnotes to Assurance C.1.

¹ These laws do not apply to airport planning sponsors.

² These laws do not apply to private sponsors.

³ 49 CFR Part 18 and 2 CFR Part 200 contain requirements for State and Local Governments receiving Federal assistance. Any requirement levied upon State and Local Governments by this regulation and circular shall also be applicable to private sponsors receiving Federal assistance under Title 49, United States Code.

⁴ On December 26, 2013 at 78 FR 78590, the Office of Management and Budget (OMB) issued the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards in 2 CFR Part 200. 2 CFR Part 200 replaces and combines the former Uniform Administrative Requirements for Grants (OMB Circular A-102 and Circular A-110 or 2 CFR Part 215 or Circular) as well as the Cost Principles (Circulars A-21 or 2 CFR part 220; Circular A-87 or 2 CFR part 225; and A-122, 2 CFR part 230). Additionally it replaces Circular A-133 guidance on the Single Annual Audit. In accordance with 2 CFR section 200.110, the standards set forth in Part 200 which affect administration of Federal awards issued by Federal agencies become effective once implemented by Federal agencies or when any future amendment to this Part becomes final. Federal agencies, including the Department of Transportation, must implement the policies and procedures applicable to Federal awards by promulgating a regulation to be effective by December 26, 2014 unless different provisions are required by statute or approved by OMB.

⁵ Cost principles established in 2 CFR part 200 subpart E must be used as guidelines for determining the eligibility of specific types of expenses.

⁶ Audit requirements established in 2 CFR part 200 subpart F are the guidelines for audits.

2. Responsibility and Authority of the Sponsor.

a. Public Agency Sponsor:

It has legal authority to apply for this grant, and to finance and carry out the proposed project; that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing body authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

b. Private Sponsor:

It has legal authority to apply for this grant and to finance and carry out the proposed project and comply with all terms, conditions, and assurances of this grant agreement. It shall designate an official representative and shall in writing direct and authorize that person to file this application, including all understandings and assurances contained therein; to act in connection with this application; and to provide such additional information as may be required.

3. Sponsor Fund Availability.

It has sufficient funds available for that portion of the project costs which are not to be paid by the United States. It has sufficient funds available to assure operation and maintenance of items funded under this grant agreement which it will own or control.

4. Good Title.

- a. It, a public agency or the Federal government, holds good title, satisfactory to the Secretary, to the landing area of the airport or site thereof, or will give assurance satisfactory to the Secretary that good title will be acquired.
- b. For noise compatibility program projects to be carried out on the property of the sponsor, it holds good title satisfactory to the Secretary to that portion of the property upon which Federal funds will be expended or will give assurance to the Secretary that good title will be obtained.

5. Preserving Rights and Powers.

- a. It will not take or permit any action which would operate to deprive it of any of the rights and powers necessary to perform any or all of the terms, conditions, and assurances in this grant agreement without the written approval of the Secretary, and will act promptly to acquire, extinguish or modify any outstanding rights or claims of right of others which would interfere with such performance by the sponsor. This shall be done in a manner acceptable to the Secretary.

- b. It will not sell, lease, encumber, or otherwise transfer or dispose of any part of its title or other interests in the property shown on Exhibit A to this application or, for a noise compatibility program project, that portion of the property upon which Federal funds have been expended, for the duration of the terms, conditions, and assurances in this grant agreement without approval by the Secretary. If the transferee is found by the Secretary to be eligible under Title 49, United States Code, to assume the obligations of this grant agreement and to have the power, authority, and financial resources to carry out all such obligations, the sponsor shall insert in the contract or document transferring or disposing of the sponsor's interest, and make binding upon the transferee all of the terms, conditions, and assurances contained in this grant agreement.
- c. For all noise compatibility program projects which are to be carried out by another unit of local government or are on property owned by a unit of local government other than the sponsor, it will enter into an agreement with that government. Except as otherwise specified by the Secretary, that agreement shall obligate that government to the same terms, conditions, and assurances that would be applicable to it if it applied directly to the FAA for a grant to undertake the noise compatibility program project. That agreement and changes thereto must be satisfactory to the Secretary. It will take steps to enforce this agreement against the local government if there is substantial non-compliance with the terms of the agreement.
- d. For noise compatibility program projects to be carried out on privately owned property, it will enter into an agreement with the owner of that property which includes provisions specified by the Secretary. It will take steps to enforce this agreement against the property owner whenever there is substantial non-compliance with the terms of the agreement.
- e. If the sponsor is a private sponsor, it will take steps satisfactory to the Secretary to ensure that the airport will continue to function as a public-use airport in accordance with these assurances for the duration of these assurances.
- f. If an arrangement is made for management and operation of the airport by any agency or person other than the sponsor or an employee of the sponsor, the sponsor will reserve sufficient rights and authority to insure that the airport will be operated and maintained in accordance Title 49, United States Code, the regulations and the terms, conditions and assurances in this grant agreement and shall insure that such arrangement also requires compliance therewith.
- g. Sponsors of commercial service airports will not permit or enter into any arrangement that results in permission for the owner or tenant of a property used as a residence, or zoned for residential use, to taxi an aircraft between that property and any location on airport. Sponsors of general aviation airports entering into any arrangement that results in permission for the owner of residential real property adjacent to or near the airport must comply with the requirements of Sec. 136 of Public Law 112-95 and the sponsor assurances.

6. Consistency with Local Plans.

The project is reasonably consistent with plans (existing at the time of submission of this application) of public agencies that are authorized by the State in which the project is located to plan for the development of the area surrounding the airport.

7. Consideration of Local Interest.

It has given fair consideration to the interest of communities in or near where the project may be located.

8. Consultation with Users.

In making a decision to undertake any airport development project under Title 49, United States Code, it has undertaken reasonable consultations with affected parties using the airport at which project is proposed.

9. Public Hearings.

In projects involving the location of an airport, an airport runway, or a major runway extension, it has afforded the opportunity for public hearings for the purpose of considering the economic, social, and environmental effects of the airport or runway location and its consistency with goals and objectives of such planning as has been carried out by the community and it shall, when requested by the Secretary, submit a copy of the transcript of such hearings to the Secretary. Further, for such projects, it has on its management board either voting representation from the communities where the project is located or has advised the communities that they have the right to petition the Secretary concerning a proposed project.

10. Metropolitan Planning Organization.

In projects involving the location of an airport, an airport runway, or a major runway extension at a medium or large hub airport, the sponsor has made available to and has provided upon request to the metropolitan planning organization in the area in which the airport is located, if any, a copy of the proposed amendment to the airport layout plan to depict the project and a copy of any airport master plan in which the project is described or depicted.

11. Pavement Preventive Maintenance.

With respect to a project approved after January 1, 1995, for the replacement or reconstruction of pavement at the airport, it assures or certifies that it has implemented an effective airport pavement maintenance-management program and it assures that it will use such program for the useful life of any pavement constructed, reconstructed or repaired with Federal financial assistance at the airport. It will provide such reports on pavement condition and pavement management programs as the Secretary determines may be useful.

12. Terminal Development Prerequisites.

For projects which include terminal development at a public use airport, as defined in Title 49, it has, on the date of submittal of the project grant application, all the safety equipment required for certification of such airport under section 44706 of Title 49, United States Code, and all the security equipment required by rule or regulation, and

has provided for access to the passenger enplaning and deplaning area of such airport to passengers enplaning and deplaning from aircraft other than air carrier aircraft.

13. Accounting System, Audit, and Record Keeping Requirements.

- a. It shall keep all project accounts and records which fully disclose the amount and disposition by the recipient of the proceeds of this grant, the total cost of the project in connection with which this grant is given or used, and the amount or nature of that portion of the cost of the project supplied by other sources, and such other financial records pertinent to the project. The accounts and records shall be kept in accordance with an accounting system that will facilitate an effective audit in accordance with the Single Audit Act of 1984.
- b. It shall make available to the Secretary and the Comptroller General of the United States, or any of their duly authorized representatives, for the purpose of audit and examination, any books, documents, papers, and records of the recipient that are pertinent to this grant. The Secretary may require that an appropriate audit be conducted by a recipient. In any case in which an independent audit is made of the accounts of a sponsor relating to the disposition of the proceeds of a grant or relating to the project in connection with which this grant was given or used, it shall file a certified copy of such audit with the Comptroller General of the United States not later than six (6) months following the close of the fiscal year for which the audit was made.

14. Minimum Wage Rates.

It shall include, in all contracts in excess of \$2,000 for work on any projects funded under this grant agreement which involve labor, provisions establishing minimum rates of wages, to be predetermined by the Secretary of Labor, in accordance with the Davis-Bacon Act, as amended (40 U.S.C. 276a-276a-5), which contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work.

15. Veteran's Preference.

It shall include in all contracts for work on any project funded under this grant agreement which involve labor, such provisions as are necessary to insure that, in the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns owned and controlled by disabled veterans as defined in Section 47112 of Title 49, United States Code. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

16. Conformity to Plans and Specifications.

It will execute the project subject to plans, specifications, and schedules approved by the Secretary. Such plans, specifications, and schedules shall be submitted to the Secretary prior to commencement of site preparation, construction, or other performance under this grant agreement, and, upon approval of the Secretary, shall be incorporated into this grant agreement. Any modification to the approved plans,

specifications, and schedules shall also be subject to approval of the Secretary, and incorporated into this grant agreement.

17. Construction Inspection and Approval.

It will provide and maintain competent technical supervision at the construction site throughout the project to assure that the work conforms to the plans, specifications, and schedules approved by the Secretary for the project. It shall subject the construction work on any project contained in an approved project application to inspection and approval by the Secretary and such work shall be in accordance with regulations and procedures prescribed by the Secretary. Such regulations and procedures shall require such cost and progress reporting by the sponsor or sponsors of such project as the Secretary shall deem necessary.

18. Planning Projects.

In carrying out planning projects:

- a. It will execute the project in accordance with the approved program narrative contained in the project application or with the modifications similarly approved.
- b. It will furnish the Secretary with such periodic reports as required pertaining to the planning project and planning work activities.
- c. It will include in all published material prepared in connection with the planning project a notice that the material was prepared under a grant provided by the United States.
- d. It will make such material available for examination by the public, and agrees that no material prepared with funds under this project shall be subject to copyright in the United States or any other country.
- e. It will give the Secretary unrestricted authority to publish, disclose, distribute, and otherwise use any of the material prepared in connection with this grant.
- f. It will grant the Secretary the right to disapprove the sponsor's employment of specific consultants and their subcontractors to do all or any part of this project as well as the right to disapprove the proposed scope and cost of professional services.
- g. It will grant the Secretary the right to disapprove the use of the sponsor's employees to do all or any part of the project.
- h. It understands and agrees that the Secretary's approval of this project grant or the Secretary's approval of any planning material developed as part of this grant does not constitute or imply any assurance or commitment on the part of the Secretary to approve any pending or future application for a Federal airport grant.

19. Operation and Maintenance.

- a. The airport and all facilities which are necessary to serve the aeronautical users of the airport, other than facilities owned or controlled by the United States, shall be operated at all times in a safe and serviceable condition and in accordance with the minimum standards as may be required or prescribed by applicable Federal,

state and local agencies for maintenance and operation. It will not cause or permit any activity or action thereon which would interfere with its use for airport purposes. It will suitably operate and maintain the airport and all facilities thereon or connected therewith, with due regard to climatic and flood conditions. Any proposal to temporarily close the airport for non-aeronautical purposes must first be approved by the Secretary. In furtherance of this assurance, the sponsor will have in effect arrangements for-

- 1) Operating the airport's aeronautical facilities whenever required;
 - 2) Promptly marking and lighting hazards resulting from airport conditions, including temporary conditions; and
 - 3) Promptly notifying airmen of any condition affecting aeronautical use of the airport. Nothing contained herein shall be construed to require that the airport be operated for aeronautical use during temporary periods when snow, flood or other climatic conditions interfere with such operation and maintenance. Further, nothing herein shall be construed as requiring the maintenance, repair, restoration, or replacement of any structure or facility which is substantially damaged or destroyed due to an act of God or other condition or circumstance beyond the control of the sponsor.
- b. It will suitably operate and maintain noise compatibility program items that it owns or controls upon which Federal funds have been expended.

20. Hazard Removal and Mitigation.

It will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

21. Compatible Land Use.

It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

22. Economic Nondiscrimination.

- a. It will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.
- b. In any agreement, contract, lease, or other arrangement under which a right or privilege at the airport is granted to any person, firm, or corporation to conduct or

to engage in any aeronautical activity for furnishing services to the public at the airport, the sponsor will insert and enforce provisions requiring the contractor to-

- 1) furnish said services on a reasonable, and not unjustly discriminatory, basis to all users thereof, and
 - 2) charge reasonable, and not unjustly discriminatory, prices for each unit or service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.
- c. Each fixed-based operator at the airport shall be subject to the same rates, fees, rentals, and other charges as are uniformly applicable to all other fixed-based operators making the same or similar uses of such airport and utilizing the same or similar facilities.
 - d. Each air carrier using such airport shall have the right to service itself or to use any fixed-based operator that is authorized or permitted by the airport to serve any air carrier at such airport.
 - e. Each air carrier using such airport (whether as a tenant, non-tenant, or subtenant of another air carrier tenant) shall be subject to such nondiscriminatory and substantially comparable rules, regulations, conditions, rates, fees, rentals, and other charges with respect to facilities directly and substantially related to providing air transportation as are applicable to all such air carriers which make similar use of such airport and utilize similar facilities, subject to reasonable classifications such as tenants or non-tenants and signatory carriers and non-signatory carriers. Classification or status as tenant or signatory shall not be unreasonably withheld by any airport provided an air carrier assumes obligations substantially similar to those already imposed on air carriers in such classification or status.
 - f. It will not exercise or grant any right or privilege which operates to prevent any person, firm, or corporation operating aircraft on the airport from performing any services on its own aircraft with its own employees [including, but not limited to maintenance, repair, and fueling] that it may choose to perform.
 - g. In the event the sponsor itself exercises any of the rights and privileges referred to in this assurance, the services involved will be provided on the same conditions as would apply to the furnishing of such services by commercial aeronautical service providers authorized by the sponsor under these provisions.
 - h. The sponsor may establish such reasonable, and not unjustly discriminatory, conditions to be met by all users of the airport as may be necessary for the safe and efficient operation of the airport.
 - i. The sponsor may prohibit or limit any given type, kind or class of aeronautical use of the airport if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public.

23. Exclusive Rights.

It will permit no exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. For purposes of this paragraph, the providing of the services at an airport by a single fixed-based operator shall not be construed as an exclusive right if both of the following apply:

- a. It would be unreasonably costly, burdensome, or impractical for more than one fixed-based operator to provide such services, and
- b. If allowing more than one fixed-based operator to provide such services would require the reduction of space leased pursuant to an existing agreement between such single fixed-based operator and such airport. It further agrees that it will not, either directly or indirectly, grant or permit any person, firm, or corporation, the exclusive right at the airport to conduct any aeronautical activities, including, but not limited to charter flights, pilot training, aircraft rental and sightseeing, aerial photography, crop dusting, aerial advertising and surveying, air carrier operations, aircraft sales and services, sale of aviation petroleum products whether or not conducted in conjunction with other aeronautical activity, repair and maintenance of aircraft, sale of aircraft parts, and any other activities which because of their direct relationship to the operation of aircraft can be regarded as an aeronautical activity, and that it will terminate any exclusive right to conduct an aeronautical activity now existing at such an airport before the grant of any assistance under Title 49, United States Code.

24. Fee and Rental Structure.

It will maintain a fee and rental structure for the facilities and services at the airport which will make the airport as self-sustaining as possible under the circumstances existing at the particular airport, taking into account such factors as the volume of traffic and economy of collection. No part of the Federal share of an airport development, airport planning or noise compatibility project for which a grant is made under Title 49, United States Code, the Airport and Airway Improvement Act of 1982, the Federal Airport Act or the Airport and Airway Development Act of 1970 shall be included in the rate basis in establishing fees, rates, and charges for users of that airport.

25. Airport Revenues.

- a. All revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport. The following exceptions apply to this paragraph:
 - 1) If covenants or assurances in debt obligations issued before September 3, 1982, by the owner or operator of the airport, or provisions enacted before September 3, 1982, in governing statutes controlling the owner or operator's financing, provide for the use of the revenues from any of the airport owner or

operator's facilities, including the airport, to support not only the airport but also the airport owner or operator's general debt obligations or other facilities, then this limitation on the use of all revenues generated by the airport (and, in the case of a public airport, local taxes on aviation fuel) shall not apply.

- 2) If the Secretary approves the sale of a privately owned airport to a public sponsor and provides funding for any portion of the public sponsor's acquisition of land, this limitation on the use of all revenues generated by the sale shall not apply to certain proceeds from the sale. This is conditioned on repayment to the Secretary by the private owner of an amount equal to the remaining unamortized portion (amortized over a 20-year period) of any airport improvement grant made to the private owner for any purpose other than land acquisition on or after October 1, 1996, plus an amount equal to the federal share of the current fair market value of any land acquired with an airport improvement grant made to that airport on or after October 1, 1996.
 - 3) Certain revenue derived from or generated by mineral extraction, production, lease, or other means at a general aviation airport (as defined at Section 47102 of title 49 United States Code), if the FAA determines the airport sponsor meets the requirements set forth in Sec. 813 of Public Law 112-95.
- b. As part of the annual audit required under the Single Audit Act of 1984, the sponsor will direct that the audit will review, and the resulting audit report will provide an opinion concerning, the use of airport revenue and taxes in paragraph (a), and indicating whether funds paid or transferred to the owner or operator are paid or transferred in a manner consistent with Title 49, United States Code and any other applicable provision of law, including any regulation promulgated by the Secretary or Administrator.
 - c. Any civil penalties or other sanctions will be imposed for violation of this assurance in accordance with the provisions of Section 47107 of Title 49, United States Code.

26. Reports and Inspections.

It will:

- a. submit to the Secretary such annual or special financial and operations reports as the Secretary may reasonably request and make such reports available to the public; make available to the public at reasonable times and places a report of the airport budget in a format prescribed by the Secretary;
- b. for airport development projects, make the airport and all airport records and documents affecting the airport, including deeds, leases, operation and use agreements, regulations and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request;
- c. for noise compatibility program projects, make records and documents relating to the project and continued compliance with the terms, conditions, and assurances of this grant agreement including deeds, leases, agreements, regulations, and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request; and

- d. in a format and time prescribed by the Secretary, provide to the Secretary and make available to the public following each of its fiscal years, an annual report listing in detail:
 - 1) all amounts paid by the airport to any other unit of government and the purposes for which each such payment was made; and
 - 2) all services and property provided by the airport to other units of government and the amount of compensation received for provision of each such service and property.

27. Use by Government Aircraft.

It will make available all of the facilities of the airport developed with Federal financial assistance and all those usable for landing and takeoff of aircraft to the United States for use by Government aircraft in common with other aircraft at all times without charge, except, if the use by Government aircraft is substantial, charge may be made for a reasonable share, proportional to such use, for the cost of operating and maintaining the facilities used. Unless otherwise determined by the Secretary, or otherwise agreed to by the sponsor and the using agency, substantial use of an airport by Government aircraft will be considered to exist when operations of such aircraft are in excess of those which, in the opinion of the Secretary, would unduly interfere with use of the landing areas by other authorized aircraft, or during any calendar month that –

- a. Five (5) or more Government aircraft are regularly based at the airport or on land adjacent thereto; or
- b. The total number of movements (counting each landing as a movement) of Government aircraft is 300 or more, or the gross accumulative weight of Government aircraft using the airport (the total movement of Government aircraft multiplied by gross weights of such aircraft) is in excess of five million pounds.

28. Land for Federal Facilities.

It will furnish without cost to the Federal Government for use in connection with any air traffic control or air navigation activities, or weather-reporting and communication activities related to air traffic control, any areas of land or water, or estate therein, or rights in buildings of the sponsor as the Secretary considers necessary or desirable for construction, operation, and maintenance at Federal expense of space or facilities for such purposes. Such areas or any portion thereof will be made available as provided herein within four months after receipt of a written request from the Secretary.

29. Airport Layout Plan.

- a. It will keep up to date at all times an airport layout plan of the airport showing
 - 1) boundaries of the airport and all proposed additions thereto, together with the boundaries of all offsite areas owned or controlled by the sponsor for airport purposes and proposed additions thereto;
 - 2) the location and nature of all existing and proposed airport facilities and structures (such as runways, taxiways, aprons, terminal buildings, hangars and

roads), including all proposed extensions and reductions of existing airport facilities;

- 3) the location of all existing and proposed nonaviation areas and of all existing improvements thereon; and
 - 4) all proposed and existing access points used to taxi aircraft across the airport's property boundary. Such airport layout plans and each amendment, revision, or modification thereof, shall be subject to the approval of the Secretary which approval shall be evidenced by the signature of a duly authorized representative of the Secretary on the face of the airport layout plan. The sponsor will not make or permit any changes or alterations in the airport or any of its facilities which are not in conformity with the airport layout plan as approved by the Secretary and which might, in the opinion of the Secretary, adversely affect the safety, utility or efficiency of the airport.
- b. If a change or alteration in the airport or the facilities is made which the Secretary determines adversely affects the safety, utility, or efficiency of any federally owned, leased, or funded property on or off the airport and which is not in conformity with the airport layout plan as approved by the Secretary, the owner or operator will, if requested, by the Secretary (1) eliminate such adverse effect in a manner approved by the Secretary; or (2) bear all costs of relocating such property (or replacement thereof) to a site acceptable to the Secretary and all costs of restoring such property (or replacement thereof) to the level of safety, utility, efficiency, and cost of operation existing before the unapproved change in the airport or its facilities except in the case of a relocation or replacement of an existing airport facility due to a change in the Secretary's design standards beyond the control of the airport sponsor.

30. Civil Rights.

It will promptly take any measures necessary to ensure that no person in the United States shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in any activity conducted with, or benefiting from, funds received from this grant.

- a. Using the definitions of activity, facility and program as found and defined in §§ 21.23 (b) and 21.23 (e) of 49 CFR § 21, the sponsor will facilitate all programs, operate all facilities, or conduct all programs in compliance with all non-discrimination requirements imposed by, or pursuant to these assurances.
- b. Applicability
 - 1) Programs and Activities. If the sponsor has received a grant (or other federal assistance) for any of the sponsor's program or activities, these requirements extend to all of the sponsor's programs and activities.
 - 2) Facilities. Where it receives a grant or other federal financial assistance to construct, expand, renovate, remodel, alter or acquire a facility, or part of a facility, the assurance extends to the entire facility and facilities operated in connection therewith.

- 3) Real Property. Where the sponsor receives a grant or other Federal financial assistance in the form of, or for the acquisition of real property or an interest in real property, the assurance will extend to rights to space on, over, or under such property.

c. Duration.

The sponsor agrees that it is obligated to this assurance for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the assurance obligates the sponsor, or any transferee for the longer of the following periods:

- 1) So long as the airport is used as an airport, or for another purpose involving the provision of similar services or benefits; or
- 2) So long as the sponsor retains ownership or possession of the property.

d. Required Solicitation Language. It will include the following notification in all solicitations for bids, Requests For Proposals for work, or material under this grant agreement and in all proposals for agreements, including airport concessions, regardless of funding source:

“The **(Name of Sponsor)**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises and airport concession disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.”

e. Required Contract Provisions.

- 1) It will insert the non-discrimination contract clauses requiring compliance with the acts and regulations relative to non-discrimination in Federally-assisted programs of the DOT, and incorporating the acts and regulations into the contracts by reference in every contract or agreement subject to the non-discrimination in Federally-assisted programs of the DOT acts and regulations.
- 2) It will include a list of the pertinent non-discrimination authorities in every contract that is subject to the non-discrimination acts and regulations.
- 3) It will insert non-discrimination contract clauses as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a sponsor.
- 4) It will insert non-discrimination contract clauses prohibiting discrimination on the basis of race, color, national origin, creed, sex, age, or handicap as a

covenant running with the land, in any future deeds, leases, license, permits, or similar instruments entered into by the sponsor with other parties:

- a) For the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
 - b) For the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.
- f. It will provide for such methods of administration for the program as are found by the Secretary to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the acts, the regulations, and this assurance.
- g. It agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the acts, the regulations, and this assurance.

31. Disposal of Land.

- a. For land purchased under a grant for airport noise compatibility purposes, including land serving as a noise buffer, it will dispose of the land, when the land is no longer needed for such purposes, at fair market value, at the earliest practicable time. That portion of the proceeds of such disposition which is proportionate to the United States' share of acquisition of such land will be, at the discretion of the Secretary, (1) reinvested in another project at the airport, or (2) transferred to another eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order, (1) reinvestment in an approved noise compatibility project, (2) reinvestment in an approved project that is eligible for grant funding under Section 47117(e) of title 49 United States Code, (3) reinvestment in an approved airport development project that is eligible for grant funding under Sections 47114, 47115, or 47117 of title 49 United States Code, (4) transferred to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport, and (5) paid to the Secretary for deposit in the Airport and Airway Trust Fund. If land acquired under a grant for noise compatibility purposes is leased at fair market value and consistent with noise buffering purposes, the lease will not be considered a disposal of the land. Revenues derived from such a lease may be used for an approved airport development project that would otherwise be eligible for grant funding or any permitted use of airport revenue.
- b. For land purchased under a grant for airport development purposes (other than noise compatibility), it will, when the land is no longer needed for airport purposes, dispose of such land at fair market value or make available to the Secretary an amount equal to the United States' proportionate share of the fair market value of the land. That portion of the proceeds of such disposition which is proportionate to the United States' share of the cost of acquisition of such land will, (1) upon application to the Secretary, be reinvested or transferred to another

eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order: (1) reinvestment in an approved noise compatibility project, (2) reinvestment in an approved project that is eligible for grant funding under Section 47117(e) of title 49 United States Code, (3) reinvestment in an approved airport development project that is eligible for grant funding under Sections 47114, 47115, or 47117 of title 49 United States Code, (4) transferred to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport, and (5) paid to the Secretary for deposit in the Airport and Airway Trust Fund.

- c. Land shall be considered to be needed for airport purposes under this assurance if (1) it may be needed for aeronautical purposes (including runway protection zones) or serve as noise buffer land, and (2) the revenue from interim uses of such land contributes to the financial self-sufficiency of the airport. Further, land purchased with a grant received by an airport operator or owner before December 31, 1987, will be considered to be needed for airport purposes if the Secretary or Federal agency making such grant before December 31, 1987, was notified by the operator or owner of the uses of such land, did not object to such use, and the land continues to be used for that purpose, such use having commenced no later than December 15, 1989.
- d. Disposition of such land under (a) (b) or (c) will be subject to the retention or reservation of any interest or right therein necessary to ensure that such land will only be used for purposes which are compatible with noise levels associated with operation of the airport.

32. Engineering and Design Services.

It will award each contract, or sub-contract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design, engineering, surveying, mapping or related services with respect to the project in the same manner as a contract for architectural and engineering services is negotiated under Title IX of the Federal Property and Administrative Services Act of 1949 or an equivalent qualifications-based requirement prescribed for or by the sponsor of the airport.

33. Foreign Market Restrictions.

It will not allow funds provided under this grant to be used to fund any project which uses any product or service of a foreign country during the period in which such foreign country is listed by the United States Trade Representative as denying fair and equitable market opportunities for products and suppliers of the United States in procurement and construction.

34. Policies, Standards, and Specifications.

It will carry out the project in accordance with policies, standards, and specifications approved by the Secretary including but not limited to the advisory circulars listed in the Current FAA Advisory Circulars for AIP projects, dated _____ (the latest approved version as of this grant offer) and included in this grant, and in accordance

with applicable state policies, standards, and specifications approved by the Secretary.

35. Relocation and Real Property Acquisition.

- a. It will be guided in acquiring real property, to the greatest extent practicable under State law, by the land acquisition policies in Subpart B of 49 CFR Part 24 and will pay or reimburse property owners for necessary expenses as specified in Subpart B.
- b. It will provide a relocation assistance program offering the services described in Subpart C and fair and reasonable relocation payments and assistance to displaced persons as required in Subpart D and E of 49 CFR Part 24.
- c. It will make available within a reasonable period of time prior to displacement, comparable replacement dwellings to displaced persons in accordance with Subpart E of 49 CFR Part 24.

36. Access By Intercity Buses.

The airport owner or operator will permit, to the maximum extent practicable, intercity buses or other modes of transportation to have access to the airport; however, it has no obligation to fund special facilities for intercity buses or for other modes of transportation.

37. Disadvantaged Business Enterprises.

The sponsor shall not discriminate on the basis of race, color, national origin or sex in the award and performance of any DOT-assisted contract covered by 49 CFR Part 26, or in the award and performance of any concession activity contract covered by 49 CFR Part 23. In addition, the sponsor shall not discriminate on the basis of race, color, national origin or sex in the administration of its DBE and ACDBE programs or the requirements of 49 CFR Parts 23 and 26. The sponsor shall take all necessary and reasonable steps under 49 CFR Parts 23 and 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts, and/or concession contracts. The sponsor's DBE and ACDBE programs, as required by 49 CFR Parts 26 and 23, and as approved by DOT, are incorporated by reference in this agreement. Implementation of these programs is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the sponsor of its failure to carry out its approved program, the Department may impose sanctions as provided for under Parts 26 and 23 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1936 (31 U.S.C. 3801).

38. Hangar Construction.

If the airport owner or operator and a person who owns an aircraft agree that a hangar is to be constructed at the airport for the aircraft at the aircraft owner's expense, the airport owner or operator will grant to the aircraft owner for the hangar a long term lease that is subject to such terms and conditions on the hangar as the airport owner or operator may impose.

39. Competitive Access.

- a. If the airport owner or operator of a medium or large hub airport (as defined in section 47102 of title 49, U.S.C.) has been unable to accommodate one or more requests by an air carrier for access to gates or other facilities at that airport in order to allow the air carrier to provide service to the airport or to expand service at the airport, the airport owner or operator shall transmit a report to the Secretary that-
 - 1) Describes the requests;
 - 2) Provides an explanation as to why the requests could not be accommodated; and
 - 3) Provides a time frame within which, if any, the airport will be able to accommodate the requests.
- b. Such report shall be due on either February 1 or August 1 of each year if the airport has been unable to accommodate the request(s) in the six month period prior to the applicable due date.

Appendix C - Airport Building Assessment

C.1 Introduction

The Ohio State University Airport - airport code KOSU - operations and services include conference room rentals, aircraft maintenance and service, and fixed base operator-provided services, such as de-icing and fueling. The Airport has multiple buildings that range from operations to hangars and maintenance buildings. In order to identify the building conditions and their current characteristics for the Master Plan, facility condition assessments were conducted on Thursday, November 9, 2017¹.

The facility assessments examine multiple building components including those related to the architectural, structural, mechanical, electrical, plumbing, and safety aspects of each of the structures. Conditions are reported through physical descriptions. Each facility is then given a condition assessment score. These scores are provided to assist the Airport Administration in determining the next steps in improving airport facilities. The parameters for scoring are as follows:

- Poor Condition - This requires major renovation or replacement.
- Average Condition – This requires minor renovations and improvements.
- Good Condition – This requires no renovations but requires minimal improvements.
- Excellent Condition – This requires no improvements or renovations

The Consultant interviewed Mr. Dale Gelter, Assistant Director for Facilities and Airport Operations, while conducting the assessments. The Consultant was escorted by Mr. Gelter's staff.

C.2 Analysis of Existing Conditions

A total of 23 buildings were assessed by Eric Chambers and Phil Schilffarth of Brandstetter Carroll Inc. on November 9, 2017. The remainder of this report is comprised of brief descriptions and condition assessments for the facilities. The square footage of the 23 buildings consist of the following breakdowns:

- Storage Facilities – 17,300 sf
- Maintenance Facilities – 52,500 sf
- Office with Conventional Hangar – 85,300 sf
- Conventional Hangars – 68,700 sf
- T-Hangars – 131,400 sf

A new terminal is being constructed at KOSU that will include a new aviation education and research facility with state-of-the-art flight simulators, research labs and classrooms, and a modern flight terminal. The new facilities will integrate education with airport operations, benefiting Ohio students as well as Columbus-area residents and visitors. This modern facility will be approximately 29,000 square feet and will replace the existing general aviation terminal (1,929 square feet; administration building (4,687 square feet); and maintenance building (6,186 square feet).

¹ A few facilities were not evaluated during this assessment as they are not owned by the University or are in the process of being replaced.

0143 The Paint House

The GSF of this building is 1,100 sf.
The building was constructed in 1948.
This building is in **poor condition**.

0164 Snow Removal and Equipment Storage Building

The GSF of this building is 15,700 sf.
The building was constructed in 1991
This building is in **average condition**.

0195 Airport Storage

The GSF of this building is 12,800 sf.
The building was constructed in 1960.
This building is in **poor condition**.

0196 T-Hangar A West

The GSF of this building is 10,600 sf.
The building was constructed in 1960.
This building is in **average condition**.

0197 T-Hangar A East

The GSF of this building is 12,800 sf.
The building was constructed in 1960.
This building is in **poor condition**.

0198 Hangar 4

The GSF of this building is 29,500 sf.
The building was constructed in 1963.
This building is in **average condition**.

0235 Flight Laboratory (Hangars)

The GSF of this building is 13,500 sf.
The building was constructed in 1958.
This building is in **average condition**.

0236 Hangars 1, 2, and 3

The GSF of this building is 29,400 sf.
The building was constructed in 1943.
This building is in **average condition**.

0237 Airport Maintenance

The GSF of this building is 6,200 sf.
The building was constructed in 1948.
This building is in **poor condition**.

0238 Hangar 6

The GSF of this building is 5,700 sf.
The building was constructed in 1948.
This building is in **poor condition**.

0239 Hangar 7

The GSF of this building is 9,900 sf.
The building was constructed in 1976.
This building is in **average condition**.

0256 Hangar 8

The GSF of this building is 19,000 sf.
The building was constructed in 1980.
This building was in **average condition**.

0900 Hangar 9

The GSF of this building is 33,100 sf.
The building was constructed in 1986.
This building is in **average condition**.

0901 T-Hangar C

The GSF of this building is 17,200 sf.
The building was constructed in 1986.
This building is in **average condition**.

0904 T-Hangar D

The GSF of this building is 17,200 sf.
The building was constructed in 1986.
This building is in **average condition**.

0978 Med Flight Hangar

The GSF of this building is 42,200 sf.
The building was constructed in 1972.
This building is in **good condition**.

0993 Airport Blue Barn

The GSF of this building is 900 sf.
The building was constructed in 1965.
This building is in **poor condition**.

1000 Airport North Storage Hangar

The GSF of this building is 4,000 sf.
The building was constructed in 1976.
This building is in **poor condition**.

1001 Airport North Storage Shed

The GSF of this building is 600 sf.
The building was constructed in 1980.
This building is in **poor condition**.

1014 T-Hangar B

The GSF of this building is 17,200 sf.
The building was constructed in 2017.
This building is in **excellent condition**.

1015 T-Hangar E

The GSF of this building is 19,600 sf.
The building was constructed in 2017.
This building is in **excellent condition**.

1016 T-Hangar F

The GSF of this building is 19,600 sf.
The building was constructed in 2017.
This building is in **excellent condition**.

1017 T-Hangar G

The GSF of this building is 17,200 sf.
The building was constructed in 2017.
This building is in **excellent condition**.

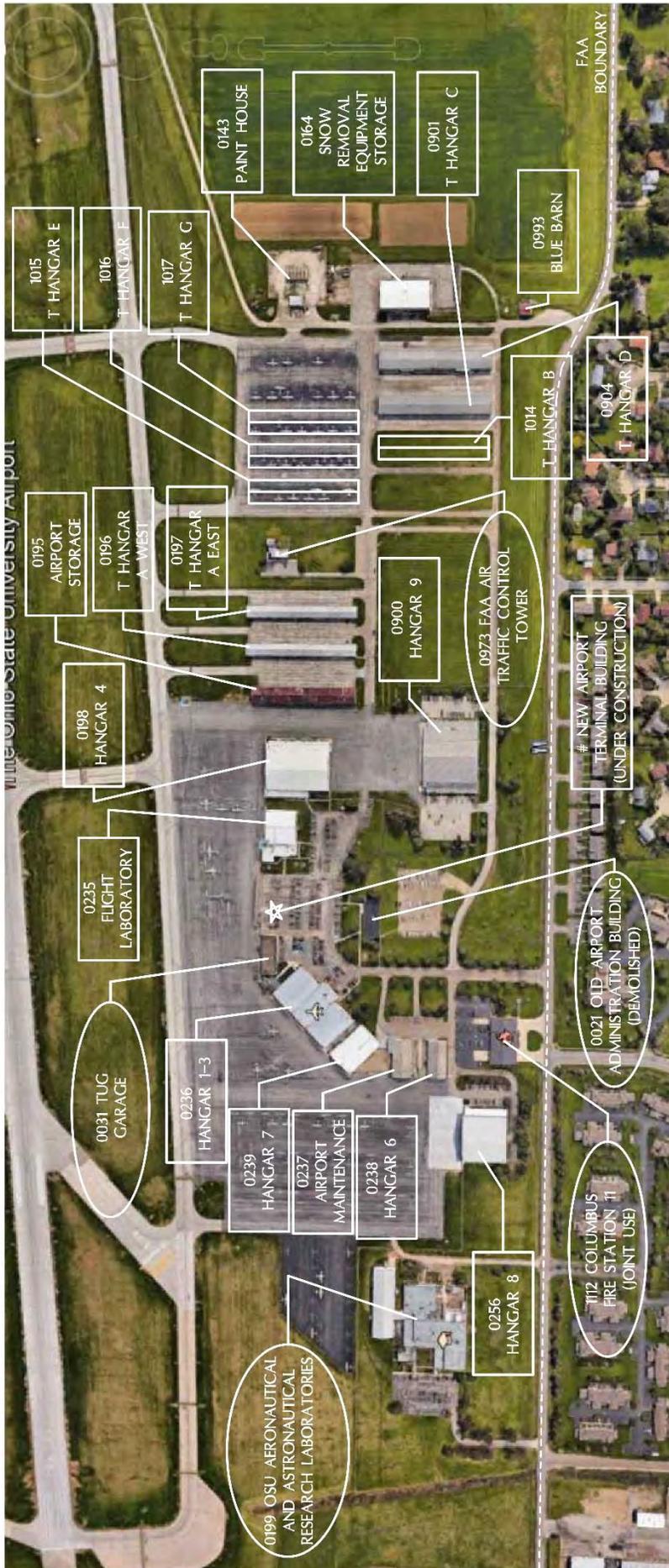
New Airport Terminal Building

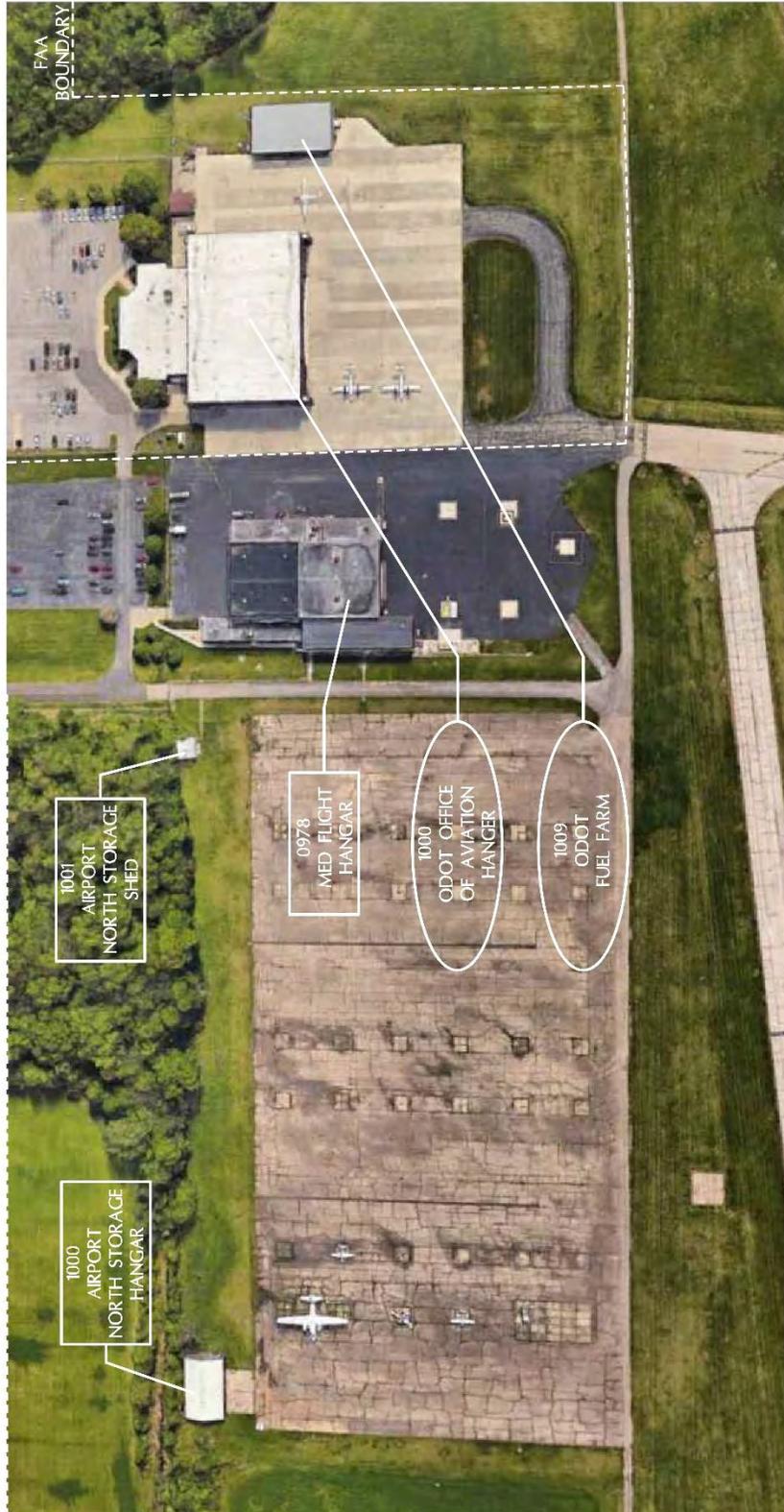
The GSF of this building is 29,000 sf.
The building was constructed in 2018.
This building is in **excellent condition**

0021 Airport Administration Building

was **not reviewed** - in the process of being replaced and **will be demolished****0285 Fire Crash and Rescue Building** has been **demolished**

0031 Airport Operations has been **demolished**





C.3 Building 0143 – The Paint House



Source: BCI, 2017

Condition: Poor

C.3.1 Introduction

The Paint House is located at 2160 West Case Road in Columbus, Ohio. The area of the building is approximately 1,100 sf. The building was constructed in 1948. This building is a wood framed, gabled roof structure with a standing seam metal panel wall system and a standing seam metal roof system. The structure has a small Office and a small Storage Room on the interior of the building. The siding and roof systems are rusting, and paint finishes have peeled and are damaged. The interior Office and Storage Room are heavily used and show signs of wear. There are three manual overhead sectional garage doors which appear to be in fair condition. The building needs to be repainted and also needs new HVAC systems. There is a small Guard Station located in the fenced area of the property. This station has some mechanical systems for the large fuel pumps. The guard station itself is in fair condition, but does show signs of wear from its age and use. The clear floor height for the building is 10'-0" to the center. The eave height is 9'-0". The main building is in poor condition.

C.3.2 Exterior

Walls

The exterior walls consist of a standing seam metal wall panel system which are supported by a wood structural frame and girts on the interior of the building. The exterior paint is chipped and damaged and should be stripped and repainted. The siding is rusted and damaged and needs to be repaired in multiple locations.

Roof

The roof of the structure is standing seam metal roof system. The roof is original to the structure; however, it is rusting in various locations and should be replaced if any significant improvements are made to the building.

Outdoor Amenities

There are six large Convault fuel tanks with a pumping station located in the fenced area of the property. These appear to be in good working condition.

C.3.3 Foundation and Structure

The building consists of a reinforced concrete footing with CMU foundation walls to grade. The concrete slab is slab on grade. The footings and foundation appear to be in good condition.

The structural frame consists of a wood post and beam construction with wood roof trusses and a wood purlin and girt wall system. The interior partition walls are wood frame construction. The structure appears in sound condition.

C.3.4 Interiors

Walls

The interior walls of the building are exposed exterior metal wall system and wood girts. Various areas of the wall system have been painted; however, the paint is peeling and in need of repair. There are wood framed walls with painted gypsum board and plywood. Insulation has been added to the interior of the building. However, it is damaged in many locations and should be repaired or replaced. The gypsum board is damaged in many locations and should be patched, repaired, and repainted. The small Guard Station consists of plywood interior walls, which are painted. These appear to be in adequate condition but could be repainted if other work is undertaken.

Floors

The building consists of reinforced concrete slab on grade floors. The floors are worn and stained in various locations but are still in good working condition.

Ceilings

The building has gypsum wall board installed over the wood framing. The wall board is unfinished in many locations and weathered but remains in fair condition. The painted wallboard in the small office appears to be in good condition.

Doors and Windows

The doors consist of hollow metal steel doors and frames. Some of the exterior doors are rusted and should be replaced. Some of the doors have small windows or vision lights. The doors have cylinder hardware. There are sliding steel doors with a window to the Guard Station. There are three overhead sectional doors which are in fair condition but may be at the end of their useful life.

The windows are single pane glass with wire mesh and aluminum frames. The windows are not energy efficient and are original to the building. The Guard Station has double pane fixed windows on one side of the building.

C.3.5 Code Analysis

The structure has multiple means of egress which meet the Life Safety Codes. The exterior doors are accessible, but do not meet ADA Accessibility Compliance. The signage on the building is not compliant with ADA Requirements.

This building does not meet current Energy Code Requirements. The building does not meet the current energy code for R values for insulation, roof, or wall assembly components.

C.3.6 Systems

Fire Protection

Sprinkler

The structure has no sprinkler system.

Fire Alarm

The structure has no fire alarm system.

Extinguishers

The structure has numerous fire extinguishers which appear to receive annual inspection.

HVAC

System

The system consists of an AC unit with DX cooling and electric heat in the Office Area. These systems should be replaced if any significant improvements are made to this building.

Controls

The units themselves have built-in thermostats which appear to be working. However, they are not efficient as temperature ranges fluctuate to the extremes.

Electrical

Lighting

There are surface mounted, and chain hung fluorescent fixtures and some HID exterior lighting. These lights are inefficient and should be updated.

Exit signs and emergency egress lighting are lacking at this facility. These should be installed immediately for compliance with life safety requirements.

Lighting Controls

Manual light wall switches appear to be in adequate condition. Face plates should be replaced as desired.

Service and Distribution

There is currently a 100-amp, 208-volt service. All buildings appear to have service provided by AEP. The fuel pumps are powered by 400-amp 280-volt three phase service. These services appear to be in good condition. Distribution is handled by a single panel in the office of the building. The fuel pumps have two 200-amp distribution panels which appear to be in good condition.

Telecommunications and IT

The building and Guard Station appear to have adequate phone and data access; however, it is limited in its quantity.

Receptacles

There appear to be wall receptacles located in various locations and appear to be in working condition. Outlet covers should be replaced as desired.

C.4 Building 0164 – Snow Removal Equipment Storage



Source: BCI, 2017

Condition: Average

C.4.1 Introduction

The Snow Removal and Equipment Storage Building is located at 1892 West Case Road in Columbus, Ohio. The approximate area of the building is 15,700 s.f. The building was constructed in 1991. The building is a two-story structure with a partial basement that is utilized for truck maintenance and storage of parts. The first-floor main level consists of maintenance and storage facilities, salt and sand bays, offices, and storage rooms. The second floor consists of offices and store rooms. The structure span varies across the building with the largest span being 46'. The clear floor height for the main bay areas is 20'-0" with the second-floor clear floor height being 10'-0" and the partial basement having a clear floor height of 9'-0". The clear floor height in the center is 29'-0". The construction type of the building is a steel framed metal building with standing seam metal panel wall system and standing seam metal roof. There are CMU block walls for the offices and storage facilities. The interior surfaces are painted gypsum board and painted CMU walls with VCT flooring and acoustical ceiling systems. There are reinforced concrete walls provided in the sand and salt bays. The facility is in average condition, however, there are areas that need to be improved, as noted in the information below.

C.4.2 Exterior

Walls

The exterior walls are standing seam metal panel system supported on steel girts. The exterior walls have fabric covered batt insulation installed on the interior of the building. Most of the insulation is in good condition, however, there are areas that are damaged that need to be repaired or replaced. The exterior walls do have damage around the exterior of the building and should be repaired. The exterior of the building should be repainted, if any significant improvements are conducted on this building.

Roof

The roof consists of a standing seam metal roof system supported on the steel purlins and roof trusses. The metal flashing and trim is in fair condition, but there are some areas that are damaged and should be repaired. There is insulation located above the ceilings in many of the heated areas. The roof appears to be in fair condition.

The roof drainage system consists of aluminum gutters and downspouts. The downspouts are rusting and damaged at multiple locations, especially at the PVC downspout boots. These connections should be repaired.

Amenities

The exterior of the building does have chain link fence provided on three of the main sides of the building. The fence appears to be in good condition.

C.4.3 Structure

Foundation

The foundations and footings for this building are reinforced concrete footings with CMU block walls to grade. There are reinforced concrete piers around the perimeter at column locations. The slab is a reinforced concrete floor. Both the foundations, footings, and slab appear to be in good condition. There is some general cracking occurring in the bay areas, but these do not appear to be settling or creating any hazardous conditions. The basement walls consist of concrete masonry walls. The basement floor is a reinforced concrete floor. The ceiling of the basement area has a small section that is open to the main level bay as a pit for maintenance purposes. These structural elements are in good condition.

Structural Frame

The structure consists of steel columns, beams, floor joists, steel trusses, and steel girts and purlins for the roof structure. There are reinforced concrete walls located at the sand and salt bays. These components appear to be in good condition.

C.4.4 Interiors

Walls

The interior walls of the facility consist of painted CMU block walls, painted gypsum board in office and Restroom locations. There is exposed insulation on the exterior walls which have some damage that should be repaired. The interior walls are in good condition, but many of them need repainting. The concrete reinforced walls in the salt and sand bays are in good condition. The salt bay has an epoxy coating on the concrete walls to protect it from deterioration from the salt being stored in this area. The first and second floor Restrooms have tile. The first floor Restroom has painted drywall above the tile. The second floor Restroom has a shower that has tile walls.

Floors

The structure consists of reinforced concrete floors which have been sealed in many areas. Other locations have been covered with VCT, such as in the offices and common spaces. The VCT is a high maintenance item and should be replaced if any improvements are made to this facility. The first floor Restroom has ceramic tile floors. These appear to be in good condition, however, there are some locations where grout joints should be cleaned or repaired.

Ceilings

The building consists of exposed painted structure in the bays and other storage locations, however, there are acoustical ceiling systems in the offices and Restroom facilities. There are also some locations that have painted

gypsum board ceilings. Most of the ceilings are in fair condition, however, the acoustical ceiling tile should be replaced, especially in the second floor Restroom above the shower where water damage has occurred.

Doors and Windows

Regarding doors, there are multi-track, double-sliding, metal, hanging doors which are provided on two sides of the building for access to the main bays. These have insulated metal panels and appear to be in good condition. There are some areas on the doors that do have damage to them, which should be repaired. The doors should also be resealed, as many of the seals are broken or worn out. Many of the other doors around the facility consist of hollow metal frames and doors. Some have half-light glazing in them. Many of them have lever hardware and appear to be in working condition. Most of the exterior main doors should have weather stripping and cosmetic damage repaired. The windows on the building consist of double pane, glazed aluminum windows. The windows in many locations are fogged up. Regardless, it appears that they are in fair condition currently. If any significant improvements are made to the facility, the windows should be replaced for more cost effective and energy efficient solutions.

C.4.5 Vertical Circulation

Stairs and Elevator

There is no elevator in this building.

There are two stairways in the building. One consists of steel stringers with non-slip metal steps. The stair has steel tube handrails with baluster railings. This goes from the main level to the second floor. The steel stringers and handrails could be repainted if desired. There is a second set of stairs that go from the main level to the basement area, which consist of concrete steps. This stair also has steel tube handrails that appear to be in good condition. The handrails could be repainted if desired. There is a removable steel ladder that is available from the maintenance pit in the basement to the main level bay. This appears to be in good condition.

Fixed Casework

The Breakroom consists of laminated wall cabinets, base cabinets, and counter tops. The second floor Locker Rooms have metal wall lockers. The second floor Restrooms also have laminate vanities where the sinks are located. These are all in fair condition. The Restrooms do have metal partitions, which are stained, but are in good condition. The shower stalls have glass doors which are in fair condition. The main bay has a post lift. There are two safes located in the main level for various items.

C.4.6 Code Analysis

The building has multiple means of egress which meet life safety codes. The roof appears to have adequate fall protection. The Restrooms on the first and second floors are not ADA compliant. The first floor also does not have ADA compliant hardware, which should be replaced since it is labeled as an ADA compliant Restroom. The signage for the building is accessible and meets ADA compliance at the proper locations. The exterior doors around the building are not ADA compliant. There is an ADA compliant automatic opener at the main entry to the facility. The handrails do not meet building code for handrail extensions.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.4.7 Systems

Plumbing

Service

The structure has a 1 ½" water supply with meter.

Piping

The piping for the building consists of copper piping and fittings for the domestic water, which appear to be in good condition. The sanitary piping is PVC pipe which drains to a septic treatment tank with an outfall. The building has a 1 ½" gas service and gas meter which has a 1 ½" supply for distribution into the building appliances. The system appears to be in good working condition.

Fixtures

Fixtures consist of floor mounted water closets and wall mounted urinals. Lavatories are provided in the vanities in the Restroom areas. There are single shower stalls which consist of ceramic tile surrounds. The Breakroom has a stainless steel sink and there is a stainless steel laundry sink and cast iron sink. The main bay does have an emergency shower and eyewash station. The building has wall mounted water fountains located on the first and second floors, which meet plumbing code. However, these fountains do not meet ADA compliance for clear floor space or high-low consistency.

Gas

There is gas provided for the building. It appears to be in fair condition.

Fire Protection

Sprinkler

The Chemical Storage Room has a limited area sprinkler provided from the domestic water system. However, the remaining portion of the building is not sprinkled.

Fire Alarm

The building has a Simplex Fire Alarm System. There are also smoke detectors, pull stations at various exits, and horn strobes provided. The system appears to receive annual inspections.

Extinguishers

There are wall mounted fire extinguishers throughout the building. They appear to receive annual inspections.

HVAC

System

The system consists of gas fired furnaces and a DX cooling condenser and coils. There are also gas fired infrared radiant ceiling heaters and unit heaters provided in the bay areas and other storage rooms. These systems appear to be in working order, although, some of the radiant heater components appear to be damaged and should be repaired.

Distribution

Distribution consists of standard metal duct supply/return. There are exhausts provided in the Restroom and Breakroom area. There are also lay-in diffusers, both supply and return grills in the office areas.

Controls

The building has electronic thermostats which control the HVAC systems. These appear to be in working condition, but there does appear to be a varying temperature range within the building.

Electrical

Lighting

The building has surface mounted and chain hung fluorescent fixtures. There are also HID wall packs and metal halide lighting. Many of the lights are burned out and should be replaced.

Lighting Controls

The lighting controls for the building consist of wall mounted light switches throughout. The cover plates could be replaced if desired. There are also relay panels that control lighting in the bay areas for multi-level switching. These appear to be in adequate condition.

Service and Distribution

The existing service for the building is an 800-amp 208/120 three phase. There is a 225 KVA transformer. The building distribution consists of multiple panels. The electrical meter is box is rusting and should be repaired or replaced.

Telecommunications and IT

There appears to be telephone and computer access throughout the office areas of the building. Additional outlets could be provided if any improvements are made to the facility.

Security Systems

The security for the building is limited and consists of only a few card access controlled doors. The access control appears to be in working condition.

Receptacles

There appear to be multiple receptacles located throughout the building. Additional outlets could be added if any improvements are made to the facility.

Exit Signs and Emergency Lighting

The building has illuminated exit signs and wall mounted emergency lighting. Both of these have battery back-ups and they appear to be located throughout the facility. They also appear to be in working condition.

C.5 Building 0195 – Airport Storage



Source: BCI, 2017

Condition: Poor

C.5.1 Introduction

The Airport Storage Building is located at 2160 West Case Road, Columbus, Ohio. The building is approximately 12,800 s.f. The building was constructed in 1960 and was originally called T-Hangar B. It was recently changed to Airport Storage. The clear floor height for the building is 16'-0". The spans vary, with the largest span being approximately 42'-4". The building is a steel frame structure with gable roof. The building has steel siding and roof system. The structure consists of steel post beams and steel roof trusses. There are large sliding style steel doors on the exterior of the building on the east and west elevations. The exterior façade is rusted and is in poor condition. Many of these panels will need to be replaced in their entirety. The building is currently being used for storage. There are multiple interior systems and walls that have been abandoned and damaged due to storage of materials. Many of the sliding doors are difficult to operate and have been damaged by vehicle impact. The building is in poor condition.

C.5.2 Exterior

Walls

The exterior walls are painted metal siding. The siding is rusted throughout, and the paint finish is fading. Many of the panels should be replaced in their entirety. Many of the panels are damaged and would need to be repaired if not replaced. The entire exterior façade should be repainted.

Roof

The roof consists of a metal standing seam roof system, which is supported by the trusses and purlins. In review of the facility, there is limited insulation for the roof. Many of the panels on the roof appear to be rusted through, from visible inspection from inside the building. The roof would need to be replaced in its entirety.

Roof drainage consists of steel gutters and downspouts which drain to cast iron boots. Many of the gutters and downspouts have either rusted or are damaged where they are no longer functional. Gutters and downspouts should be replaced.

C.5.3 Structure

Foundation

Footings appear to be continuous concrete footings. The floor is a concrete slab on grade. These appear to be in adequate condition.

Structural Frame

The structural frame consists of steel columns, beams with roof trusses, steel girts, and roof purlin systems. The structural integrity is provided, however, the exterior cladding for the walls and roof is in poor condition.

C.5.4 Interiors

Walls

Interior partition walls that are still in place have severe damage and many of the wall coverings have been removed. Perimeter walls are just exposed structural systems and metal siding. There are some walls with fiber board insulation, however, it is severely damaged and saturated with water. The metal siding has rusted through in many locations.

Floors

Many of the areas within the building have asphalt paved floors. There are some areas that have a concrete slab on grade, specifically, in the old office areas. Many of the floors are in bad condition and need to be replaced.

Ceilings

The ceilings are exposed steel with exposed insulation. Much of the insulation has either fallen down or is missing entirely.

Doors and Windows

The exterior consists of steel sliding doors on steel tracks. Many of the sliding doors are in poor condition. They are either difficult to open, rusted, or have been damaged by vehicle impact. These doors need to be repaired or replaced. There are some single-entry doors that are hollow metal frames and doors. These appear to be in fair condition. The hardware on these doors is not in good condition and should be replaced.

There are minimal windows in this building. The ones in place are steel frame, single pane windows with wire mesh. These windows appear to be original to the building and are in poor condition.

C.5.5 Code Analysis

The doors on the exterior of the building are not ADA compliant. Hardware on the single man doors need to be replaced. Current hardware is not ADA compliant. The structure does have multiple means of egress, and therefore meets the Building Code. It should be noted, though, that many of the doors are difficult to operate, which would need to be fixed for life safety requirements.

The building does not meet the current energy code for R values for insulation or for roof or wall assembly components.

C.5.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system in the building.

Fire Alarm

There is a fire alarm with heat detectors and a pull station at the northeast corner of the building. There are no interior systems in place as they have been removed.

Extinguishers

There are fire extinguishers located around the building which appear to receive annual inspection.

HVAC

System

Systems were abandoned in place.

Electrical

Lighting

Fluorescent lighting in the building has been abandoned in place and is not in working order. Exit signs and emergency egress lighting are not provided and should be installed immediately for life safety requirements.

Lighting Controls

Wall mounted switches are abandoned in place and not operational since lighting has been abandoned.

Service and Distribution

The building has a 100-amp 240/120 service, which appears to be adequate for this building. Distribution was handled by one distribution panel.

Telecommunications and IT

There is telephone coverage for the building due to the fire alarm, however, there is not adequate data services for the building.

Receptacles

Most of the receptacles have been removed, therefore, there is no adequate provision for electrical.

C.6 Building 0196 – T-Hangar A West



Source: BCI, 2017

Condition: Average

C.6.1 Introduction

T-Hangar A West is located at 2160 West Case Road in Columbus, Ohio. The approximate size of the building is 10,600 s.f. The building was built in 1960. The building is a steel structure with a gabled roof consisting of steel posts and beams and steel roof trusses. The longest span is 32'-4". The clear floor height is 16'-0" at the center. The clear floor height at the hangar doors is 8'-0". The clear floor height at the eave is 12'-0".

The wall and roof systems have chipped and peeling paint. Some of the panels have begun to rust, specifically on the roof. There is a small portion of the existing hangar that was converted to the new Flyers Club Offices. This area has broad loom carpet over concrete floors and some VCT floors. This area has stud wall partitions and painted gypsum board. There is a small room on the other side of the building used for tire storage. There are nine hangar bays which are rented and hold aircraft and some personal property. The structure is old but is in average condition.

The Hangar Doors are 35'-5" x 8'-0"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

A1 - N32405	A6 - N761AM
A2 - N500SU	A7 - Empty
A3 - N739EU	A8 - N91WW
A4 - N510SU	A9 - N566FD
A5 - Empty	

C.6.2 Exterior

Walls

Exterior walls are painted metal siding. The paint finish is peeling and damaged in many areas and should be repainted. The southernmost hangar does have a standing seam metal panel system installed that is in good condition.

Roof

The roof is a metal standing seam roof system supported on the roof purlins and trusses. There are translucent panels that have been installed. There are areas where rust has occurred due to paint peeling or chipping. These panels should be replaced. Metal gutters and downspouts drain to cast iron boots. The gutters and downspouts are in fair condition, however, there are a few that are damaged that should be repaired.

C.6.3 Structure

Foundation

Footings appear to be continuous concrete footings. The floor is a concrete slab on grade. These appear to be in adequate condition.

Structural Frame

The structural frame consists of steel columns, beams with roof trusses, steel girts, and roof purlin systems. The integrity of the structural frame is in place, though the exterior cladding for the walls and roof are in poor condition.

C.6.4 Interiors

Walls

The southernmost hangar was converted to the new Flyers Club which consists of stud frame partition walls with painted gypsum board. The walls could stand to be repainted due to some cosmetic damage. The hangar spaces around the remaining portion of the building have exposed metal siding. These areas appear to be in good condition.

Floors

The southern hangar where the new Flyers Club is located has a concrete floor. It is covered with broad loom carpeting and VCT flooring which is worn out and should be replaced. Hangar spaces consist of asphalt paving, many of them appear to be in adequate condition.

Ceilings

The new Flyers Club has painted gypsum board ceilings and some acoustical ceiling systems which appear to be in good condition. Ceiling tiles could be replaced if desired to improve cosmetic appearance. The hangars are exposed structure which is painted and appears to be in good condition.

Doors and Windows

There are hollow metal doors and hollow metal frames at the new Flyers Club area. These appear to be in fair condition, but there are also steel sliding doors on metal tracks around the perimeter of the building. Many of the single and double entry hollow metal doors have cylinder hardware. The Storage Area door has chipped and peeled paint which should be repainted. On the sliding metal doors, the metal tracks appear to be in good condition. There are a few that are damaged which should be repaired. There are door guards which need repair. Pad locks on the sliding doors should be oiled or replaced where needed.

Windows in the facility are steel, single pane windows. The new Flyers Club has double hung, single pane windows and aluminum frames. These are in good condition, but all windows should be replaced if any improvements are done to this facility.

C.6.5 Code Analysis

The steel sliding doors are not ADA compliant. Many of the entry doors around the facility are also not ADA compliant, especially into the new Flyers Club. The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.6.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system in the building.

Fire Alarm

There are heat detectors and a fire alarm in the hangar bays with a pull station at the northeast corner of the building. These appear to be tested annually.

Extinguishers

The portable fire extinguishers that are provided, appear to be tested annually.

HVAC

System

The HVAC consists of electric heat pumps for the new Flyers Club. This heat pump also has an air handling unit with DX coils. There is also a 1-ton window AC unit that is provided.

Distribution

The distribution system utilizes standard flex supply and return ducts and standard diffusers and grills. These appear to be in good working condition.

Controls

Building controls consist of electric thermostats which control the heat pump and the window unit and they appear to be in good working order.

Electrical

Lighting

The building has surface mounted and chain hung incandescent and HID lighting. There are also fluorescent fixtures provided in some locations. All this lighting should be replaced with current lighting technology such as LED or compact fluorescent fixtures. The lighting is in adequate condition for the general use of the building, but if any improvements are undertaken, the lighting should be replaced.

Lighting Controls

Wall mounted light switches are provided which appear to be in good condition.

Service and Distribution

There is a 200-amp 240/120 service with distribution through one panel.

Telecommunications and IT

There appear to be adequate telephone provisions for fire alarm, though there are no IT provisions in the building except in the new Flyers Club. It appears to be limited and should be expanded if any further improvements are made to this facility.

Receptacles

There are general receptacles provided around the facility, including ground fault current interrupters (GFCI).

Exit Signs and Emergency Egress

Exit signs and emergency lighting is lacking at this facility and should be installed immediately for life safety requirements.

C.7 Building 0197 – T-Hangar A East



Source: BCI, 2017

Condition: Poor

C.7.1 Introduction

0197 T Hangar A East is located at 2160 West Case Road in Columbus, Ohio. The approximate size of the building is 12,800 s.f. The building was built in 1960. The building is a steel structure with a gabled roof consisting of steel posts and beams and steel roof trusses.

The exterior has been painted several times over the course of its life. Paint is chipping and peeling around the entire building. The building should be stripped and repainted.

There are 10 active hangars available for rent. There is a small rentable space with carpet that is severely worn. This rental space is conditioned. There is a light vault located in the building for the air strip. The lighting equipment for the entire Airport Complex is located here. There is also an electric generator located in this room. The unit is only servicing the lighting. The facility is in poor condition. The clear floor height is 14'-0" at the center. The clear floor height at the hangar doors is 8'-0". The clear floor height at the eave is 12'-0".

The Hangar Doors are 35'-5" x 8'-0"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

A11 - N14GL	A14 - N9708F	A17 - Empty
A12 - N15IDB	A15 - Empty	A18 - N178CT
A13 - N35MR	A16 - Empty	A19 - N2394M

C.7.2 Exterior

Walls

The exterior walls are painted metal siding. Much of the paint around the facility is chipping and peeling and should be stripped and repainted. Some of the panels are rusting and need to be replaced.

Roof

The roof is a metal standing seam roof system supported on the roof purlins and trusses. There are translucent panels that have been installed. There are areas where rust has occurred due to paint peeling or chipping away. These panels should be replaced. Metal gutters and downspouts are in place which drain to cast iron boots. The gutters and downspouts are rusting and should be repaired. A few of the downspouts do not connect to the boots due to missing portions of the downspout or due to the connection being damaged. These need repair to avoid ponding water at the base of the building and foundation.

Amenities

The Airport lighting equipment for the entire complex is located in this building. This room appears to be in adequate condition, however, there are some items that need to be replaced, such as lighting and ceilings.

C.7.3 Structure

Foundation

The column supports are reinforced concrete footings with concrete piers. There is a reinforced slab on grade floor on the north and south ends of the building for the rentable space and Equipment Room.

Structural Frame

The steel frame consists of steel posts, columns and beams, steel roof trusses, and steel girts and purlin systems. This structure appears to be in good condition, and its integrity is intact.

C.7.4 Interiors

Walls

The rentable space and Equipment Room have stud framed walls with painted gypsum board. These walls are in fair condition; however, they could be repainted if desired. Vinyl base has been removed from the rentable space and many of the walls in this area are damaged and should be patched, repaired, and repainted. New base should be installed as well, prior to renting the room. The hangar bays consist of exposed metal siding systems. Some of them are rusted and could be cleaned and painted with a rust inhibiting paint.

Floors

The building consists primarily of concrete floors. The rentable space does have broadloom carpeting which is extremely worn and should be replaced. The hangar bays consist of asphalt paving, which is damaged or cracking in many locations and is also stained from jet fuel, oil, and hydraulic fluid. The bays are functional, but repairs to the floors should be considered.

Ceilings

The bays consist of exposed steel structure. There is rust that is occurring, and these patches could be painted with a rust inhibiting paint to avoid further deterioration. The Equipment Room and rentable space have acoustical ceilings. Many of them are stained and should be replaced. There are also many that are falling out in the rentable space that should be repaired.

Doors and Windows

Many of the exterior doors to the light vault and to the rentable space are not ADA compliant. The steel sliding doors on steel tracks are not ADA compliant either.

Exterior doors consist of double steel sliding doors on steel tracks. The hardware should be replaced. There are also single steel entry doors to the light vault and to the rentable space. The single-entry doors have glazing in them which appears to be in good condition. The doors themselves have been painted, but the paint is chipping and peeling. These should be stripped and repainted. Many of the sliding doors are difficult to open. These tracks should be repaired.

Exterior window frames consist of steel, single pane windows with wire mesh. The windows appear to be original to the structure and are in poor condition. The windows should be replaced if any improvements are made to the facility.

C.7.5 Code Analysis

The building has multiple means of egress which meets current life safety requirements.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.7.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system for this building.

Fire Alarm

The fire alarm system has pull stations and heat detectors in the hangars along with warning lights and sirens. These appear to be tested annually.

Extinguishers

Portable fire extinguishers are provided throughout and appear to be tested annually.

HVAC

There is an AC window unit with electric heat in the tenant space. It appears to be in working condition.

Controls

The window unit has a built-in thermostat which appears to be in working condition.

Electrical

Lighting

The structure consists primarily of surface mounted chain hung HID and incandescent lighting. The office or rentable space has fluorescent fixtures. All lighting should be replaced with new lighting technology such as LED or compact fluorescents. Exit signs and emergency egress lighting are lacking in the facility and should be installed to meet life safety requirements.

Lighting Controls

Lighting controls consist of wall mounted light switches which appear to be in working condition. Cover plates could be replaced if desired.

Service and Distribution

Service entrance consists of a 100-amp 240/120-volt service. Distribution is handled by a single distribution panel.

Telecommunications and IT

There appear to be adequate telephone provisions for fire alarm, though there are no IT provisions in the rentable space. It appears to be limited and should be expanded if any further improvements are made to this facility.

Receptacles

There are general receptacles provided around the facility, including ground fault current interrupters (GFCI).

Emergency Power

The light vault does have a Marathon Electric 90 kw 375-amp diesel fuel generator. The diesel fuel tank is located on the exterior of the building, and is a 250-gallon tank. The tank appears to be in good condition. The generator appears to be in good condition. It should be noted that this generator is only for the light vault equipment which is the lighting for the entire Airport Facility.

C.8 Building 0198 – Hangar 4



Source: BCI, 2017

Condition: Poor

C.8.1 Introduction

0198 – Hangar 4 is located at 2160 West Case Road, Columbus, Ohio. The area is approximately 29,500 s.f. The building was constructed in 1963 with two additions added in 1979. The structural span varies with the largest span being approximately 118'-0". The clear floor space at the center is 28'-0". The tenant spaces have clear floor height of 8'-0". The clear floor height at the hangar door is 20'-0". The building structure consists of CMU block walls on the perimeter of the hangar and both additions. The hangar is a steel frame structure with steel columns and beams. The hangar and additions are in poor condition and continue to function as originally intended. The building does have Restrooms with shower stalls, which are in average condition. Several of the tenant spaces within the building have new paint and cabinetry. Hangar 4 has cracks throughout and appears to be settling in many places. It was stated that the floor conditions may be caused by leaks in the heating system that is below grade.

The Hangar Doors are 114'-0" x 20'-0"

The following aircraft and numbers were in the hangar at the time of the assessment.

N4UZ	N806AD
N37OCP	N59EC
N7OIJF	N807AD
N61JB	

C.8.2 Exterior

Walls

The exterior walls are painted CMU block. These walls should be repainted. The other walls consist of insulated corrugated metal wall panel systems. These systems are painted, but are chipping and peeling around the facility. These areas should be stripped and repainted.

Roof

The roof is an insulated corrugated metal roof system. The roof drainage consists of steel gutters and downspouts. There are downspouts that go to cast iron boots. These appear to be in good condition.

C.8.3 Structure

Foundation

The structure has continuous reinforced concrete footings with CMU block foundation walls. These appear to be in good condition. Concrete slabs are slab on grade. The Office Spaces appear to be in good condition, though the hangar floor has radiant heating installed which appears to be causing issues where there is heavy cracking and settling of the floor. The bay floor should be repaired.

Structural Frame

The structural frame consists of a steel structure with steel columns, roof trusses, and steel girts and purlin system. CMU block perimeter walls support steel roof trusses. The structure appears to be in good condition and integrity is intact.

C.8.4 Interiors

Walls

The hangar area has exposed metal siding systems with insulation. The insulation is damaged or missing in multiple areas and should be repaired or replaced. The metal siding systems that are exposed are painted. The paint itself is faded and should be repainted if desired. The painted CMU block perimeter and partition walls are in adequate condition but should be repainted if desired. The tenant service spaces are metal stud framed walls with painted gypsum board. There are wall coverings such as wall paper and wood paneling. Many of these wall coverings are in poor condition and should be removed and replaced with new painted finishes.

Floors

The hangar floor is a reinforced concrete slab on grade with radiant heating. It also has an epoxy floor covering. As noted previously, the floor is cracking and settling in multiple locations. This should be immediately repaired to avoid safety hazards or damage to the aircraft. The other areas, specifically, the office areas, have carpeting, both broadloom and carpet squares. There is ceramic tile, VCT, and epoxy coated concrete. All floor coverings in these areas are in poor condition and should be replaced.

Ceilings

Ceilings consist of exposed steel roof systems and insulation. This occurs in the hangar area. Insulation is damaged or missing in multiple locations and should be repaired or replaced. The tenant spaces consist of acoustical ceiling systems and some painted gypsum board. These ceiling systems are in poor condition and should be replaced. Many of these ceiling systems appear to be damaged due to water infiltration which should be reviewed and repaired.

Doors and Windows

Windows consist of single pane aluminum windows. Many of the windows are difficult to operate and allow air infiltration. These are in poor condition and should be replaced.

The doors consist of single and double hollow metal entry doors and frames. These doors have cylinder hardware. There are sliding metal hangar doors with translucent panels. The folding hangar door also has translucent panels. These doors are in fair condition but are probably at the end of their useful life. The office areas have hollow metal

doors and frames with vision lights. Many of the offices have cylinder or lever hardware. There are sliding wood doors on steel tracks for storage closets that are within the hangar area. Most of the doors throughout need to be repainted. There are some doors that have damage that should be repaired. The large folding doors are 114'-0" x 20'-0".

Fixed Casework

Many of the offices have wood base and wall cabinets with laminate countertops in the Kitchenette areas. These are in fair condition.

C.8.5 Code Analysis

There are multiple means of egress from the structure, which meets building code requirements. There are Restrooms located in the building in the tenant suites, however, these are not ADA accessible. ADA signage is lacking throughout and should be installed. The exterior doors are not ADA compliant. The sliding entry doors have steel entry doors built into them which are on steel tracks and have automatic openers. These entrances are accessible, but not in full compliance with ADA Accessibility.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.8.6 Systems

Plumbing

Service

The service is a 4" water supply and water meter.

Piping

Piping consists of insulated copper piping which appears to be in good condition. There is water damage apparent in some of the tenant suites which should be investigated and repaired. The sanitary piping consists of cast iron piping with drains which go to a sewage treatment vault. The hangar area has floor drains which drain to an oil and sand separation trap.

There is a gas fired 30-gallon water heater provided for the building. This unit appears to be at the end of its useful life.

Fixtures

The fixtures are floor mounted water closets, sink vanities, and shower units. These appear to be in good condition.

Gas

The structure has a 1" steel gas pipe. It appears to be in good condition.

Fire Protection

Sprinkler

There is no sprinkler system in this building.

Fire Alarm

The building has a fire alarm system with heat and smoke detectors and pull stations at exits, along with lights and horns. It appears the system is tested annually.

Extinguishers

The building has portable fire extinguishers located throughout which appear to be tested annually.

HVAC

System

The system is a gas fired hot water boiler and circulating pumps. There are baseboard unit heaters and under floor heating pipes. The boiler appears to be at the end of its useful life. Due to the possibility of the radiant floor heating leaking under the slab, the radiant floor heating should be replaced when the slab is replaced. There is some electric heating that has been added to tenant space Restrooms. There are numerous through-wall AC units that do also have heating capabilities for some of the tenant spaces. These appear to be in working condition.

Distribution

The distribution system consists of standard metal duct supply and return. Restrooms have exhaust fans. There are lay-in diffusers, as well as supply and return air grills that are located in many of the tenant spaces. There are area exhaust fans which are connected to outside air louvers as well.

The boiler system has steel welded piping for distribution of hot water supply and return piping that has insulation. Some of the insulation is missing in locations and should be replaced. Some of this piping appears to be worn and at the end of its useful life and should be replaced.

Controls

There are electric thermostats throughout that appear to be in working condition.

Electrical

Lighting

There are new fluorescent light fixtures in the hangar area. There are also lay in and chain hung fluorescent fixtures and HID fixtures in some of the tenant spaces. Some of the tenant spaces also have incandescent lighting provided. Many of these older fluorescent and incandescent and HID lights should be replaced with newer lighting technology such as compact fluorescents or LED lights.

Lighting Controls

Lighting controls consist of mostly wall mounted light switches. There are motion sensors provided in some locations.

Exit Signs and Emergency Egress Lighting

There are exit signs, emergency egress lighting with battery back-ups and combination units with battery back-ups. These all appear to be in good condition. There are some older exit signs which should be replaced.

Service and Distribution

The building has a 600-amp 208/120 service. The distribution for the building is spread through switch gear power distribution panels and then separate tenant meters in each of the tenant spaces.

Telecommunications and IT

There is adequate telephone and computer access provided in the building per the current arrangement. If any modifications are made to this facility, additional outlets should be provided.

Security Systems

There are exterior cameras around the property which are monitored locally. There are also some keypad locks at various doors around the perimeter of the building.

Receptacles

There appears to be adequate receptacles throughout the facility, including GFCI outlets. There are some larger amperage receptacles located in the hangar. Additional outlets should be provided if any significant improvements are made to this facility.

C.9 Building 0235 – Flight Laboratory



Source: BCI, 2017

Condition: Average

C.9.1 Introduction

The Flight Laboratory is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 13,500 s.f. The building was constructed in 1958 with the last renovation occurring in 1973. The building was made the Flight Laboratory in 1974. This building is a one-story building. The building itself contains offices, aircraft storage, and maintenance facilities. The office and lab portion of the structure is a CMU block building with brick veneer on the west elevation. The structure consists of bow string trusses, exterior CMU block. There is a portion of the Mechanical Room that is below grade, which the boiler system was replaced with a hot water system in 2015. The building has two flight simulation simulators. There are acoustical panels which have been added for sound control. The majority of the building is outdated, and finishes are in worn condition. The building is in average condition for its age; however, many of the systems that have not been previously replaced are approaching the end of their useful life. Many of the finishes within the building need to be updated. The structural span varies across the building with the largest span being 96'-6" at the hangar area. The clear floor height is 15'-0" at the eave with the clear height at the hangar doors at 16'-4". The office areas are 8'-0".

The Hangar doors are 96'-8" x 16'-4"

The following aircraft and numbers were in the hangar at the time of the assessment.

N6OSU	N3OSU	N10OSU
N8OSU	N7OSU	N717TH
N1OSU	N5OSU	N969PG
N14OSU	N5462	N312CS
N2OSU	N65784	N4096Z

C.9.2 Exterior

Walls

The exterior walls are CMU block with brick veneer along the west elevation. The block walls are painted. The exterior walls are in fair condition but should be repainted. The north and south portions of the hangar area have

metal wall panel systems. These also appear to be in fair condition but could be repainted if other improvements are made.

Roof

A portion of the structure has a flat roof, which has been recently replaced and is in good condition. It consists of a TPO fully adhered roof system and new flashing. This roof is in good condition. The hangar area has a metal roof system and a built-up roof membrane installed over top of the metal roof panels. It appears that this roof is in fair condition. The roof's drainage system consists of steel gutters and downspouts with cast iron boots. These appear to be in fair condition but could be repainted if other improvements take place.

C.9.3 Structure

Foundation

The structure consists of continuous reinforced concrete footers and concrete piers at the column locations. The foundation walls consist of CMU block. There is reinforced concrete slab on grade for floors. These appear to be in good condition. There is a Mechanical Room that is partially below grade which consists of CMU block walls and a reinforced concrete slab. This room appears to be in good condition.

Structural Frame

The structural frame consists of load bearing CMU block walls with steel roof joists and metal deck. The hangar consists of CMU block walls with reinforced block columns supporting both string roof trusses, metal purlin, and a metal purlin system. There is metal roof deck installed on this portion. The structure appears to be in fair condition.

C.9.4 Interiors

Walls

Interior walls are painted CMU block with vinyl base. The walls appear to be in good condition. The Mechanical Room, which is partially below grade, is painted CMU block walls. These walls have cosmetic damage and stains which should be cleaned. All of the walls should be cleaned and repainted.

Floors

The reinforced concrete slab on grade floors have rubber flooring installed in the high traffic areas. The Restroom consists of Terrazzo flooring. The Terrazzo flooring has been stained in multiple locations. There is broadloom carpeting in some of the office areas and hallways. This carpet is rather old, and should be at the very least, cleaned, if not replaced. The Mechanical Room has exposed concrete floors. The mezzanine areas have wood floors which appear to be in fair condition. The hangar area has reinforced concrete flooring of which cracking has appeared throughout, however, there is no substantial settling evident in the cracked areas.

Ceilings

Most areas have the old interlocking ceiling tiles. Many of them have been painted. These appear to be similar tiles to the old asbestos ceiling tiles. Further investigation into environmental concerns for asbestos and lead should be conducted by a third party Environmental Firm. This is beyond the scope of this work. These ceilings need to be replaced. There are also acoustical ceiling systems in some of the office areas. Many of them have stained ceiling tiles which should be replaced. The Flight Simulator Room has exposed concrete ceilings and acoustical panels for sound control. These appear to be in good condition. The Restrooms and the Mechanical Room, which is below, grade is exposed painted structure. The hangar area has exposed roof framing and decking which are in fair condition.

Doors and Windows

The building has hollow metal entry doors and frames. Some of them have half glass lights. The doors have cylinder hardware. Most of these doors are in fair condition but could stand to be repainted. The hangar doors are sliding doors on steel tracks, which recess into pockets on the side of the hangar. These are in fair condition, but there is some damage that should be repaired. The Mechanical Room has a hollow metal entry door with cylinder hardware. This door should also be repainted.

The building has single pane steel window frames and glass. The windows are operable. The windows are inefficient and allow significant air infiltration. These windows should be replaced if any improvements are undertaken.

C.9.5 Vertical Circulation

Stairs and Elevator

There is no elevator in this building. The stairways consist of steel stringers and metal steps with steel tube handrails. These stairs go to the mezzanines in the hangar. The mezzanine has steel tube guardrails. There are also cast in place concrete steps that go to the lower level Mechanical Room. These also have steel tube handrails. All of the handrails and guardrails should be stripped and repainted.

Fixed Casework

There are two flight simulators located in the building for training purposes. There are also wood base cabinets with laminate countertops. The Restrooms have metal toilet partitions which are in fair condition. The wood base cabinets and laminate countertops are also provided in the Women's Restroom. There is a large Receptionist desk, along with wood display cabinets. These are outdated, but in good condition.

C.9.5 Code Analysis

The structure has multiple means of egress to meet life safety requirements. There is no roof fall protection provided for the flat roofs. The Restrooms are not ADA compliant, and signage for the building is not ADA compliant. The steel entry doors are not accessible and are not ADA compliant on the exterior of the building.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.9.6 Systems

Plumbing

Service

The building has a 1 ½" water supply and meter.

Piping

The piping is insulated copper piping for the domestic water, which appears to be in fair condition. The sanitary piping is a cast iron piping with some PVC piping. The piping appears to be in fair condition.

Fixtures

The hot water source is a small electric hot water tank to provide hot water for handwashing in the Restroom Areas.

Fixtures include wall mounted water closets and wall mounted lavatories and urinals. Most of these fixtures are older, original to the building in most cases. There is a floor mounted water fountain located in the hallway which does not meet any current building or accessibility codes. The building contains a water softener in the Mechanical

Room. Most of the fixtures appear to be in working order but should be replaced. The flush valves should be replaced.

Gas

The gas is a 3" natural gas service with meter.

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

The building has a Simplex fire alarm panel which appears to be receiving annual inspections.

Extinguishers

Portable fire extinguishers are provided throughout the building and in the hangar. These appear to receive annual inspections.

HVAC

System

There is a natural gas fired heater steam boiler with baseboard unit heaters. The original system was replaced in 2015 with a new hot water system. The hangar consists of ceiling mounted heaters which replaced the original unit heaters. These systems are in fair condition. The structure has two split system AC condensing units.

Distribution

The distribution system consists of standard metal return and supply ducts. There are diffusers and grills throughout the facility. The system appears to be in working order. There appears to be some locations where steam piping has been abandoned in place and should be removed.

Controls

There are electric thermostats throughout the building which have been updated with the new system.

Electrical

Lighting

The structure has lay in and chain hung fluorescent lighting fixtures and some HID lighting. The HID lighting should be replaced if any other improvements are undertaken. Fluorescent lighting appears to be in good condition.

Lighting Controls

Exit Signs and Emergency Egress

The structure has exit signs and emergency egress lights with battery back-ups provided. These appear to be in fair condition.

Service and Distribution

The building has a 400-amp 208/120 service. It was reported the building has maxed its capacity. If improvements are undertaken, the service size should be upgraded. Distribution occurs through two distribution panels which are maxed out. These should be upgraded if any other improvements are undertaken when the service is upgraded.

Telecommunications and IT

The structure currently has telephone and computer access coverage. Additional outlets should be installed if improvements are undertaken, however.

Receptacles

There are wall receptacles located throughout the building. The hangar also has larger amperage receptacles. Additional receptacles should be added if there are improvements made to the building.

C.10 Building 0236 – Hangars 1, 2, and 3



Source: BCI, 2017

Condition: Average

C.10.1 Introduction

Hangars 1, 2, and 3 are located at 2160 West Case Road, Columbus, Ohio. The approximate area for Hangars 1, 2, and 3 is 29,400 s.f. The buildings were constructed in 1943, which are all tied together. The building has CMU block perimeter and interior walls with wood barrel trusses. There are interior mezzanines and steel frame supports and posts. The service areas have painted gypsum board ceilings and the engineered mezzanines have added office space to the facilities. There is a Parts Department located in the structure and a paint booth is contained in Hanger 3 with an exhaust system which is manually operated. There is a restaurant tenant in the building which is located on the northeast corner of the building. The restaurant is called Barn Stormers.

These buildings are in average condition and are close to the end of their useful life. Though this is the case they are still being utilized and can continue to be utilized. The structural span varies across the building, with the larger spans being 80' and 61 ½'. The clear floor heights for the main area are 8'-9" and the mezzanine levels are 8'-0". The largest clear floor height space for the building is approximately 28'-6" at the center. The clear floor heights at the hangar doors is 18'-0".

The Hangar doors are as follows:

Hangar 1 = 64'-0" x 18'-0"

Hangar 2 = 46'-0" x 18'-0"

Hangar 3 = 64'-6" x 18'-0"

The following aircraft were being housed in these hangars at the time of the assessment, due to maintenance being conducted.

Hangar 1 had the following aircraft:

N31OVP	N306BZ
N2864F	

Hangar 2 had the following aircraft:

N83KS	N22OSS
N3055R	

Hangar 3 had the following aircraft:

N456PP	N766OP
N736CT	N1872T
N892WW	N9155Q

The apron area had the following aircraft:

N321W2	N9OSU
N42U	N400HG
N22KV	N824CB
N1008L	N525DR

C.10.2 Exterior

Walls

The exterior walls are load bearing CMU block walls with paint or epoxy finishes. There is painted wood siding on the west end of the hangars. Most of these finishes are damaged or peeling and need to be stripped and repainted. The walls themselves appear to be in fair condition.

Roof

A new roof was installed in approximately 2009, which is a heat welded ballasted roof system. It appears to be in good condition.

The roof drainage system consists of stainless steel gutters and downspouts which were replaced when the roof was replaced in or around 2009. They currently drain the cast iron boots.

C.10.3 Structure

Foundation

The structure has continuous reinforced concrete footers with CMU block walls. The slab is reinforced slab on grade. These are in fair condition; but the concrete slab has various cracks throughout. However, the cracks do not appear to be structurally of any concern as they are not settling or heaving.

Structural Frame

The structural frame consists of load bearing CMU block exterior walls with CMU pilasters supporting the wooden barrel roof trusses and purlin system. These systems appear to be in good condition and structural integrity is intact.

The mezzanines are steel framed with steel support columns. These also appear to be in good condition for the age of the building.

C.10.4 Interiors

Walls

The majority of the walls are CMU block walls which are painted. The walls should be stripped and repainted. There are wood framed walls with painted gypsum board or plywood. These are aged and should be repainted. The mezzanine consists of wood and metal stud framed walls with painted gypsum board. These are in fair condition, but should be repainted. There are various walls that have damage, specifically at the offices. These should be patched, repaired, and repainted.

Floors

The balconies have tongue and groove wood floor. These are in good condition for the age of the building, but should be sanded and re-stained. There are concrete over metal pans in some of the other areas. These floors are in good condition. The hangar floors are reinforced concrete slabs with epoxy coverings. These slabs are cracked; however, they do not appear to be structurally of concern. There are exposed concrete floors in most of the work areas. There is VCT flooring and broadloom carpet, and carpet squares provided in the office and other areas of the building. All of the flooring is worn and outdated and should be replaced. There is a concern that some of the floor tile may contain asbestos which should be inspected by an Environmental Inspection Firm. The clear floor height is 28'-6".

Ceilings

The hangars have exposed wood framing. There are painted gypsum board ceilings in the mezzanine areas and office areas. There are also acoustical ceiling systems and painted gypsum board in the offices. Most of the ceilings need repair due to water or cosmetic damage. Ceiling tiles should be removed and replaced.

Doors and Windows

There are hollow metal entry doors and frames with lever hardware. Some of these doors have half lights. Many of these are in good condition, though they should be repainted. The hangar doors consist of fiberglass folding hangar doors. These appear to be in good condition, even though there is some cosmetic damage that should be repaired. There are also overhead aluminum sectional doors that are provided which appear to be in good working order. Some of the steel entry doors are in wood frames which are in bad condition and should be replaced. There are interior hollow metal doors and frames. Some of these have half lights. They have cylinder hardware. There are also wood doors with half lights, some in wood and some in metal frames. There are some doors with older panic style hardware which should be replaced with new panic hardware which meets building codes. There are some offices with hollow wood doors with metal frames and cylinder hardware. There is a large fire door located between Hangars 1 and 2. It appears to have received annual inspection. Most of the doors throughout the facility should be stripped and repainted. Some of the older doors do not close correctly and are difficult to operate. These should be replaced.

The windows consist of single pane glazing and steel frames. There are a few aluminum storefront systems with double pane glass that have been installed. It was noted that some of the windows have been recently replaced due to water infiltration that was occurring. Most of the original windows need to be replaced as they are inefficient and allow air infiltration into the building.

C.10.5 Vertical Circulation

Stairs and Elevator

There is no elevator in this building. Hangar 1 has reinforced concrete stringers and steps with steel tube railings. These railings should be stripped and repainted.

Fixed Casework

There are metal wall lockers located throughout the building. There are also a few fenced or caged areas in portions of the building. Many of these need to be cleaned and repainted as they have begun to rust. There are wood base and wall cabinets located throughout the building. There is also a paint booth located in Hangar 3. It does not have any fire suppression, but does appear to have proper exhaust.

C.10.6 Code Analysis

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

There are multiple means of egress from the building which meet life safety requirements. There appears to be roof fall protection provided. The Restroom does not meet ADA compliance. It appears that the Restroom is a Unisex Restroom. Current building codes require a separate Restroom for each sex. There are some women working at this facility, which would require the additional Restroom.

The handrails do not appear to meet current building code requirements for extensions.

Signage in the building is not ADA compliant and wayfinding is lacking.

The doors are not ADA compliant and hardware should be replaced.

C.10.7 Systems

Plumbing

Service

The structure has a 2" water supply with meter.

Piping

Piping consists of insulated copper piping for the domestic water which is in fair condition. The sanitary piping consists of cast iron piping. This appears to be in fair condition. The hot water heater is a natural gas fired 40-gallon hot water tank. It appears to be in fair condition. A small electric water tank is located in Hangar 3, which appears to provide hot water to the handwashing sink. Multiple areas of water piping that have missing or deteriorated insulation which should be replaced.

Fixtures

There are floor mounted water closets and a urinal. There is a wall mounted lavatory. There is a large sink located in the Men's Restroom. These all appear to be in fair condition. There is a large stainless-steel laundry sink in Hangar 3. This sink drains directly to the grate on the floor. This does not meet current plumbing code.

There is an emergency shower and eyewash station located in Hangar 3.

Gas

It has a 3" natural gas service and meter.

Fire Protection

Sprinkler

There is no sprinkler system in this building.

Fire Alarm

The building has a simplex fire alarm system. There are smoke detectors and pull stations at various exits, and horn strobes provided. The system appears to receive annual inspections.

Extinguishers

The building has multiple portable fire extinguishers throughout which appear to receive annual inspection.

HVAC

System

They have new hot water systems that were replaced in 2015. There are also unit heaters which were replaced with new infrared heaters in 2015. The building also has a DX condenser and window AC units located throughout. Most of these appear to be in good working order.

Distribution

Distribution consists of standard metal supply and return ductwork. There are exhaust fans for the Restroom. The ceilings have lay-in diffusers and supply and return air grills. The Paint Booth has a manual exhaust system.

Controls

There are electronic thermostats which appear to be in good working order.

Electrical

Lighting

The building has lay-in and chain-hung fluorescent lighting with HID lighting. There is also Compact fluorescent and incandescent lighting in the building. The lighting is in working condition. Any burnt out bulbs should be replaced, and eventually all lighting should be replaced with newer lighting technologies such as compact fluorescents or LED lighting.

Lighting Controls

The controls are manual wall switches. Covers can be replaced if desired.

Exit Signs and Emergency Egress Lighting

The building has exit signs and emergency egress lights. Some of the egress lighting is combination exit and emergency lights, which is in good condition. Many of the wall packs are not functioning and there are other areas that do not have egress lighting at all. Egress lighting should be provided in all locations to meet life safety codes. All wall packs should be replaced if not functional. Paper exit signs should be replaced with illuminated exit signs and battery back-ups.

Service and Distribution

The structure has a 1,000-amp 208/120 service. It is distributed by switch gear power distribution panels throughout. Many of these panels are full capacity and appear to be at the end of their useful life and should be

upgraded. There are also panels throughout that have exposed cabling and open aircraft panels, which should be replaced or repaired.

Telecommunications and IT

There appears to be telephone and computer access provided in the building. If any improvements are made, additional outlets should be provided. The Server Room AC service is not adequate for the size Server Room and equipment that is being utilized. This should be upgraded or replaced to provide the proper size equipment for this room.

Security Systems

There are a few doors that have keypad locks. These appear to be in good working condition.

Receptacles

There are multiple GFCI and standard wall receptacles throughout. Additional outlets should be provided if any additional improvements are undertaken.

C.11 Building 0237 – Airport Maintenance



Source: BCI, 2017

Condition: Poor

C.11.1 Introduction

Airport Maintenance – 0237 is located at 2160 West Case Road, Columbus, Ohio. The approximate area of this building is 6,200 s.f. The building was constructed in 1948. The building was originally a Storage and Maintenance Facility for the Ohio National Guard. Now, the building is utilized for airport equipment and material storage. The building is made of CMU block walls and a gable roof. There has been a small addition on the north elevation which has an Office, Storage, and a small Restroom. It does not appear that the Office and Restrooms have been utilized in some time. The Office Area is being utilized for storage. There appears to be excessive water leaking in the roof and the wall systems, which has caused the ceiling to deteriorate. There is a portion of the building that has reinforced concrete slabs with the remaining portions of the open area consisting of asphalt paving. There are tile floors in the Office Area, which may be consistent with asbestos type tiles from this time period. This should be inspected by an Environment Inspection Firm. The floors throughout are damaged and need repair or replacement. There is large cracking on the southwest corner of the building around the entry door. The building is lacking proper roof drainage systems. The building is being utilized for storage. The building should be repaired or replaced to ensure that the contents within it are safe and maintained. The structural span varies across the building with the largest span being 80'-0". The clear floor height for the building is 20'-0" at the center. The clear floor height at the hangar door is 10'-0". This building is in poor condition.

Hangar Doors are as follows:

20'-0" x 10'-0"

14'-0" x 10'-0"

C.11.2 Exterior

Walls

The exterior walls are CMU block with an exterior finish system. It appears that there is an asphalt coating that has been installed on the exterior walls. The end walls have corrugated metal panel systems with a painted finish. These should be repainted. There is a large crack near the entry door which should be repaired or remediated.

Roof

The roof is a corrugated metal roof system. It is severely leaking in various places throughout the building. The roof should be replaced in its entirety. The roof drainage system is lacking around the building. There are downspouts around the building that have no gutters attached to them. New gutters and downspouts should be installed to divert storm water away from the building.

C.11.3 Structure

Foundation

The structure has a continuous reinforced concrete footing with CMU block foundation walls. There is a reinforced concrete slab on grade which covers a portion of the open bay and the addition area. The slab is damaged in several areas, but is still functional. These cracks and damage should be repaired. The footings and foundations appear to be in good condition.

Structural Frame

The structural frame consists of load bearing CMU block walls supporting steel roof trusses. There is large step cracking at the southwest corner near the door entry, which needs to be addressed.

The structural system in general appears to be in fair condition. The area of concern is the step cracking at the southwest corner.

C.11.4 Interiors

Walls

Interior walls are painted CMU block walls. There are a few wood stud framed walls with painted gypsum board. The existing walls should be repainted. There are some wall finishes that are damaged and in bad condition, these should be patched and repaired. There is a chain-link fence that runs to the bottom of the steel roof trusses in a secured area of the building. The fencing appears to be in good condition. The Office Area has wood paneling on the existing walls which is in bad condition, and appears to have severe water damage. The folding divider wall in the Bay Area is not functional. This should be removed or replaced.

Floors

The Bay Area consists of reinforced concrete floors and asphalt paved floors. The reinforced concrete floors need to have cracking and damage repaired. The asphalt paved floors should be removed and replaced. There is tile located on a portion of the concrete slab that is damaged and may contain asbestos materials. These tiles should be tested by an Environmental Inspection Firm.

Ceilings

The bay has exposed ceilings which appear to be in fair condition. Some of the structure appears to be rusting due to water exposure. These areas should be cleaned and repainted. Rust inhibitive coatings should be utilized. There are other areas of the facility that have painted gypsum board ceilings which have significant water damage and have even collapsed in many locations. These all need to be removed in their entirety.

Doors and Windows

There are hollow metal entry doors and frames which are in poor condition. These need to be replaced. There are two overhead fiberglass sectional doors and wood frames. These are in poor condition and need to be replaced. The wood frames are rotting. There are both hollow metal and wood doors on the interior. These are in metal

frames and have cylinder hardware. These are all in poor condition, and some even have significant water damage. Some of these doors do not operate properly. The chain-link fence gate located at the secured area has a pad lock.

Existing windows consist of steel window frames and single pane glazing. The windows do not operate properly and are original to the building. These should be replaced in their entirety.

Fixed Casework

There is currently wood shelving in the Bay Area. The secure area has wood wall cabinets and metal wall cabinets. These appear to be in good condition. The Restroom has metal toilet partitions which are in poor condition.

C.11.5 Code Analysis

There are multiple means of egress for this facility which meets life safety requirements. It should be noted that the pathway to the egress doors is blocked by storage. There is also no identification on the floor or by signage for exit locations. The chain-link gate does not have panic hardware. Per Building Code, this gate should have panic hardware, so that someone cannot be locked in the secure area. There is no ADA accessibility for the Restroom. There is only a single Restroom in this building. Though this is acceptable for the current use, if the building is modified for another intended purpose, additional Restrooms may be needed.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.11.6 Systems

Plumbing

Service

The structure has a 1" water supply with meter. The water does not appear to be on at this building.

Piping

The domestic water system has insulated steel piping which is at the end of its useful life and should be replaced if this building is utilized. If there is no need for water at this facility, the line should be capped and abandoned in place or removed in its entirety. Sanitary piping consists of cast iron piping. The system is not utilized at this time. The piping should be removed in its entirety or abandoned in place if it is not needed at this facility.

Gas

There is a 2" natural gas service and meter. There is an electric hot water heater provided in the restroom. It appears that the tank is functional, however, water service is not provided at this time.

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is no fire alarm system.

Extinguishers

There are no fire extinguishers.

HVAC

System

There are gas fired, infrared, radiant heaters in the bay space. Infrared heaters need repair, but appear to be in good condition. There is a gas fired furnace, which is in poor condition and does not appear to be functioning. There is an AC unit which is also not functioning at this time.

Distribution

The distribution system is standard metal supply and return ducts. These appear to be in bad condition, and should be replaced with a new system.

Controls

Building controls are electronic thermostats which control the radiant heaters and furnace. It is not possible to tell if these are in working condition, but should be replaced with a new system.

Electrical

Lighting

Currently, there are surface mounted and chain hung fluorescent lighting. There are a few incandescent lights and HID lights in the building. All lighting should be replaced with newer lighting technologies.

Exit Signs and Emergency Egress Lighting

The structure currently has no exist signs or emergency egress lighting. These should be installed immediately for life safety requirements.

Lighting Controls

Lighting controls appear to be wall mounted, manual light switches. Cover plates should be replaced.

Telecommunications and IT

The structure appears to have telephone accessibility. Additional data outlets and cabling should be provided if this building is to be utilized for its intended purpose or for an additional purpose.

Receptacles

There are a few receptacles provided, but additional outlets should be added if any modifications occur.

C.12 Building 0238 – Hangar 6



Source: BCI, 2017

Condition: Poor

C.12.1 Introduction

Hangar 6 is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 5,700 s.f. The building was constructed in 1948. It was originally an Aircraft Storage Facility for the Ohio National Guard. It is now being utilized as an Airport Equipment and Material Storage Facility. The building is a CMU block structure with gable roof. A small storage area is located in the northeast corner of the building, which is utilized for record storage. The bay floor consists of asphalt and concrete. The concrete was placed approximately six years ago. The overhead sectional doors were replaced in approximately 2014. There is a large step crack on the northwest corner of the building. This should be repaired. The building is lacking gutters and downspouts. Storm water is accumulating at the foundation walls. The structural span varies with the largest span being approximately 64'-0". The clear floor height appears to be 21'-0" at the center. The clear floor height at the hangar door is 11'-8". This building is in poor condition.

The Hangar doors are as follows:

19'-8" x 11'-8"

C.12.2 Exterior

Walls

Exterior walls are CMU block walls. There are corrugated metal panel systems utilized on the gable ends. There appears to be an asphalt coating finish applied to the face of these walls that is in poor condition and has peeled off in numerous locations. There is a large step crack on the northwest corner of the building. It should be investigated and repaired immediately.

Roof

The roof is a corrugated metal roof system which has a waterproof membrane coating over it. There are significant penetrations through the roof system which need to be repaired. The roof needs to be replaced completely.

C.12.3 Structure

Foundation

The structure is continuous concrete footings with CMU block walls. The footings and foundations appear to be in good condition. Removing the roof drainage from the foundations would be something that should be addressed immediately before footings begin to have deterioration or settling due to excessive water in and around the foundation system. The presence of excessive water at the foundation is due to a lack of gutters.

Structural Frame

The structural frame consists of load bearing CMU block walls supporting steel roof trusses. The northwest corner of the structure has a significant step crack with separation and displacement. The crack is the full extent of the wall. This needs to be inspected and repaired immediately.

C.12.4 Interiors

Walls

Interior walls are painted CMU block walls. These walls should be repainted. There are some wood stud frame walls with painted gypsum board. Some of the paint finishes are in poor condition and should be stripped and repainted.

Floors

The floor consists of concrete reinforced slab on grade on the west side of the bay. This remains in good condition. The remainder of the bay has asphalt paved floors which are in fair condition. The small storage space has concrete floors, which are also in good condition.

Ceilings

The ceilings consist of exposed painted structure and some painted gypsum board ceilings. All of these appear to be in fair condition, though repainting would be justifiable if additional improvements are made to the building.

Doors and Windows

There are wood doors with wood frames. Many of these are difficult to open and should be replaced. There are hollow metal entry doors and frames which are in fair condition. These should be repainted. The two aluminum overhead sectional doors have automatic openers and were recently installed. These appear to be in good condition. There are some cosmetic items and some surface damage that should be repaired and cleaned.

There are two aluminum overhead sectional doors. The overhead sectional doors can only be operated with a key.

The building has one means of egress. The door does not contain the proper signage or proper hardware. The overhead sectional doors cannot be considered egress doors per the Building Code. The cylinder hardware on the entry door should be replaced, and the door is not ADA compliant.

The windows are steel double hung single pane glass, which appear to be original to the structure. These need to be replaced in their entirety.

C.12.5 Code Analysis

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

The entry door is not accessible.

C.12.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is no fire alarm system.

Extinguishers

There are a few portable fire extinguishers which appear to receive annual inspection.

Electrical

Lighting

The structure has surface mounted compact fluorescent lights in the Bay Area. These appear to be in fair condition. The lights should be replaced with newer lighting technologies.

Exit Signs and Emergency Egress Lighting

Exit signs and emergency egress lighting are lacking in the building. These should be installed immediately to meet life safety requirements.

Lighting Controls

Lighting controls consist of wall mounted manual light switches. These appear to be in good condition. Cover plates could be replaced if desired.

Service and Distribution

The structure has a 100-amp 208/120-volt service. The distribution occurs through a single panel. This panel needs to be replaced and upgraded.

Receptacles

There are a few wall receptacles. If improvements are made to the facility, additional receptacles should be added to the building.

C.13 Building 0239 – Hangar 7



Source: BCI, 2017

Condition: Average

C.13.1 Introduction

Hangar 7 is located at 2160 West Case Road, Columbus, Ohio. The GSF of this building is 9,900 sf.

The building was constructed and relocated to KOSU in 1976. The structure consists of CMU block walls with barreled roof trusses. This building is well maintained and in average condition. The structural span varies across the building with the largest span being 80'-0". The clear floor height is 31'-8" at the center of the bay. The clear floor height at the hangar doors is 21'-0". The clear floor height at the eave is 21'-3". This building is in average condition.

Hangar Doors are 78'-0" x 21'-0"

The following aircraft was housed at this location at the time of the assessment.

N878SP
N5RB
N984C

C.13.2 Exterior

Walls

Exterior walls are CMU block with an exterior finish system and asphalt coating. There is painted metal panel system installed on the end walls of the barrel roof. These should be stripped and repainted.

Roof

The roof has a fully adhered roof and flashing system. It was noted this was installed in approximately 2004 and is in fair condition. The roof drainage system consists of gutters and downspouts. These downspouts tie into cast iron boots. Downspouts and gutters should be repaired where damaged.

C.13.3 Structure

Foundation

The building has reinforced concrete footings with CMU block foundation walls. The reinforced concrete slab grade on grade floor is in good condition as is the main foundation footing.

Structural Frame

The structure consists of CMU block walls with steel columns and beams supporting steel barrel roof trusses. The structure has cross bracing for wind and appears to be in good condition.

C.13.4 Interiors

Walls

The interior walls consist of painted CMU block perimeter walls. These need to be repainted.

Floors

The floors are reinforced concrete slab on grade and appears to be in fair condition, though there is floor cracking occurring. The wall and floor are separating from each other. Expansion material should be provided around the perimeter of the building.

Ceilings

The building has exposed painted structure. The structure should be cleaned and repainted.

Doors and Windows

There is a folding hangar door with an automatic opener. There are also hollow metal entry doors and frames with panic style hardware. The folding fiberglass hangar door has insulation and is in good condition. The entry doors are in good condition except that the door should be repainted. Windows consist of window pane steel window frames in glass. These appear to be original to the structure and should be replaced.

C.13.5 Code Analysis

The entry doors on the north side of the building are ADA compliant as are the entry doors on the south side of the building. The folding hangar doors are not ADA accessible. The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components. The building has multiple means of egress which meet Life Safety requirements.

C.13.6 Systems

Plumbing

Piping

There is a 1" compressed air which comes from hangars 1, 2, and 3. This appears to be in working condition.

Gas

There is a 3" gas service with meter.

Fire Protection

Sprinkler

No sprinkler is provided in this building.

Fire Alarm

No fire alarm is provided in this building.

Extinguishers

There are a few extinguishers which appear to be tested annually.

HVAC

System

The primary source is gas fired infrared radiant heaters. These appear to be in good condition but do need repair in a few locations.

There are electronic thermostats provided for the radiant heaters. These appear to be in good condition.

Electrical

Lighting

Lighting consists of chain hung fluorescent light fixtures. There is exterior HID lighting which has yellow covers. These are in working order but should be replaced with newer lighting technologies.

Lighting Controls

Controls consist of wall mounted light switches and HID relay panels. Cover plates could be replaced if desired.

Exit Signs and Emergency Egress Lighting

Exit signs and emergency egress lighting combination units with battery backup are provided. These appear to be in good working condition.

Service and Distribution

The building has a 400-amp service. Distribution occurs through multiple panels.

Receptacles

There are multiple GFCI and standard receptacles provided, however if any improvements take place, additional outlets should be added.

C.14 Building 0256 – Hangar 8



Source: BCI, 2017

Condition: Average

C.14.1 Introduction

Hangar 8 is at 2160 West Case Road, Columbus, Ohio. The approximate area of this building is 19,000 sf. The building was constructed in 1980 for Worthington Industries. The building was renovated in 2008 and again in 2015. The hangar is a steel building with CMU block portions in the office area. The structure is still occupied by Worthington Industries, which has a small lobby and offices for pilots and passengers. The office area was recently remodeled, and the finishes appear to be in good condition. The hangar portion has received new insulation on the walls and ceilings. The floors were recently covered with epoxy floor covering. The floor is in good condition. The structural span varies with the largest expanse being 136'-0". The clear floor height is 50'-0" in the center and the clear floor height at the hangar door is 30'-0". The clear floor height at the eave is 32'-0". The building is in average condition. The following aircraft was housed in the hangar at the time of the assessment.

The hangar doors are 100'-0" x 30'-0"

The following aircraft was housed at this location at the time of the assessment: 1253W

C.14.2 Exterior

Walls

The exterior walls are insulated standing metal wall systems. The office area entry has white brick veneer. This brick should be cleaned. The metal system should be repainted.

Roof

The roof is insulated standing seam metal roof system with metal flashings and trim. The roof was replaced in 2014 and is in good condition. The roof drainage system consists of aluminum gutters and downspouts.

C.14.3 Structure

Foundation

The footings consist of continuous reinforced concrete footers and concrete piers. The slab is a reinforced concrete slab on grade and appears in good condition.

Structural Frame

The structural frame consists of steel columns and CMU block walls with steel roof trusses supporting the building on the east elevation. The structure appears to be in good condition.

C.14.4 Interiors

Walls

Interior walls are metal stud frame walls with painted gypsum board. Some areas of the office space have wall covering. The hangar itself has CMU block walls to approximately 10'-0" along the east elevation where the standing seam metal panel system continues with insulation to the roof deck. The metal panel system continues up to the deck. This has insulation which is in good condition.

Floors

Floors consist of reinforced concrete slab on grade with broadloom carpeting, VCT, and ceramic tile. The hangar floor has recently been coated with an epoxy floor finish which is still in good condition. The other finishes in the office areas are in good condition.

Ceilings

Office and storage spaces have acoustical ceiling systems. There are painted gypsum board ceilings in the restroom areas. These are all in good condition. The hangar has exposed structure with spray on insulation. These are in good condition.

Doors and Windows

The exterior doors consist of aluminum glass storefront at the entry area. These are in good condition. The others are hollow metal entry doors and frames, some with half lights and they all have the appropriate hardware. There are overhead aluminum sectional doors with automatic openers and sliding steel hangar doors with steel tracks. Both door types are in good condition. There is some cosmetic and surface damage that needs to be repaired on the doors. Office areas have solid six panel wood doors and hollow metal frames. These doors are in good condition. There are hollow metal doors and hollow metal frames between the office area and the hangar bay. These have vision lights in them and lever hardware. These doors are in good condition.

Windows are aluminum framed with double pane glass and are a fixed window system. These are in good condition. There is also an aluminum glass door for an entry which is also in good condition. There is aluminum storefront entry with glazing.

Fixed Casework

There are metal wall lockers and metal restroom partitions which are in fair condition. The kitchenette has wood base cabinets and laminate countertops which are in good condition.

C.14.5 Code Analysis

The double sliding hangar doors are not ADA compliant even though they provide a man door. The hollow metal entry doors are not ADA compliant nor are the overhead sectional doors. There is an ADA compliant entry door at the glass storefront entry system on the east side of the building. This entry door is also accessible.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.14.6 Systems

Plumbing

Service

There is a 1-1/4" water supply and meter.

Piping

There is insulated copper piping for the domestic water system which is in fair condition. The sanitary piping consists of cast iron piping which appears to be in good condition. The building's hot water source is a gas fired 30-gallon water heater, which appears to be in good condition. There is a 1-1/2" compressed air in the hangar area.

Gas

Natural gas piping consists of a 3" natural gas service with meter. This appears to be in good condition.

Fire Protection

Sprinkler

There is no sprinkler system in the building.

Fire Alarm

The fire alarm system consists of smoke detectors, pull station at exits, interior alarm bells, and exterior hangar lights and horns. The system appears to receive annual inspections.

Extinguishers

Portable fire extinguishers are located throughout and receive annual inspection.

HVAC

System

The primary source is gas fired forced air for the office space and gas fired infrared heating for the hangar area. These are in good condition. There are a few locations on the infrared heaters that need to be repaired. There is a AC condensing unit which is in good condition.

Distribution

The distribution is handled from exhaust fans interconnected with outside air louvers and large industrial ceiling fans. These are all in good condition. Other distribution equipment consists of standard metal and flex duct supply and return air. These are located above the ceilings above the office spaces. These all appear to be in good condition.

Controls

Electronic thermostats control the heaters and systems. These appear to be in good working order.

Electrical

Lighting

There is chain hung fluorescent light fixtures in the office spaces. These are in good condition. The hangar area has new LED light fixtures which are in good condition. Exterior HID lighting is adequate but should be replaced with newer lighting technologies.

Some light fixtures in the office area have emergency ballasts with battery backup. These appear to be in good working order.

Exit Signs and Emergency Egress Lighting

Exit lighting and emergency egress lighting illuminated exit signs with battery backups are located at the exits. The emergency egress lighting is provided with emergency wall packs and battery backups in the hangar area. These are older fixtures which should be replaced.

Lighting Controls

Wall mounted manual light switches along with HID relay panels are provided and in good condition. Cover plates can be replaced if desired.

Telecommunications and IT

There is adequate telephone and computer coverage. If improvements are made additional outlets should be provided.

Security Systems

The building contains internal motion sensors with key pad locks on some doors. These items are monitored by the tenant and appear adequate for the condition.

Receptacles

There are numerous GFCI and standard receptacles throughout the facility. If improvements are made on this facility additional outlets should be provided.

C.15 Building 0900 – Hangar 9



Source: BCI, 2017

Condition: Average

C.15.1 Introduction

Hangar 9 is located at 2160 West Case Road, Columbus, Ohio. The approximate area of this building is 33,100 sf. The building was constructed in 1986. A renovation took place in 2011. This structure is gabled with two shed roof additions on the east and west elevations. The hangar is a steel structure consisting of steel columns and steel roof trusses. There are suites provided along the east and west elevation. Several of these are leased and have updated finishes by the tenants. The vacant suites need to be cleaned and updated so they can be leased out. The structure has secure storage areas on each wing along with caged areas with padlocks. The building is also known as Cardinal Health. The structural span varies across the building with the largest span 148'-0". The clear floor height is 36'-0".

This building is in average condition.

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

N800CH	N968UD
N12LA	N900CH
N91DP	N400EC
N200CH	

C.15.2 Exterior

Walls

The exterior walls are a standing seam metal wall panel system. These need to be stripped and repainted.

Roof

The roof is an insulated standing seam metal roof system. The roof is in fair condition. The roof drainage system consists of gutters and downspouts. These downspouts drain into cast iron boots. Some of the gutters and downspouts need to be repaired and repainted.

C.15.3 Structure

Foundation

The foundation is comprised of continuous reinforced concrete footings with concrete piers at column locations. There is a reinforced concrete slab on grade. All of these systems appear to be in good condition.

Structural Frame

The structural frame consists of an engineered steel structure with steel posts, columns, along with steel roof trusses and steel girts and purlin system. The structure appears to be in good condition and structural integrity is intact.

C.15.4 Interiors

Walls

Interior walls in the hangar area are exposed batt insulation over the exterior metal wall panel system. There is standing seam metal siding installed 12'-0" around the perimeter. These panels should be repainted. The office areas have metal stud frame walls with painted gypsum board. Some walls have coverings, such as wallpaper. These areas in tenant spaces have been updated and are in good condition. Vacant spaces are outdated and need to be renovated. There are also glass wall panels installed for the conference room which are in good condition. There are metal cages in select storage areas. These are in good condition.

Floors

Floors are reinforced concrete slab on grade. They are coated with epoxy floor covering in the hangar area. The slab has significant cracking and the epoxy coating appears to be severely worn. The cracking does not appear to be of structural concern but should be monitored. The interior office spaces have broadloom carpet and carpet squares. The tenant spaces are in good condition however, the vacant spaces are in need of replacement.

Ceilings

The hangar has exposed structure which should be repainted. Insulation is exposed for the roof areas. Any damaged insulation should be repaired or replaced. The interior office spaces have acoustical ceiling systems. Several areas are missing tiles. There are also numerous areas with water damaged ceiling tiles or stained ceiling tiles which need to be replaced. Restrooms have painted gypsum board ceilings which need repainting.

Doors and Windows

The exterior hangar doors consist of sliding hangar doors on steel tracks which are in good condition. There is some damage to the doors and tracks that need to be repaired. There is hollow metal entry doors and frames around the perimeter. Some of these have broken or loose hardware sets which need to be replaced. There are also numerous doors that are beginning to rust that should be cleaned and repainted with a rust inhibitor. There are hollow metal doors and frames between suites and the hangar area. These are in fair condition. They need to be repaired and repainted. The suites contain wood doors and metal frames. Doors in the vacant suites need to be replaced. Doors in the leased spaces are in good condition. Most of the doors have lever or cylinder hardware. There is a caged area with gates with padlocks.

Windows consist of aluminum sliding window with double pane glazing which are original to the structure and need to be replaced.

Fixed Casework

Many of the suites have wood base and wall cabinets. There are a few that have laminate base and wall cabinets with laminate countertops. There is modular office furniture provided which is in good condition. There are a few

vacant tenant spaces that have modular office furniture which need to be replaced. Some of the restrooms have wood or laminate vanities which are outdated and should be replaced. There are metal wall lockers provided in various locations which are in fair condition. It should be noted there is two safety harness and fall protection devices in the hangar for plane inspection. All of these appear to be maintained.

C.15.5 Code Analysis

There are multiple means of egress from the building, which meets Life Safety requirements. There is no roof fall protection visible. ADA signage should be added especially to the tenant and restroom areas. The restrooms in the suites are not ADA compliant. Several of them have had accessible features and accessories added to them but they still do not meet ADA accessibility standards. The entry doors around the perimeter of the building are not ADA compliant.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.15.6 Systems

Plumbing

Water Service

Water service is a 2" water supply and meter.

Piping

Piping consists of insulated copper piping for the domestic water system which is in fair condition.

The sanitary piping is cast iron piping. This appears to be in fair condition. The hot water source consists of several small electric points-of-use hot water heaters. They are installed in the suite areas. These are in good condition. The remaining areas have small 5-gallon electric hot water heaters mounted above ceilings in the restrooms. These are changed out to on-demand systems as they fail. Many of these above-ceiling units have leaked, which has caused significant water damage to the ceilings.

There is a 1-1/2' compressed air which is in good condition.

Fixtures

Restrooms have typical floor mounted water closets, sinks, in vanities, and some wall lavatories.

Gas

There is gas piping with meter.

Fire Protection

Sprinkler

There is no sprinkler system in the building.

Fire Alarm

There is an auto call fire alarm system with heat and smoke detectors, pull stations and exterior hanger lights with horns. The fire alarm appears to receive annual inspection.

Extinguishers

There are portable fire extinguishers located throughout which appear to receive annual inspection. It should be noted there is an AED located at the Cardinal Health Area.

HVAC

System

The primary source is gas fired infrared radiant heaters located in the hangar areas. Suites contain through wall units. Several of these units in the unoccupied suites are not operational. These should be tested and repaired as needed, prior to leasing these vacant spaces.

Distribution

Air louvers in the hangar which are connected to area exhaust fans. These appear to be in working condition.

Controls

Building controls consist of electronic thermostats which control the infrared heater and thru wall units. These appear to be in working condition. There appear to be drastic temperature swings between spaces. Thermostats may need to be replaced as spaces are leased.

Electrical

Lighting

Lighting consists of chain hung complex fluorescents. There is some exterior HID lighting. The hangar area utilizes fluorescent fixtures with automatic sensors and timers. There is some incandescent lighting that remain in the suite areas. The HID lighting should be replaced for newer technologies.

Exit Signs and Emergency Egress Lighting

Exit signs with battery backups are provided and in good condition. Emergency egress lighting, wall packs with battery backups are provided and are in good condition.

Lighting Controls

Lighting controls consists of an HID relay panel and wall mounted light switches. Cover plates should be replaced in the vacant suites prior to them being leased. Other areas can be replaced if desired.

Service and Distribution

The service consists of a 200-amp 208/120-volt service. The distribution occurs through switch gear power distribution panel and ten separate tenant meters and other multiple panels.

Telecommunications and IT

Adequate telephone and computer coverage is provided in the building. Additional outlets should be added as improvements are made to the building.

Security Systems

There are CCTV cameras and motion detectors in the Cardinal Health Suites. These are locally monitored and maintained by the tenant. There are secured storage areas with locked gates which are in good condition.

Receptacles

There are multiple GFCI and standard receptacles in the suites and in the hangar. Additional outlets should be added as improvements occur. There are higher amp receptacles located in the hangar area for aircraft purposes.



Source: BCI, 2017

Condition: Average

C.16 Building 0901 – Hangar C

C.16.1 Introduction

T-Hangar C is located 2160 West Case Road, Columbus, Ohio. The approximate area of this building is 17,200 sf. The building is a steel structure with low gable roof. The hangars have large folding hangar style doors and hollow metal entry doors. The exterior of the building is standard standing seam metal wall panel systems. The building contains 15 available hangars for rent. The south end of the building has a small mechanical room and office area. The mechanical room and office have reinforced concrete slabs on grade floors. The office area has concrete floor with broadloom carpet and vinyl flooring. It was reported there has been water issues in the hangars due to condensation. The floors for the hangar bays are paved asphalt. The building is in average condition.

The building was constructed in 1986. The building was originally called T-Hangar 4 and has been renamed T-Hangar C. The vertical spans vary across the building. The largest span is 30'-0". The clear floor height is 12'-0".

During the walk through, there were locations where water was ponding in front of the man doors for the hangars. The pavement should be repaired in these locations to avoid ponding water at the main doors.

The Hangar doors are 40'-11" x 14'-4"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

C1 - N8229Z	C6 - N784CD	C11 - N2073L
C2 - N54461	C7 - N56735	C12 - N101CH
C3 - N111ZW	C8 - Empty	C13 - N8392Y
C4 - Empty	C9 - N734UL	C14 - N176EM
C5 - N400LB	C10 - N31700	C15 - N6475U

C.16.2 Exterior

Walls

The exterior walls are standing seam metal wall panel systems. There are several areas with minor damage which should be repaired. The building is prefinished paint however there are areas that have been chipped or peeled due to damage. These areas should be stripped and repainted.

Roof

The roof is a standing seam metal roof system. The roof has rusted in some locations and should be repaired. The roof drainage system consists of steel gutters and downspouts which drain to cast iron boots. Some of the gutters and downspouts are damaged and should be repaired if any improvements are conducted on this building. Locations where they do not connect to the cast iron boots should be repaired immediately so that proper drainage occurs.

C.16.3 Structure

Foundation

Foundations consist of reinforced concrete footings and concrete piers at the column locations. There is reinforced slab on grade concrete floors in the mechanical and office area. These appear to be in good condition.

Structural Frame

The structural frame consist of steel posts, columns and beams with roof trusses and steel girts and purlin systems. The structural frame appears in good condition and structural integrity is intact.

C.16.4 Interiors

Walls

The walls are wood stud frame with painted gypsum board in the office area. These areas should be repainted. The hangar areas are exposed standing seam metal panel systems. These are in good condition, minus some damage that has occurred. The damage should be repaired. Paint damage or peeling should be stripped, repaired and repainted.

Floors

The office and mechanical space has reinforced concrete slab on grade. These areas have broadloom carpet and rolled vinyl flooring in some areas. They are in fair condition, though the carpet and vinyl flooring should be replaced if any improvements are made to the building. The hangar areas have asphalt paved floors which are stained from hydraulic oil and jet fuel. Many of them have cracking and are worn. They are still functionally acceptable. However, any patching and repairing could be conducted as needed if improvements are undertaken for the building.

Ceilings

The office space has acoustical ceiling systems which need replacement. The hangars have exposed painted structure which appears to be in good condition. It has been noted that there have been some water issues due to condensation. There was no evidence visible during the walkthrough of this still occurring but should be monitored.

Doors and Windows

The hangar doors are folding doors with steel tracks. There are built-in steel entry doors in metal frames that are in good condition. Doors have automatic openers; however, the openers must be operated from the interior of the hangar. The hollow metal doors and metal frames for the building have cylinder hardware. These are in good

working order. There is cosmetic damage to many of the doors and folding doors. Some of the frames are rusty and should be repaired and repainted.

Sliding aluminum windows with single pane glass are original to the structure. They appear to be in good working order, though if improvements are made to the building, replacing the windows would be beneficial.

C.16.5 Code Analysis

There are multiple means of egress from the building. This meets Life Safety requirements. The entry doors around the perimeter are not ADA accessible. The folding hangar doors are also not ADA accessible since there is no exterior means to operate them.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.16.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system for the building.

Fire Alarm

The structure has a fire alarm system with heat detectors inside the hangars. There are pull stations at the ends of the building. There are lights and horns provided on the exterior as well. These appear to be tested annually.

Extinguishers

There are portable fire extinguishers throughout the building. These appear to be tested annually.

HVAC

System

There is a window unit for heating and cooling in the building. It appears to be in working condition.

Controls

The window unit has a built-in thermostat which appears to be in working order.

Electrical

Lighting

The structure has standard fluorescent lighting in the office area. The hangars have incandescent and HID lighting which are surface mounted, or chain hung from the structure. All lighting should be replaced with modern lighting technologies.

Exit Signs and Emergency Egress Lighting

The structure does not have any exit signage, which should be installed for life safety requirements. The emergency egress lighting is lacking for the building and should be installed for Life Safety requirements.

Lighting Controls

Lighting controls consist of wall mounted manual light switches. Cover plates could be replaced if desired.

Service and Distribution

The structure has a 200-amp 208/120 service with meter. Distribution occurs from two distribution panels. These appear to be in good condition.

Telecommunications and IT

There is adequate telephone coverage for the building. If any improvements are made, additional outlets and data systems should be added.

Receptacles

There are adequate wall receptacles throughout the building. Additional receptacles should be added if further improvements to the building are made.

C.17 Building 0904 – Hangar D



Source: BCI, 2017

Condition: Average

C.17.1 Introduction

T-Hangar D is located at 2160 West Case Road, Columbus, Ohio. The approximate area of this building is 17,200 sf. The building was constructed in 1986. The hangar has large folding hangar doors and built in steel entry doors. The building has 15 hangars available for rent. There is a small office, storage and service area located on the north and south side of the building. The hangars have asphalt paved floors and the office and storage, and service areas have reinforced concrete slab on grade floors. This building has also had water issues due to condensation. At the time of the visit, these water issues were not apparent, however, it was noted that it does occur. This facility was original named T-Hangar 5 and has since been changed to T-Hangar D. The clear floor height is 12'-0".

This building is in average condition.

The Hangar doors are 40'-11" x 14'-4"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

D1 - N9514L	D6 - Empty	D11 - N9207T
D2 - Empty	D7 - N2307U	D12 - N95639
D3 - N2636H	D8 - N1194Z	D13 - N116HR
D4 - N5905J	D9 - N8311C	D14 - N210GS
D5 - N12B6	D10-N715AC	D15 - N2713W

C.17.2 Exterior

Walls

The exterior walls are standing seam metal wall panel systems. There are several areas with minor damage which should be repaired. The building's exterior has been painted with prefinished paint. There are areas that have been chipped or peeled due to damage. These areas should be stripped and repainted.

Roof

The roof is a standing seam metal roof system. The roof has rusted in some locations and should be repaired. The roof drainage system consists of steel gutters and downspouts which drain to cast iron boots. Some of the gutters and downspouts are damaged and should be repaired if any improvements are conducted on this building. Locations where they do not connect to the cast iron boots should be repaired immediately so that proper drainage occurs.

C.17.3 Structure

Foundation

Foundations consist of reinforced concrete footings and concrete piers at the column locations. There is reinforced slab on grade concrete floors in the mechanical and office area. These appear to be in good condition.

Structural Frame

The structural frame consist of steel posts, columns and beams with roof trusses and steel girts and purlin systems. The structural frame appears in good condition and structural integrity is intact.

C.17.4 Interiors

Walls

The walls are wood stud frame with painted gypsum board in the office area. These areas should be repainted. The hangar areas are exposed standing seam metal panel systems. These are in good condition, minus some damage that has occurred. The damage should be repaired. Paint damage or peeling should be stripped, repaired and repainted.

Floors

The office and mechanical space has reinforced concrete slab on grade. These areas have broadloom carpet and rolled vinyl flooring in some areas. They are in fair condition, though carpet and vinyl flooring should be replaced if any improvements are made to the building. The hangar areas have asphalt paved floors which are stained from hydraulic oil and jet fuel. Many of them have cracking and are worn. They are still useful for the purpose of the building. Any patching and repairing could be conducted as needed if improvements are undertaken for the building.

Ceilings

Building has exposed painted ceilings which appear to be in fair condition.

Doors and Windows

Sliding aluminum windows with single pane glass are original to the structure. They appear to be in good working order. If improvements are made to the building, replacing the windows would be beneficial. The hangar doors are folding doors with steel tracks. There are built in steel entry doors in metal frames that are in good condition. Doors have automatic openers, which must be operated from the interior of the hangar. The hollow metal doors and metal frames for the building have cylinder hardware. These are in good working order. There is cosmetic damage to many of the doors and folding doors. Some of the frames are rusty and should be repaired and repainted

C.17.5 Code Analysis

There are multiple means of egress from the building. This meets Life Safety requirements. The entry doors around the perimeter are not ADA accessible. The folding hangar doors are also not ADA accessible since there is no exterior

means to operate them. The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.17.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system for the building.

Fire Alarm

The structure has a fire alarm system with heat detectors inside the hangars. There are pull stations at the ends of the building. There are lights and horns provided on the exterior as well. These appear to be tested annually.

Extinguishers

There are portable fire extinguishers throughout the building. These appear to be tested annually.

Electrical

Lighting

The structure has standard fluorescent lighting in the office area. The hangars have incandescent and HID lighting which are surface mounted, or chain hung from the structure. All lighting should be replaced with modern lighting technologies.

Exit Signs and Emergency Egress Lighting

Exit signs and emergency egress lighting. The structure does not have any exit signage which should be installed for life safety requirements. The emergency egress lighting is lacking for the building and should be installed for Life Safety requirements.

Lighting Controls

Lighting controls consist of wall mounted manual light switches. Cover plates could be replaced if desired.

Service and Distribution

The structure has a 200-amp 208/120 service with meter. The distribution occurs through a distribution panel. These appear to be in good condition.

Telecommunications and IT

There is adequate telephone coverage for the building. If any improvements are made, additional outlets and data systems should be added.

Receptacles

There are adequate wall receptacles throughout the building. If any work is conducted on this, additional receptacles should be added.

C.18 Building 0978 – Med Flight Hangar



Source: BCI, 2017

Condition: Average

C.18.1 Introduction

The Med Flight Hangar is located at 2827 West Dublin Granville Road, Columbus, Ohio. The approximate area of this building is 42,200 sf. The building was constructed in 1972 with renovations occurring in 1975, 2006 and 2011. Originally the building was built for the Ohio Army National Guard. In 1976 the hangar was expanded. In 2006, Med Flight began leasing the building. In 2008 it was turned over to the Ohio State University. Med Flight has all responsibilities regarding maintenance of the hangar and has had several projects during the past few years. The flat roof of the structure varies in height, and several areas of the roof have been replaced in 2016. The hangar has had bird netting recently installed in 2016. The paint finish on a large portion of the hangar metal roof deck is peeling significantly. This may be caused by condensation or inappropriate paint selection for galvanized roof decking.

There have been numerous improvements to the interior finishes. A generator and fluorescent hangar lighting have been installed. The structural span for the building varies with the largest span being 130'-0". The clear floor height is 30'-8" in the center of the bay area and 9'-0" at the second-floor level. The clear floor height at the hangar doors is 23'-6". The clear floor height at the eave is 26'-0". The Med Flight Hangar houses aircraft and vehicles for Metra Aviation Nationwide Children's hospital. This facility is in average condition.

The Hangar doors are 70'-0" x 23'-6"

C.18.2 Exterior

Walls

The exterior walls are load bearing CMU block walls with brick veneer. There are insulated metal panels on portions of the exterior façade. The brick around the building needs to be cleaned but is in adequate condition.

Roof

The building has multiple insulated, flat roofs with metal decking. The roof was recently replaced in 2016 due to significant water issues that were occurring. The new roof is in good condition and appears to have addressed the water infiltration issues.

The roof drainage systems consist of cast iron roof drains with cast iron storm piping that routes through the interior and discharges into the underground storm piping. The system seems to be in good working condition.

Amenities

There is a large apron that also has multiple heliports for the helicopters to land. An awning at the entry to the classroom has been installed to allow people to get out of the weather and wind.

C.18.3 Structure

Foundation

Foundations and footings consists of continuous reinforced concrete footings and concrete piers with CMU block walls. There is reinforced concrete slab on grade floors. There is cracking in some of the concrete slabs. The cracks have not settled significantly and do not appear to be a structural concern. The CMU block does have some cracking in various locations which should be inspected and repaired. The structural frame consists of load bearing CMU block perimeter and interior load bearing walls. There are steel roof trusses.

Structural Foundations

The structure is in good condition and the structural integrity is intact.

C.18.4 Interiors

Walls

The interior walls are painted CMU block walls which have recently been repainted. Metal stud frame partition walls with gypsum board have also been recently repainted. These appear to be in good condition and are well maintained. The restroom and locker room areas are ceramic tile walls. Some walls also have epoxy coating applied to them. These appear to be in adequate condition.

Floors

The structure has reinforced concrete slab on grade floors. The hangar bay has epoxy coating which is in good condition. Several of the support or service areas around the bay area have exposed concrete floors. Many of the interior offices and other spaces have carpet squares or broadloom carpeting. The majority of these are in good condition.

Ceilings

The ceilings consist of exposed ceilings in the bay area. Bird netting has recently been installed. Interior spaces have painted gypsum board ceilings or acoustical ceiling systems. Many of the acoustical ceilings have stained tile which should be replaced. The bay area paint should be stripped and repainted with the appropriate paint type for galvanized metal decking.

Doors and Windows

Aluminum storefront frame systems along with single and double hollow metal doors and hollow frames are in good condition. There are overhead and rollup steel doors in some of the service areas. Many of these have peeling or chipped paint and need to be repainted. There are sliding insulated hangar doors on steel tracks for the large bay area. Weather stripping should be replaced. There are also a few built-in man doors for these large hangar doors which do have some rust that should be repaired. Many of the interior doors are hollow metal frames with hollow metal doors. There are hollow or solid core wood doors and wood frames. Many of the doors have cylinder

hardware. There are some doors with half lights provided. The doors appear to be in good condition. There are some doors that have some cosmetic damage that should be repaired.

The windows consist of aluminum frames with double-paned glazing. Many windows on the south side appear to be leaking due to staining and pooling of water on the window sills. These should be replaced and re-flashed. There are some windows that have been replaced in the past with vinyl double hung windows with double pane glass. These appear to still be in good condition.

C.18.5 Vertical Circulation

Stairs and Elevator

The stairways for the building consists of steel stringers and steel pans with concrete infill. These have been covered with a rubber tread system. The walls of the stairways are painted CMU block walls. There are steel tube handrails for the stairwells. The stairs are in good condition. There is no elevator in this building.

Fixed Casework

There are numerous kitchenettes which have wood base and wall cabinets and laminate countertops. There is a mail copy area with wood base and wall cabinets and laminate countertops. These are in good condition. There are restrooms, locker rooms and sleeping areas which have metal wall lockers. The restrooms contain metal wall partitions which are in good condition. There is a large mobile storage unit system which is still functional and in good condition. There is a crane and a vehicle lift located in the bay area for maintenance purposes

C.18.6 Code Analysis

This building has multiple means of egress which meet life safety requirements. Restrooms are not fully handicap accessible. The building does not have an elevator for accessible access to the upper level. There does not appear to be adequate fall protection for the roof which is a violation of OSHA and Building Code. The aluminum storefront entrance is ADA compliant, however, the remaining doors around the building are not ADA compliant.

The building does not meet the current energy code for R values for insulation or for roof or wall assembly components.

C.18.7 Systems

Plumbing

Service

Water service is a 3" water supply with meter.

Piping

The piping inside the building consists of copper piping and fittings which are in good condition for the domestic water system. Sanitary piping consists of cast iron piping which is in good condition. Cast iron piping goes to an oil separator and septic tank. There is PVC piping provided for the acid waste and vent system. The hot water source is gas fired 72-gallon tank for the building. The tank is functional, but it was noted that this tank needs to be enlarged for the building size.

There is miscellaneous piping. There is 1-1/2" compressed air in the bay area. This appears to be in good working condition.

Fixtures

Fixtures consist of wall mounted water closets and urinals. Lavatories are wall mounted and all appear to be in good condition. There are some restrooms with laminate countertops and drop-in sink basins. There are also wood vanities in other locations with drop in sink bases. Most of these are in good condition, though the sinks and faucets should be caulked. There is emergency eyewash and shower stations in the bay area which appear to be tested annually. There are Kitchenettes with stainless steel sinks and under counter dishwashers. The facility has wall-mounted water fountains on the interior of the hangar bay and in the office areas. These appear to be in good condition. There are shower stalls provided with CMU block with ceramic tile which appear to be in good condition. There is a laundry sink which is heavily utilized but appears to be in good working condition.

Gas

Gas piping consists of 3" natural gas service with meter.

Fire Protection

Sprinkler

There is no sprinkler system in this building

Fire Alarm

There is a fire alarm provided with smoke detector stations at various exits and horn strobes. The system appears to be tested annually.

Extinguishers

The building also has an AED unit located on the second floor. Portable fire extinguishers are provided throughout and receive annual inspection. The bay area does have CO2 fire suppression roll-around bottles available. These appear to be tested annually.

HVAC

System

The HVAC system consists of gas fired hot water boiler circulating pumps. There are baseboard and unit heaters in various areas. There is also gas fired infrared heaters in various areas. There is also gas fired infrared radiant heaters in the hangar bay area. These appear to be in good condition. There was some minimal damage to the infrared radiant heaters which should be repaired.

Distribution

Distribution consists of outside air louvers for the exhaust fans. The distribution system also utilizes standard metal supply and return air ducts. There are lay-in diffusers and supply and return grills in the ceiling systems. Hydraulic water piping is utilized for the boiler system. This appears to be steel piping with insulation on the return lines. There are some areas where the insulation is damaged and should be repaired.

Controls

The building controls consist of electronic thermostats which appear to be in good condition. There is a paint room provided with an exhaust fan. This exhaust fan is controlled by a manual switch on the wall. It was noted that some of the exhaust fans in the bay and paint area should be replaced due to operational issues.

Electrical

Lighting

The lighting consists of lay-in and chain-hung fluorescent light fixtures, both of which are in good condition and have recently been replaced. Many of the interior spaces, such as offices, have compact fluorescent lighting which have also recently been replaced. Exterior lighting is HID type which is in good condition, but should be replaced if improvements are made to the building utilizing newer lighting technologies.

Exit Signs and Emergency Egress Lighting

There are illuminated exit signs throughout the building along with combination egress lights with battery backups. All of these appear to be in good condition. There are emergency egress wall packs provided along with combination units with battery backups. These appear to be in good condition.

Lighting Controls

Lighting controls consist of wall mounted light switches, and there is a HID relay panel provided. These are in good condition.

Service and Distribution

Structure has 800-amp and 1200-amp 208/120 service. These are brought from a transformer. Distribution occurs through switch gear power distribution panels, which are in good condition. There are emergency power distribution panels, which are also in good condition.

Telecommunications and IT

There is a wall mounted cooling unit for the second floor IT room, and it is in good condition. The telephone cable, TV, and computer IT systems are provided throughout. These appear to be in good condition. If any improvements are made to the building, additional outlets should be provided as needed per the tenant

Security Systems

The structure has a CCTV around the exterior of the building. There are also some interior rooms that are monitored. All monitoring is localized to this building. There are some areas with key pad locks on various entry doors. These all appeared to be in good working condition.

Receptacles

There are GFCI and standard receptacles located throughout the building. If any improvements are made to the building additional outlets should be provided as needed per the tenant.

Emergency Power

There is a diesel fuel generator with fuel tank. This handles emergency lighting and power distribution panels. There is also a smaller natural gas fired generator which is used for the IT system in the building. These all appear to be recently installed and in good condition. It should be noted these should be tested regularly and diesel should be recycled regularly.

C.19 Building 0993 – Airport Blue Barn



Source: BCI, 2017

Condition: Poor

C.19.1 Introduction

The Airport Blue Barn is located at 1895 West Case Road, Columbus, Ohio. The Airport Blue Barn is a small structure with a gable roof. Three sides of the building had significant water ponding. The grade around this building should be regraded to allow water to divert away from the foundation. The building is primarily used for storage of various equipment. The building was constructed in 1965.

The approximate area is 900 sf. The date of construction is unknown. The structural span varies but the largest span is 25'-0". The clear floor height for the building is 19'-6" at the center. The clear floor height at the doors is 14'-0". This building was in poor condition.

The Hangar doors are 12'-4" x 14'-0"

C.19.2 Exterior

Walls

The exterior walls consist of standing seam metal panels and wood planking. The wood planking appears to be in good condition but should be coated with a water-proof coating. The metal siding is rusted and damaged in numerous locations and should be replaced in its entirety.

Roof

The roof consists of stainless standing seam metal roof panels, which are damaged in multiple locations and appear to be rusting in other locations. This should be replaced in its entirety.

C.19.3 Structure

Foundation

The foundation is reinforced concrete footings and the floor appears to be a gravel floor. These appear to be in good condition. The structural frame consists of steel posts beams roof trusses, steel girts and purlin systems. The structural integrity is intact and appears to be in good condition.

Structural Frame

It appears the ridge cover is missing from the building, which is allowing the elements and animals to get into the structure. The roof should be replaced in its entirety, including ridge cover and fascia. The structure should be repainted with a rust-inhibitive coating.

C.19.4 Interiors

Walls

The interior walls consist of exposed metal and wood. These should be repainted or recoated with waterproof coating.

Floors

Floors consist of a reinforced concrete slab on grade. There has been some patching that has occurred but appears to still be in good condition.

Ceilings

The ceiling is just exposed structure and metal roof panels. The metal roof panels need to be replaced in their entirety, and the existing structure should be repainted with a rust-inhibitive coating.

Doors and Windows

The doors consist of a large overhead sectional door. The door is operational, but should be replaced in its entirety, due to its age. There is a single steel entry door, which is in bad condition and should be replaced in its entirety. There are no windows in this building.

C.19.5 Code Analysis

The building does not meet Life Safety Codes for egress. This building does not meet ADA compliance.

C.19.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is no fire alarm system.

Extinguishers

There are no fire extinguishers.

Electrical

Lighting

There are chain-mounted HID lights in partial working condition. They should be replaced in their entirety with new lighting technologies.

There is no exit or egress lighting. These should be added to meet life safety requirements.

Lighting Controls

The lighting controls consist of wall mounted manual light switches. Cover plates can be replaced if desired.

Service and Distribution

The building appears to have a single 100-amp service with one distribution panel.

Receptacles

There are limited receptacles for the building. If any improvements are made to this building, receptacles should be added.

C.20 Building 1000 – Airport North Storage Hangar



Source: BCI, 2017

Condition: Poor

C.20.1 Introduction

The building is located at 2160 West Case Road, Columbus Ohio. The approximate square footage of this building is 4,000 sf. The building was constructed in 1976. The clear floor height for the building is 25'-8" in the center of the bays. The clear height at the hangar doors is 16'-0". The North Storage Hangar was utilized in 1976. It was originally built for equipment storage and minor maintenance facilities, however, now it is used to store seasonal equipment. The building has a gable roof. Exterior covering is rusted and beginning to deteriorate significantly. There is no heat or plumbing in the structure, and there are limited utilities. The structure remains functional but needs to be repaired if it will continue to be utilized. The overhead garage doors and steel entry door are heavily rusted and in need of replacement. The structural span across the building varies with the largest span being 50'-0".

This building is in poor condition.

Hangar Doors are 14'-0" x 16'-0"

C.20.2 Exterior

Walls

Exterior walls are standing seam metal siding system. The siding is heavily rusted, and it appears rodents and other animals have begun coming in and out of the building through these areas. These panels need to be replaced in their entirety. The remaining portion of the building should be stripped and repainted.

Roof

The roof is insulated standing seam metal roof system with a water proof membrane over it. The roof is original to the structure and has rusted through in many locations. It appears the membrane is delaminating in various locations. This roof should be replaced in its entirety. The roof drainage system consists of gutters and downspouts, which empty directly onto the ground at the base of the structure. These downspouts should be diverted away from the structure.

C.20.3 Structure

Foundation

The footing foundation consists of continuous reinforced footings with concrete piers for column support. There is a reinforced concrete slab on grade, which is in fair condition.

Structural Frame

The structural frame is an engineered steel structure with steel posts and steel trusses. There are steel girts and purlin systems. The structure integrity is intact and appears to be in fair condition. Surface rust that appears should be sanded and repainted with a rust-inhibitive coating.

C.20.4 Interiors

Walls

The interior walls of the exterior wall systems are covered in plywood and should be repainted.

Floors

The floors consist of reinforced concrete slab on grade which is in good condition. There are cracks in the floor that do not appear to be structural concerns.

Ceilings

The ceiling consists of exposed insulation and exposed structure. The insulation is damaged and missing in several locations. This should be replaced in its entirety when the roof is replaced. The exposed structure should be repainted and coated with a rust inhibitive coating.

Doors and Windows

The overhead sectional doors are heavily rusted, but functional. These doors should be replaced in their entirety. The steel entry door is also heavily rusted, but functional, and should be replaced in its entirety. There are no windows in this building.

C.20.5 Code Analysis

The structure has multiple means of egress that are in good condition. The man door does not have an exit sign and the hardware should be replaced to meet code requirements. An exit sign should be placed over the door to meet life safety codes. This building is not ADA compliant.

The building does not meet the current energy code for R values for insulation or for roof or wall assembly components. There are no systems provided for this building.

C.20.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is no fire alarm.

Extinguishers

There is no fire protection system. A fire extinguisher should be provided for this facility to meet Life Safety and NFPA requirements.

Electrical

Lighting

The building has wall mounted HID lighting. The lighting needs to be replaced with newer lighting technologies. Many of the lights do not appear to be functional.

Lighting Controls

Lighting controls are wall mounted light switches which appear to be in good condition. Cover plates can be replaced if desired.

Ext Signs and Emergency Egress Lighting

There is no exit sign or emergency egress lighting. These should be installed for Life Safety requirements.

Service and Distribution

There is 100-amp service provided with one distribution panel. The cover is missing from the panel. This should be replaced immediately since this does not meet electrical or building code requirements.

Receptacles

There are minimal wall receptacles provided for this facility. If any improvements are made to this building, additional receptacles should be provided.

C.21 Building 1001 – Airport North Storage Shed



Source: BCI, 2017

Condition: Poor

C.21.1 Introduction

The north storage shed is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 600 sf. The building was constructed in 1980. The structural span varies across the building with 24'-0" being the largest span. The clear floor height for the building is 12'-0" at the ridge and the clear floor height at the door is 8'-0". The clear floor height at the eave is 10'-0".. The north storage shed is a small steel structure with a shallow gable roof. The roof structure is leaking and missing fascia and trim pieces which should be replaced in its entirety. It appears the electrical service and appliances have been abandoned in place. The structure is primarily used for storage. There is an overhead sectional door provided for access. This building is in poor condition.

Sectional door is 16'-4" x 8'-0"

C.21.2 Exterior

Walls

The exterior walls are prefinished standing seam metal siding panels. The finish has begun to fade but is in fair condition.

Roof

The roof is a standing seam metal roof system which has rusted in various locations and is also missing trim and fascia which needs to be replaced. The entire roof should be replaced.. The roof drainage system is non-existent. Currently, the water sheds off the roof onto the walls and directly to the ground below adjacent to the footings. It is recommended that downspouts be added if the roof is replaced and divert them away from the building foundation. It appears the ridge cover is missing from the building which is allowing the elements and animals to get into the structure. The roof should be replaced in its entirety, including ridge cover and trim fascia pieces.

C.21.3 Structure

Foundation

The foundation is reinforced concrete footing with a reinforced concrete slab on grade. These appear to be in good condition.

Structural Frame

The structural frame consists of steel posts beams roof trusses, steel girts and purlin systems. The structural integrity is intact and appears to be in good condition.

C.21.4 Interiors

Walls

The interior walls are exposed exterior metal siding system and is covered in painted plywood. The plywood should be repainted. The structure should be repainted with a rust-inhibitive coating.

Floors

Floors consist of a reinforced concrete slab on grade. There has been some patching that has occurred but appears to still be in good condition.

Ceilings

The ceiling is just exposed structure.

Doors and Windows

The building has an overhead aluminum sectional door. It is operational and in fair condition. There is a single steel entry door which is in bad condition and should be replaced in its entirety. There are no windows in this building.

C.21.5 Code Analysis

The building has a means of egress which meet the life safety requirements. The main egress door on the east side is obstructed due to weed growth. This door should be made accessible for egress purposes. Access to this building is not ADA compliant.

C.21. Systems

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is no fire alarm system.

Extinguishers

A fire extinguisher should be provided for this facility to meet Life Safety and NFPA requirements.

Electrical

Lighting

Lighting should be added if improvements are made to this building.

Service and Distribution

Electrical service has been abandoned in place. The electrical service should be reconnected if any significant improvements are made.

Receptacles

There are no receptacles. If any improvements are made to this building, receptacles should be added.

C.22 Building 1014 – T-Hangar B

Source: BCI, 2017

Condition: Excellent

C.22.1 Introduction

T-Hangar B is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 17,200 sf. The building was constructed in 2017. The building has large folding hangar style doors with steel entry doors. The exterior of the building is clad and standing seam metal wall panel systems.

The roof system is standing seam metal roof. The buildings have 14 hangars available for rent. The clear floor height at the ridge is 16'-10" and the clear floor height at the hangar doors is 14'-0".

The hangars have reinforced concrete slab on grade floors. Hangar B does have male and female restrooms provided on the north side of the building. There is a 2-hour fire wall separation in this building located between hangars B11, B12, B4 and B5. These buildings are in excellent condition since they are less than one years old.

The Hangar doors are 42'-0" x 14'-0".

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

B1 - N26KJ	B6 - N25BM	B11 - Empty
B2 - N824KB	B7 - N735UQ	B12 - Empty
B3 - N15677	B8 - N9936Q	B13 - N3126E
B4 - N218JD	B9 - N527MC	B14 - Empty
B5 - N7516T	B10 - N4753D	

C.22.2 Exterior

Walls

The exterior walls are prefinished standing seam metal siding panel systems.

These walls are in excellent condition. There are some areas that have been damages specifically in the hangar doors which should be repaired.

Roof

The roof is a prefinished standing seam metal roof system. There are aluminum gutters and downspouts which drain to PVC downspout boots. These are all in good condition. There are a few locations where the downspouts should be repaired due to some damage.

C.22.3 Structure

Foundation

Foundations consist of continuous reinforced concrete footings with concrete piers at the column locations. The floor is reinforced concrete slab on grade. These areas are in good condition.

Structural Frame

Structural frame consists of a steel building consisting of steel posts, columns and beams, roof trusses with steel girts and purlins. The structure's integrity is intact and in good condition.

C.22.4 Interiors

Walls

The interior walls consist of the painted steel metal siding system. These are in good condition. There are interior walls that are constructed of metal stud framing and painted gypsum board. These are in good condition.

Floors

The floors consist of reinforced concrete slab on grade. Some of these floors have been sealed, others have had broadloom carpet installed in some locations. These are in good condition.

Ceilings

The ceiling is an exposed painted steel structure. There is insulation exposed in the hangars which is in good condition. Restroom ceilings have painted gypsum board ceilings.

Doors and Windows

The doors consist of steel man doors with steel frames. The single man doors are 2'-10" wide x 6'-6" high. The height of the hangar is 14'-4" in the center. The restroom and mechanical rooms have hollow metal doors and frames. These are in good condition. Lever hardware is provided on the restroom and mechanical doors and metal doors. The hangar doors consist of folding steel hangar doors on steel tracks. The hangar doors are 14' high x 42' wide. These are in good condition. There are no windows in this building.

C.22.5 Code Analysis

The building has multiple means of egress, which meet life safety requirements. The hangar bays are ADA accessible. The restrooms are also ADA accessible. There is accessible signage provided at the restroom locations. The building does not meet the current energy code for R values for insulation or for roof or wall assembly components.

C.22.6 Systems

Plumbing

Service

There is a 1-1/2-inch water service and meter.

Piping

The piping consists of insulated copper piping and fittings, which are in good condition. Sanitary piping consists of cast iron or PVC piping.

Fixtures

There are floor mounted water closets and wall mounted lavatories. Hot water in the lavatories comes from instantaneous water heating.

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is a fire alarm system with heat detectors in the hangars, pull stations at each end of the building, and exterior lights and horns. These appear to be tested annually. The fire alarm is a Honeywell notifier system.

Extinguishers

Fire extinguishers are provided and appear to be tested annually.

HVAC

System

An electric unit heater is provided in the electric room.

Controls

Building controls consist of built in thermostat with the unit heaters which is operational.

Electrical

Lighting

The structure has compact fluorescent strip fixtures with sensors in the hangar bays. Restrooms have surface mounted compact fluorescent lighting. These lights are in good condition.

Lighting Controls

Lighting controls consist of wall mounted light sensors and switches.

Ext Signs and Emergency Egress Lighting

There is adequate exit egress lighting and exit signage provided.

Service and Distribution

The structure has 120/208 3-phase power. The building is fed from 120/208 single phase distribution panel.

Telecommunications and IT

Adequate phone coverage is provided for the fire alarm system.

Receptacles

Adequate receptacles are provided throughout the building.

C.23 Building 1015 – T-Hangar E

Condition: Excellent

Source: BCI, 2017

C.23.1 Introduction

T-Hangar E is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 19,600 sf. The building was constructed in 2017. The building has large folding hangar style doors with steel entry doors. The exterior of the building is clad and standing seam metal wall panel systems.

The roof system is standing seam metal roof. The buildings have 13 hangars available for rent. The clear floor height at the ridge is 16'-10" and the clear floor height at the hangar doors is 14'-0".

The hangars have reinforced concrete slab on grade floors. Hangar E has a Mechanical Room with a reinforced concrete slab floor. There is a 2-hour fire wall separation in this building located between hangars. These buildings are in excellent condition since they are less than one years old.

The Hangar doors are 42'-0" x 14'-0"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

E1 - N731FG	E6 - N219OK	E11 - N326KB
E2 - N66059	E7 - Empty	E12 - Empty
E3 - N962AC	E8 - Empty	E13 - Empty
E4 - Empty	E9 - Empty	
E5 - N18BR	E10 - Empty	

C.23.2 Exterior

Walls

The exterior walls are prefinished standing seam metal siding panel systems. These walls are in excellent condition. There are some areas that have been damages specifically in the hangar doors which should be repaired.

Roof

The roof is a prefinished standing seam metal roof system. There are aluminum gutters and downspouts which drain to PVC downspout boots. These are all in good condition. There are a few locations where the downspouts should be repaired due to some damage.

C.23.3 Structure

Foundation

Foundations consist of continuous reinforced concrete footings with concrete piers at the column locations. The floor is reinforced concrete slab on grade. These areas are in good condition.

Structural Frame

Structural frame consists of a steel building consisting of steel posts, columns and beams, and roof trusses with steel girts and purlins. The structure's integrity is intact and in good condition.

C.23.4 Interiors

Walls

The interior walls consist of the painted steel metal siding system. These are in good condition. There are interior walls that are constructed of metal stud framing and painted gypsum board. These are in good condition.

Floors

The floors consist of reinforced concrete slab on grade. Some of these floors have been sealed, others have had broadloom carpet installed in some locations. These are in good condition.

Ceilings

The building has exposed painted steel structure. There is insulation exposed in the hangars which is in good condition.

Doors and Windows

The doors consist of steel man doors with steel frames. The single man doors are 2'-10" wide x 6'-6" high. The height of the hangar is 14'-4" in the center. The mechanical room has hollow metal doors and frames. These are in good condition. Lever hardware is provided on the mechanical doors and metal doors. The hangar doors consist of folding steel hangar doors on steel tracks. The hangar doors are 14' high x 42' wide. These are in good condition. There are no windows in this building.

C.23.5 Code Analysis

The building has multiple means of egress, which meets life safety requirements. The hangar bays are ADA accessible.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.23.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is a fire alarm system with heat detectors in the hangars, pull stations at each end of the building, and exterior lights and horns. These appear to be tested annually. The fire alarm is a Honeywell notifier system.

Extinguishers

Fire extinguishers are provided and appear to be tested annually.

HVAC

System

There is unit heater provided in the electric room.

Controls

Building controls consist of built in thermostat with the unit heaters which is operational.

Electrical

Lighting

The structure has compact fluorescent strip fixtures with sensors in the hangar bays.

Lighting Controls

Lighting controls consist of wall mounted light sensors and switches.

Ext Signs and Emergency Egress Lighting

There is adequate exit egress lighting and exit signage provided.

Service and Distribution

The structure has 120/208 3-phase power. The building is fed from 120/208 single phase distribution panel.

Telecommunications and IT

Adequate phone coverage is provided for the fire alarm system.

Receptacles

Adequate receptacles are provided throughout the building.

C.24 Building 1016 – T-Hangar F

Condition: Excellent

Source: BCI, 2017

C.24.1 Introduction

T-Hangar F is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 19,600 sf. The building was constructed in 2017. The building has large folding hangar style doors with steel entry doors. The exterior of the building is clad and standing seam metal wall panel systems.

The roof system is standing seam metal roof. The buildings have 13 hangars available for rent. The clear floor height at the ridge is 16'-10" and the clear floor height at the hangar doors is 14'-0". The hangars have reinforced concrete slab on grade floors. Hangar F has a Mechanical Room with a reinforced concrete slab floor. There is a 2-hour fire wall separation in this building located between hangars F11, F10, F4 and F5. These buildings are in excellent condition since they are less than one years old.

The Hangar doors are 42'-0" x 14'-0"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

F1 - N27930	F6 - N700TC	F11 - N42CX
F2 - Empty	F7 - Empty	F12 - Empty
F3 - No N number present	F8 - Empty	F13 - Empty
F4 - Empty	F9 - N50885	
F5 - N426PS	F10 - N41380	

C.24.2 Exterior

Walls

The exterior walls are prefinished standing seam metal siding panel systems. These walls are in excellent condition. There are some areas that have been damaged, particularly parts of the hangar doors, which should be repaired.

Roof

The roof is a prefinished standing seam metal roof system. There are aluminum gutters and downspouts which drain to PVC downspout boots. These are all in good condition. There are a few locations where the downspouts should be repaired due to some damage.

C.24.3 Structure

Foundation

Foundations consist of continuous reinforced concrete footings with concrete piers at the column locations. The floor is reinforced concrete slab on grade. These areas are in good condition.

Structural Frame

Structural frame consists of a steel building consisting of steel posts, columns and beams, and roof trusses with steel girts and purlins. The structure's integrity is intact and in good condition.

C.24.4 Interiors

Walls

The interior walls consist of the painted steel metal siding system. These are in good condition. There are interior walls that are constructed of metal stud framing and painted gypsum board. These are in good condition.

Floors

The floors consist of reinforced concrete slab on grade. Some of these floors have been sealed, others have had broadloom carpet installed in some locations. These are in good condition

Ceilings

The building has exposed painted steel structure. There is insulation exposed in the hangars which is in good condition.

Doors and Windows

The doors consist of steel man doors with steel frames. The single man doors are 2'-10" wide x 6'-6" high. The height of the hangar is 14'-4" in the center. The mechanical room has hollow metal doors and frames. These are in good condition. Lever hardware is provided on the mechanical doors and metal doors. The hangar doors consist of folding steel hangar doors on steel tracks. The hangar doors are 14' high x 42' wide. These are in good condition. There are no windows in this building.

C.24.5 Code Analysis

The building has multiple means of egress, which meet life safety requirements. The hangar bays are ADA accessible.

The building does not meet the current energy code for R values for insulation, or for roof or wall assembly components.

C.24.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system

Fire Alarm

There is a fire alarm system with heat detectors in the hangars, pull stations at each end of the building, and exterior lights and horns. These appear to be tested annually. The fire alarm is a Honeywell notifier system.

Extinguishers

Fire extinguishers are provided and appear to be tested annually.

HVAC

System

There is unit heater provided in the electric room.

Controls

Building controls consist of built in thermostat with the unit heaters which is operational.

Electrical

Lighting

The structure has compact fluorescent strip fixtures with sensors in the hangar bays.

Lighting Controls

Lighting controls consist of wall mounted light sensors and switches.

Ext Signs and Emergency Egress Lighting

There is adequate exit egress lighting and exit signage provided.

Service and Distribution

The structure has 120/208 3-phase power. The building is fed from 120/208 single phase distribution panel.

Telecommunications and IT

Adequate phone coverage is provided for the fire alarm system.

Receptacles

Adequate receptacles are provided throughout the building

C.25 Building 1017 – T-Hangar G

Condition: Excellent

Source: BCI, 2017

C.25.1 Introduction

T-Hangar G is located at 2160 West Case Road, Columbus, Ohio. The approximate area is 17,200 sf. The building was constructed in 2017. The building has large folding hangar style doors with steel entry doors. The exterior of the building is clad and standing seam metal wall panel systems.

The roof system is standing seam metal roof. The buildings have 13 hangars available for rent. The clear floor height at the ridge is 16'-10" and the clear floor height at the hangar doors is 14'-0".

The hangars have reinforced concrete slab on grade floors. Hangar G has a Mechanical Room with a reinforced concrete slab floor. There is a 2-hour fire wall separation in this building located between hangars G11, G12, G4 and G5. These buildings are in excellent condition since they are less than one years old.

The Hangar doors are 42'-0" x 14'-0"

The following is a list of aircraft that were housed in the hangar at the time of the assessment.

Aircraft – 13 Rentable Bays

G1 - Empty	G6 - N7145P	G11 -Empty
G2 - N558W	G7 - N636G	G12 - N6PY
G3 - N521SG	G8 - N738BL	G13 - N69PK
G4 - N72771	G9 - Empty	G14 - N516W
G5 - N41AH	G10 - N612L	

C.25.2 Exterior

Walls

The exterior walls are prefinished standing seam metal siding panel systems.

These walls are in excellent condition. There are some areas that have been damaged, particularly parts of the hangar doors, which should be repaired

Roof

The roof is a prefinished standing seam metal roof system. There are aluminum gutters and downspouts, which drain to PVC downspout boots. These are all in good condition. There are a few locations where the downspouts should be repaired due to some damage.

C.25.3 Structure

Foundation

Foundations consist of continuous reinforced concrete footings with concrete piers at the column locations. The floor is reinforced concrete slab on grade. These areas are in good condition.

Structural Frame

Structural frame consists of a steel building consisting of steel posts, columns and beams, and roof trusses with steel girts and purlins. The structure's integrity is intact and in good condition.

C.25.4 Interiors

Walls

The interior walls consist of the painted steel metal siding system. These are in good condition. There are interior walls that are constructed of metal stud framing and painted gypsum board. These are in good condition.

Floors

The floors consist of reinforced concrete slab on grade. Some of these floors have been sealed, while others have had broadloom carpet installed in some locations. These are in good condition.

Ceilings

The building has exposed painted steel structure. There is insulation exposed in the hangars which is in good condition. Restroom ceilings have painted gypsum board ceilings.

Doors and Windows

The doors consist of steel man doors with steel frames. The single man doors are 2'-10" wide x 6'-6" high. The height of the hangar is 14'-4" in the center. The mechanical room has hollow metal doors and frames. These are in good condition. Lever hardware is provided on the mechanical doors and metal doors. The hangar doors consist of folding steel hangar doors on steel tracks. The hangar doors are 14' high x 42' wide. These are in good condition. There are no windows in this building.

HVAC

Building controls consist of built in thermostat with the unit heaters, which are operational.

C.25.5 Code Analysis

The building has multiple means of egress, which meets life safety requirements. The hangar bays are ADA accessible.

The building does not meet the current energy code for R values for insulation or for roof or wall assembly components.

C.25.6 Systems

Fire Protection

Sprinkler

There is no sprinkler system.

Fire Alarm

There is a fire alarm system with heat detectors in the hangars, pull stations at each end of the building, and exterior lights and horns. These appear to be tested annually. The fire alarm is a Honeywell notifier system.

Extinguishers

Fire extinguishers are provided and appear to be tested annually.

HVAC

System

There is unit heater provided in the electric room.

Electrical

Lighting

The structure has compact fluorescent strip fixtures with sensors in the hangar bays.

Lighting Controls

Lighting controls consist of wall mounted light sensors and switches.

Exit Signs and Emergency Egress Lighting

There is adequate exit egress lighting and exit signage provided.

Service and Distribution

The structure has 120/208 3-phase power. The building is fed from 120/208 single phase distribution panel

Telecommunications and IT

Adequate phone coverage is provided for the fire alarm system.

Receptacles

Adequate receptacles are provided throughout the building.

C.26 Building # – Airport Terminal Building [insert data when completed]

Source:

Condition: Excellent

C.26.1 Introduction

Airport Terminal Building is located at 2160 West Case Road, Columbus, Ohio. The new Terminal approximate area is 29,000 sf. The new terminal is currently under construction and will be completed in 2018. The new terminal will include a new aviation education and research facility with state-of-the-art flight simulators, research labs and classrooms, and a modern flight terminal. The new facilities will integrate education with airport operations, benefiting Ohio students as well as Columbus-area residents and visitors. This modern facility will replace the existing general aviation terminal (1,929 square feet, administration building (4,687 square feet); and maintenance building (6,186 square feet).

C.26.2 Exterior

Walls

Roof

C.26.3 Structure

Foundation

Structural Frame

C.26.4 Interiors

Walls

Floors

Ceilings

Doors and Windows

HVAC

C.26.5 Code Analysis

C.25.6 Systems

Fire Protection

Sprinkler

Fire Alarm

Extinguishers

HVAC

System

Distribution

Piping

Exhaust

Electrical

Lighting

Lighting Controls

Exit Signs and Emergency Egress Lighting

Service and Distribution

Telecommunications and IT

Receptacles

Appendix D – Non-Airport Building Assessments

0206: Laboratory Animal Center 6**75.33%**

Address:
6089 Godown
Road, Columbus

Area:
11156

Construction Type:
Load-bearing Masonry Block frame w / Masonry skin

Auditor:
DMD & MAM

**Date
Constructed:**
1996

Construction Type 2:

Audit Date:
03/16/2015

Last Renovation:
NA

Structural Span:
Varies 24'0", 12'0", 8'0"

Arch/MEP:
40% / 60%

LEED:
NA

Historic Significance:
NA

Clear Floor Heights (2 Floors):

Error: Subreport could not be shown.

The Laboratory Animal Center Building 6 was originally built for animal research with a BSL 3 laboratory. The building is now leased to Q-Test Research Labs who have occupied it for the past five years. The structure is a CMU block building with an interstitial space to house mechanical for the laboratory equipment. The perimeter and interior load bearing walls are CMU block with pre cast concrete ceiling panels. The interstitial spaces have metal stud framed walls and gable roofs which are fully sheathed and have standing seam metal wall and roofing systems installed over them. The exterior walls have been painted, however, this finish is fading and should be refreshed with new paint when feasible. The flat roofs of the structure have modified bitumen, built up roofing systems installed which are beginning to show their age but remain adequate. Scuppers with downspouts direct storm water off the roof, however, this water is deposited directly onto the ground at the structure causing erosion. Interior walls are painted CMU, some with an epoxy coating. The BSL 3 lab has an airlock door system and the exhaust from this area is treated with hepa filters prior to being released into the air. Two boilers provide heating hot water for the building while a third boiler provides steam for the lab cleaning appliances, cage washers, and humidifiers. These are in good condition. The interior is equipped with explosion proof devices covering the lighting, emergency equipment, and outlets. There is a large lift located on the dock to load animal cages. Interior finishes are in good condition. There are locker rooms for both sexes which have ADA compliant water closets and shower stalls. The structure has various lab equipment including, large cage washer, autoclave, surgical tables and equipment, walk in freezers and refrigerators, and stainless steel or composite cabinets and countertops. The structure and its contents are well maintained and in good condition. The facility assessment team was escorted by and interviewed Mr. Jason Chipps with University Laboratory Resources while conducting their field work.

This building was previously numbered 206 but was updated to 0206 per the University's revised numbering system. AS

Architectural**76.00%****Interior Finishes**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

The structure has 48" metal doors with metal frames, stainless steel kick plates, and lever hardware. Hallways have double metal doors in metal frames with stainless steel kick plates and magnetic hold opens tied into the fire alarm. Some lab spaces have 36" doors with a side panel that opens. Several doors have small viewing windows. The doors are in adequate condition. The BSL 3 lab has metal pressure isolation doors which are in good condition.

Error: Subreport could not be shown.

A steel, service ladder provides access to the mezzanine. The ladder is worn but remains in adequate condition.

Error: Subreport could not be shown.

Interior walls are CMU block with painted finishes, epoxy or glazed coatings with a stainless steel chair rail along the hallway for bump protection. These are in adequate condition. The mechanical room's CMU walls are stained and worn. The mezzanine has exposed CMU block and metal stud framed walls with exposed exterior sheathing and insulation. These walls are in adequate condition.

Error: Subreport could not be shown.

Reinforced concrete slab floors with epoxy coating, vinyl resilient sheet flooring, VCT, and exposed concrete. The floors are worn but well maintained and in adequate condition. The mechanical room floors are stained but in good condition.

Error: Subreport could not be shown.

The building has concrete panel ceilings which have been painted, some areas of paint are chipped and peeling. The restrooms, technician's office, supply room, vestibule, and surgery suite have commercial drop ceilings with 2'x4' acoustical tiles. Mechanical and service areas have exposed ceilings. The chipped and peeling paint should be scrapped and repainted. The ceilings are in adequate condition.

Error: Subreport could not be shown.

The building has a large, walk in, cage cleaner, an autoclave, and stainless steel animal cages. Surgical suites have stainless steel operating tables and stainless steel base and wall cabinets with soapstone countertops. Lab spaces have composite wall cabinets and countertops. There are several large, walk in freezers and refrigerators as well. The equipment is well maintained and in good condition. A washing machine and dryer are located in room 107 and are in good condition. The restrooms have metal partitions which are worn but remain adequate. A Kelley Atlantic lift is located at the loading dock. This unit has begun to rust heavily but remains functional.

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

Multiple exits met life safety codes when built and remain adequate.

Error: Subreport could not be shown.

A 3' tall parapet wall surrounds the flat roof of the building providing fall protection.

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%

Error: Subreport could not be shown.

The signage meets current ADA standards.

Error: Subreport could not be shown.

The men's restroom is ADA compliant with an ADA compliant shower stall as well.

Error: Subreport could not be shown.

The women's restroom is ADA compliant with an ADA compliant shower stall as well.

Error: Subreport could not be shown.

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%

Error: Subreport could not be shown.

Two single steel entry doors from the hallways are not ADA compliant as there is no accessible route to them on the exterior of the building. Single steel entry door to mechanical room is not ADA compliant.

Error: Subreport could not be shown.

Double steel entry doors into mechanical room are not ADA compliant as there is no accessible route to them on the exterior of the structure.

Error: Subreport could not be shown.

Single steel, main entry door, is ADA compliant with an accessible route and lever hardware. There are two double, steel entry doors off the dock area which are accessible. A single steel entry door off the disposal area is not ADA compliant.

Error: Subreport could not be shown.

Set of double steel entry doors off the hallway are not ADA compliant as there is no accessible route to them on the exterior of the structure.

Error: Subreport could not be shown.

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

The exterior walls are load bearing CMU block which has been painted. The paint is very faded and should be considered for repainting when feasible. The exterior walls are in good condition. The interstitial space has metal stud framed walls with exterior sheathing and standing seam metal siding. The siding is weathered but remains in good condition. The overhang at the main entrance is also clad in standing seam metal siding which is faded in places but remains adequate.

Error: Subreport could not be shown.

The structure has glass block windows along the east elevation. These are in good condition.

Error: Subreport could not be shown.

The structure has single and double steel entry doors with lever hardware. These are in good condition.

Error: Subreport could not be shown.

The structure has a modified bituminous roll roofing system installed on insulation and sheathing with a factory applied granule surface. This roofing system is worn but remains in good condition. The interstitial space has a metal stud framed roof which has been fully sheathed and has a standing seam metal roofing system installed. This roof is in good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

The structure has continuous, reinforced concrete footers and piers with CMU block foundation walls to grade and above and reinforced concrete slab floors. These are sound and in good condition.

Error: Subreport could not be shown.

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

The structure consists of load bearing, CMU block perimeter and interior walls supporting precast, reinforced concrete roof panels and a built up, insulated roofing system. The interstitial space has metal stud framed walls and roofs with exterior sheathing and standing seam metal wall and roofing systems. The structure is sound and in good condition.

MEP**74.88%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

74.38%

Error: Subreport could not be shown.

The building has wall mounted water closets and lavatories which are in good condition. Both restrooms have shower stalls with ADA compliant fixtures. There are single, wall mounted water fountains. Lab spaces have single basin, stainless steel sinks. Surgical suites have stainless steel surgical tables with built in single basin sinks. The fixtures are in good condition throughout. In addition, there are several hose bibs located throughout for cleaning which are in adequate condition.

Error: Subreport could not be shown.

The domestic water system has insulated copper piping which is in good condition.

Error: Subreport could not be shown.

The sanitary waste and vent system has no-hub, cast iron piping which is in adequate condition.

Error: Subreport could not be shown.

The structure has a 3" water service, with reduced pressure backflow preventer and a meter, from the public utility. The system is in good condition.

Error: Subreport could not be shown.

The structure has scuppers and downspouts which drain directly onto the ground at the structure. These should be extended further away from the structure to prevent erosion and deterioration.

Error: Subreport could not be shown.

A Chemline, natural gas fired, 130 gallon hot water heater provides hot water for the structure with a 1 1/2" supply, 1" return, and circulating pump. The water heater is in good condition.

Error: Subreport could not be shown.

The structure has a 2" natural gas service, from the public utility, with welded and threaded steel pipe and malleable iron fittings to the building appliances. The system is in good condition.

Error: Subreport could not be shown.

Labs have hot and cold water, vacuum, compressed air, and natural gas piping which is well maintained and in good condition.

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

NA

Error: Subreport could not be shown.

Two natural gas fired, Bryan, heating hot water boilers supply the air-handling units, reheat coils and unit heaters. One natural gas fired, Cyclonic, process steam boiler supplies the lab cleaning, cage washers, and humidifiers. These systems are in good condition.

Error: Subreport could not be shown.

One packaged, DX screw, 114 ton chiller, with a 225 gallon per minute chilled water supply pump, supplies the building's air-handling units. The system is in good condition.

Error: Subreport could not be shown.

Two rooftop air handling units with chilled water, preheat and heating coils, humidifiers, and 35%, 65% and 95% HEPA filters are in adequate condition. Area exhaust fans interconnected with outside air louvers are in good condition as well.

Error: Subreport could not be shown.

The air distribution system utilizes sheet metal supply and return ducts with some being exposed spiral oval or round ducts. The air system distribution is in good condition.

Error: Subreport could not be shown.

The building has 3/4" to 4" steel, welded and screwed piping on the heating hot water and chilled water supply and return lines with insulation. The piping is in good condition.

Error: Subreport could not be shown.

The building has 3/4" to 3" steel, welded and screwed piping on the steam heating supply and return lines with insulation. The piping is in good condition.

Error: Subreport could not be shown.

DDC thermostats control the air handling units and electric thermostats control the exhaust fans. These are in adequate condition.

Error: Subreport could not be shown.

The lab hood exhaust fans have sealed, sheet metal supply, return, and exhaust ducts which are tested annually and are in good condition.

Error: Subreport could not be shown.

The lab hoods have manual controls which are tested annually and are in good condition.

Error: Subreport could not be shown.

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

The building has portable fire extinguishers located through out which are in good condition.

Error: Subreport could not be shown.

NA

Error: Subreport could not be shown.

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Error: Subreport could not be shown.

The structure has a 600 amp, 480/277 3 phase service from AEP which is in good condition.

Error: Subreport could not be shown.

There are 100 amp and 200 amp, 480/277 3 phase lighting and power distribution panels along with 225 amp and 150 amp, 208/120 3 phase power distribution panels. These are in good condition.

Error: Subreport could not be shown.

The structure has surface mounted and lay in, T-8 fluorescent light fixtures and exterior HID lighting. The covers of the exterior HID lighting have yellowed. The lighting is in adequate condition.

Error: Subreport could not be shown.

The building has illuminated exit signs with explosion proof cases and battery back ups. These are in good condition.

Error: Subreport could not be shown.

The building has a Simplex 4020 Fire Alarm control panel with pull stations at exits with explosion proof covers, heat and smoke detectors, and combination horn/strobes. The system receives and passes annual inspections and is in good condition.

Error: Subreport could not be shown.

Mechanical rooms, service areas, and restrooms have emergency egress wall packs with battery back ups, these range from fair to good condition. The hallways have emergency ballasts with battery back ups for emergency lighting which are in adequate condition.

Error: Subreport could not be shown.

Wall mounted light switches, some with explosion proof covers, are located through out with some rooms have automatic sensors. These are in good condition.

Error: Subreport could not be shown.

The structure has a Lenel system with card swipes on exterior doors and some interior doors. The system is in good condition. There are also closed circuit tv cameras located though out the building, it was reported that these are no longer active.

Error: Subreport could not be shown.

NA

Error: Subreport could not be shown.

The building has adequate telephone and computer access and coverage.

Error: Subreport could not be shown.

The structure has 20 amp GFCI wall receptacles, many with explosion proof covers, located through out. These are in adequate condition.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Error: Subreport could not be shown.

NA

0323: Horse Barn South - OSU Equine Program**68.84**
%

Address:
3658 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/02/2015

Arch/MEP:
40% / 60%

Area:
5192

**Date
Constructed:**
1972

Last Renovation:
2014

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 81'4", 29'8", 10'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 16'6"

The Equine Facility at The Ohio State University is operated by faculty and staff of the Department of Animal Sciences. Currently, the facility houses Quarter Horses and is the central location for all equine-related teaching, research, and Extension activities. The facility features a hot/cold wash rack, 28 box stalls, 2 large foaling stalls equipped with cameras, 2 large stallion stalls, breeding lab, and a classroom with seating for up to 50 students. A large outdoor arena with several paddocks with turn-out shelters complete the facility. The experiences offered by The Ohio State University Equine Program provide students with the opportunity to enhance their formal education with hands-on experience. Routine care of the animals and facilities comes first, everyone is expected to do whatever is needed around the farm. The facility also offers full-care horse boarding with 16 box stalls available for public boarding.

In 2011, a storm took out a portion of the roof over the arena portion of this barn. As a repair, the entire roof was removed from the arena but the end walls were left. In 2013, repairs were made to the exposed walls of the service and stall areas of the building. The end walls of the arena were removed and the now exterior walls were covered in plywood on the interior and standing seam metal siding was installed on the now southern structure, while corrugated metal was added to the now northern section. A total of 13,651 square feet of covered arena area was lost due. The Equine program is currently using Plumb Hall's covered arena.

The Horse Barn is a long post and beam structure with two shed roofs. The structure consists of 6"x6" post framing with double 2"x10" headers supporting engineered roof trusses. The interiors of the building have been finished with wooden stud framed walls and ceilings with painted drywall over them. Situated west to east, the southern side of the building has classrooms, labs, tack rooms, restrooms, and animal stalls. The northern portion of the building was recently enclosed when the arena portion was damaged. The arena portion has been totally removed at this time. The northern portion of the building now has a standing seam metal wall and roofing system installed. The interior of the building is very utilitarian. Finishes are worn and damaged as well as the mechanicals. It was reported that pipes freeze in the winter due to being in unconditioned spaces inside the building. There is currently a space heater sitting in the plumbing chase to help with this. The structure has a classroom which is very worn and dated. Unit heaters throughout the structure are old and damaged, some are no longer operational. It was reported that it is difficult to maintain a constant temperature during winter months. When the northern side of the building was enclosed, untreated plywood was installed in the corridor. Newer exit signs with emergency lights were installed in 2013. The building retains its original aluminum and single pane glass windows. While functional, they allow a large amount of air infiltration. Areas of drywall have been cut out or damaged in order to repair plumbing leaks. These areas should be repaired. It was noted that the large hole in the wall in room 103L was not being repaired as it is helping in heating the plumbing chase behind it. There are two functioning restrooms which are ADA compliant. There are also two restrooms, located in the two tack rooms, which have been abandoned in place. These fixtures should be removed and their water supplies capped. Two animal stalls are located on the west end of the building. These have asphalt floors with rubber mats over them and saw dust. 2"x6" tongue and groove wood cover their walls. These are worn due to heavy usage but remain adequate. The structure while sound, was once one building and is now two due to the removal of the roof and walls of the arena. Room 141 is used to store flammable materials (gasoline) and should have a ventilation system installed for safety. The facility assessment team was escorted by and interviewed Mr. Dan Rhodeback, Equine Facilities Coordinator, while conducting their field work.

This building was previously numbered 323 but was updated to 0323 per the University's revised numbering system. AS

Architectural

68.16%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

60.29%

Doors

Level 1 **3** 75.00%

The interior doors of the barn are single and double, hollow metal doors in metal frames, with cylinder and lever hardware. Some of the doors have been painted and their finish is now chipped. The two stalls have sliding wooden, tongue and groove doors with metal bars installed above 3' and metal trim to keep animals from chewing on it. These doors are weathered and worn but remain functional.

StairwaysLevel 1 **NA** NA

NA

WallsLevel 1 **2** 50.00%

The interior walls of the hallway have been insulated and covered with unfinished plywood to enclose the northern portion of the building. The southern portion of the hallway has tongue and groove wooden walls to 6' then the tops have been covered in plywood as well. Restrooms, tack rooms, labs, and classrooms have painted drywall covered walls with vinyl base. These walls are worn and damaged due to repairs and heavy usage. They would benefit from being repaired and refreshed with new paint. The wall in room 103 was cut out to make plumbing repairs and was left open to allow heat into the chase wall. This should be patched and either a vent installed or a heater installed in the chase wall. Animal stalls have tongue and groove wooden walls with corrugated metal running above 5' to the underside of the trusses in the separation wall. These walls are worn and damaged from animals chewing. They remain adequate.

FloorsLevel 1 **2** 50.00%

The floors of the building are a reinforced concrete slab on grade. Some areas have had vct installed. This tile is dirty, worn, and damaged in many areas. The vct should be repaired or replaced where damaged and missing. The classroom's exposed floor has been sealed. The concrete floors are worn and stained throughout but remain adequate. The stalls have asphalt floors with rubber mats over them and saw dust. These floors remain adequate.

CeilingsLevel 1 **3** 75.00%

The stalls have open ceilings which are in adequate condition. The hallway has unfinished plywood installed with insulation above. These are also adequate. The remaining areas of the building have painted drywall ceilings which are in adequate condition. The ceiling in room 113 was cracked and had peeling paint.

Fixed FurnishingsLevel 1 **2** 50.00%

The lab has wooden base and wall cabinets with laminate countertops. These cabinets are very worn but remain functional. Room 121 has built in wooden shelving for storage. The bathrooms have metal and composite partitions which are very worn. Rooms 103L and 107L have been turned into tack rooms with wooden shelving added for storage of equipment. Room 107L also has staked metal wall lockers. These lockers are very worn but remain functional.

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%**Means of Egress**Level 1 **3** 75.00%

The building has multiple means of egress which met life safety codes when built and remain adequate.

Roof Fall ProtectionLevel 1 **NA** NA

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

98.21%**Signage**Level 1 **A** 75.00%

There are tactile signs for the restrooms. There is no way finding signage for the building.

Restrooms MenLevel 1 **C** 100.00%

The men's restroom, 105T is ADA compliant.

Restrooms WomenLevel 1 **C** 100.00%

The woman's restroom, 103T, is ADA compliant.

Vertical AccessLevel 1 **NA** NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%Level **NA**

NA

Level 100.00%

The main entrance into the building there is a set of double steel entry doors with pull handles which are ADA compliant. A single steel entry door with 1/2 window is not accessible. There is also a set of double, wooden sliding barn doors which have standing steel metal installed over them to match the structure.

Level 75.00%

The east elevation has a single steel entry door with an accessible route.

Level 0.00%

The west elevation has a single steel entry door which is not accessible from the exterior.

Level **NA**

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

67.50%Level

The exterior walls of the building are clad in painted, standing seam metal siding. The paint has begun to chip and peel on the southern side. The standing seam metal siding on the north side was recently added, in 2013, to seal off the wing due to the removal of the damaged roof over the arena.

Level

The building has 3 double hung, double pane glass windows which are in adequate condition. The remaining 13 windows are the original, aluminum sliding windows with single pane glass. These windows are worn and allow air infiltration. The aluminum windows should be updated when feasible.

Level

The building has double steel entry doors in metal frames on the south elevation which are in adequate condition. There is a single steel entry door on this elevation as well with a half window in a metal frame. Two steel entry doors provide egress from the east and west elevations. The doors are worn but remain functional.

Level

The roof over the southern portion of the building is standing seam metal with metal flashing. This roof is older and there are signs of previous water penetration. The northern portion of the building has a new roof which installed in 2013. It is a standing seam metal roofing system over the hallway of the building. This roof is in very good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure has post hole footers which are reinforced with concrete and a reinforced concrete slab on grade floor. The footers remain in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure consists of post and beam construction with wooden 8"x8" post, 6"x8" end wall post, 2"x6" tongue and groove wooden walls, double 2"x10" beams, with 2"x8" banding, and 2"x6" wood girts and purlin, supporting engineered roof trusses. Interior partition walls are wood stud framed. A new wall was created along the north side of the building to enclose the area due to the removal of the arena. This wall has 4"x4" posts with 2"x10" beams supporting 2"x6" roof framing. The structure is sound and remains adequate.

MEP

69.30%

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

69.12%

FixturesLevel 1 **2** 50.00%

The two restrooms have ADA compliant floor mounted water closets and wall mounted lavatories with protective wrap for their pipes. These are in good condition. The tack room, 103L, has a mop sink, floor mounted water closet, wall mounted urinal, wall mounted lavatory, and an enclosed shower stall. These are all abandoned in place and are heavily stained. Room 107L also has a floor mounted water closet, wall mounted lavatory and an enclosed shower stall which have been abandoned in place. These are also heavily stained. It is recommended that these abandoned fixtures be removed and their water supplies capped. A dual stainless steel sink is located in the lab area which is in adequate condition.

Water Piping Inside BuildingLevel 1 **3** 75.00%

The domestic water system has insulated copper piping. Some domestic water piping is installed underground to the frost proof yard hydrants. The pipe is in adequate condition.

Sanitary Vent PipingLevel 1 **3** 75.00%

The sanitary waste and vent system has bell & spigot cast iron piping which drains to a sewage treatment plant at the southeast corner of the property. The piping is in adequate condition.

Water ServiceLevel 1 **3** 75.00%

The structure has a 2" water supply from the public utilities. The service is adequate for the use of the structure.

Storm PipingLevel 1 **3** 75.00%

The building has aluminum gutters and downspouts which drain to pvc boots then to vitrified clay pipe to lower areas. The storm water management is adequate.

Hot Water SourceLevel 1 **3** 75.00%

The building has a natural gas fired, 40 gallon, AO Smith hot water tank located in room 121. The tank was installed around 2012 and is in good condition.

Natural Gas PipingLevel 1 **3** 75.00%

There is a 3" natural gas service with meter and pressure relief valves, welded and threaded steel pipe, and malleable iron fittings to the building's appliances. The piping is in good condition.

Laboratory PipingLevel 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

64.71%**Fuel Oil System**Level 1 NA NA

NA

Primary Heating SourceLevel 1 2 50.00%

The heating system has natural gas fired unit heaters, electric baseboard heaters, wall mounted fan coil units, and wall heating units. These units are worn and damaged throughout. Several wall mounted units have their "guts" removed, while other units have their covers removed, exposing the components. It was reported that these units do not function properly and are in constant need of maintenance. The units should be considered for replacement as soon as feasible.

Primary Cooling SourceLevel 1 2 50.00%

There is a window mounted AC unit in room 103T. This unit does not work and is too small for the space. It should be removed or replaced.

Air System EquipmentLevel 1 3 75.00%

The building has area exhaust fans which are interconnected with outside air louvers. They remain in adequate condition.

Air System DistributionLevel 1 3 75.00%

The system utilizes interconnected exhaust fans with outside air louvers. They are in good condition.

Hydronic Water PipingLevel 1 NA NA

NA

Steam PipingLevel 1 NA NA

NA

Building ControlsLevel 1 3 75.00%

The systems utilize electric thermostats to control the heaters. These remain adequate.

Laboratory Exhaust SystemLevel 1 2 50.00%

Room 141 is used to store gasoline. This room lacks proper ventilation for the storage of these materials. An exhaust fan should be installed for safety.

Laboratory Hoods/ControlsLevel 1 NA NA

NA

Computer Room AC EquipmentLevel 1 NA NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%**Fire Service**Level 1 **3** 75.00%

The building has wall mounted portable fire extinguishers located in the hallway. These are tested annually and are in good condition.

StandpipesLevel 1 **NA** NA

NA

Sprinkler SystemLevel 1 **NA** NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

73.44%**Service Entrance**Level 1 **3** 75.00%

The building has a 600 amp, 208/120/3 phase from AEP. The service is in adequate condition.

DistributionLevel 1 **3** 75.00%

There is a 400 amp and four 225 amp, 208/120/3 phase lighting and power distribution panels. located in room 139. The panels and switches have begun to rust, however, they remain adequate.

LightingLevel 1 **2** 50.00%

The building has lay-in and hung T-8 and T-12 fluorescent light fixtures for the interior spaces and HID lighting for the exterior. The fluorescent lighting should be updated when feasible. , Incandescent light fixtures should have compact fluorescents installed when feasible.

Exit SignsLevel 1 **4** 100.00%

The structure has new, combination exit signs with emergency lighting and battery back-ups. These were installed in 2013 and remain in very good condition. An older, exit only sign remains above the double entry door in room 100, this should be upgraded to a combination exit sign with emergency lights when feasible.

Fire Alarm SystemLevel 1 **NA** NA

NA

Emergency Egress LightingLevel 1 **4** 100.00%

The building has combination exit signs with emergency lights and battery back-ups. These are in good condition.

Lighting ControlsLevel 1 **3** 75.00%

Wall mounted light switches are utilized throughout. The are in adequate condition.

Security SystemsLevel 1 **3** 75.00%

Several doors have key pad locks on them which are in adequate condition.

Emergency PowerLevel 1 **NA** NA

NA

Phone/Data SystemsLevel 1 **3** 75.00%

The building has adequate telephone and data access.

Quantity of ReceptaclesLevel 1 **3** 75.00%

The structure has both 20 amp and 20 amp GFCI wall receptacles located throughout with adequate coverage.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA**Elevators and Lifts**Level 1 **NA** NA

NA

0326: Swine Barn**71.93%**

Address:
3671 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/04/2015

Arch/MEP:
40% / 60%

Area:
15402

**Date
Constructed:**
1972

Last Renovation:
1998

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 60'0", 42'0", 32'0", 20'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 10'0"

The Swine Barn was first occupied in 1972 and was a single story building with offices, laboratory rooms, swine feeding pens, isolation nurseries and classroom facilities. Student sleeping quarters with kitchenettes have been added. A pole barn structure, the building consists of 6"x6" wooden posts with engineered beams supporting engineered wooden roof trusses. There are multiple gable roof elevations for the separate sections of the building. A 2"x6" wooden, tongue and groove knee wall surrounds the structure to approx. 4' above grade. The exteriors are clad in standing seam metal wall and roofing systems supported on wooden girts and purlin. The building is divided into three sections. The center portion holds classroom, office, lab, and sleeping areas. There is a men's locker room with showering facilities. There is no designated women's restroom in this building. This center portion is brightly painted and well maintained. It is conditioned with ceiling mounted gas fired unit heaters and through wall combination heating and cooling units. The west wing of the building has farrowing and finishing rooms with steel tube animal pens. The east wing has gestation rooms, breeding rooms, and finishing pens. The building is in good condition, however, some of the building components are approaching the end of their useful life cycle and should to be replaced. Animal pen areas are worn and finishes are in need of repair. The roof has had a waterproof membrane installed and the exterior siding was replaced approx. 10 years ago with new insulation installed in the sidewalls. The structure is sound and functions as designed. The facility assessment team was escorted by and interviewed Mr. Ken Mays, Swine Operations Manager, while conducting their field work.

This building was previously numbered 326 but was updated to 0326 per the University's revised numbering system. AS

Architectural**68.79%****Interior Finishes**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

66.18%**Doors**

Level 1 **3** 75.00%

Wooden doors in wooden frames with cylinder hardware, wooden sliding doors on steel tracks, single steel entry doors with metal frames and cylinder hardware, and double steel hinged doors with viewing windows and push hardware. Many doors have painted finishes which are in good condition. Animal pens have galvanized steel tube gates. The doors through out are in good condition.

StairwaysLevel 1 **NA** NA

NA

WallsLevel 1 **3** 75.00%

The hallway and educational portions of the building have 2"x6" wooden, tongue and groove kneewalls to 4' above the floor with painted drywall to the ceiling supported on wooden studs and girts. Offices, restrooms, and living quarters have painted drywall installed over wooden stud framing and wooden girts. There is some wooden paneling installed. Several areas of the paneling are damaged. The animal pen areas have 4'x8' laminated wall panels with seam covers installed on wooden stud framed walls with corrugated galvanized metal on perimeter walls above the 2"x6" wooden, tongue and groove kneewalls. Animal pens have steel tube walls. Some areas have the exposed underside of the exterior slat siding visible. The walls range from fair to good condition with the animal areas being more worn and damaged.

FloorsLevel 1 **2** 50.00%

The entire structure has reinforced concrete slab on grade floors with some vct in offices and living spaces but the majority are exposed. These floors are in poor to fair condition with many areas of the vct damaged or missing and the concrete is heavily stained through out. Rooms 118A and B have epoxy floor coverings which are worn but in adequate condition. The classroom area has elevated, concrete step flooring for seating which is in good condition. Animal pens have metal grate flooring.

CeilingsLevel 1 **3** 75.00%

Occupied spaces have painted drywall ceilings, 2'x4' commercial drop ceilings with vinyl tiles, or wooden wafer board tiles. These are in fair to good condition with several areas of painted drywall needing repair. The animal areas have 4'x8' laminated moisture resistant panels with seam covers or painted drywall ceilings which are worn but remain adequate.

Fixed FurnishingsLevel 1 **2** 50.00%

Wooden base and wall cabinets with laminate and soapstone countertops are worn and damaged. Kitchenettes have electric ranges with recirculation hoods and refrigerators which are heavily used but remain adequate. Sleeping rooms have wooden built in shelving and dresser units with steel framed bunk beds. These are also worn but remain adequate. Metal wall lockers are located in rooms 102A and 126T which have painted finishes which are worn. A washer and dryer are located in room 126T which are heavily used. Lab spaces and the classroom area have upright freezers. Five small, feed bins are located on the west, south, and east elevations, these are well maintained and in good condition. Some animal pens have heat lamps and/or automatic feeding systems which are heavily used and worn. An animal scale is also located in the east wing which is in adequate condition. The gravity flow animal waste collection pits are getting full of gravel and are not functioning to their full capacity due to this.

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%**Means of Egress**Level 1 **2** 50.00%

The building has multiple means of egress which met life safety codes when built and remain adequate. It should be noted that some doors out of animal areas have been blocked off on the interior which prohibits egress from those areas. These doors should be made functional again.

Roof Fall Protection

Level 1 NA NA

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%

Signage

Level 1 C 100.00%

The building has some accessible and some ADA compliant signage. Signage for restrooms and lockers rooms are ADA compliant. Remaining signage should be replaced with ADA compliant signage.

Restrooms Men

Level 1 C 100.00%

Single occupant, uni-sex restroom is ADA compliant. The men's locker room is accessible but not ADA compliant.

Restrooms Women

Level 1 C 100.00%

Single occupant, uni-sex restroom is ADA compliant. There is no designated women's restroom or locker room.

Vertical Access

Level 1 NA NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%

Level 100.00%

Single steel entry door with ADA compliant hardware. Overhead garage door.

Level 100.00%

Single steel entry doors with cylinder and ADA compliant lever hardware.

Level 0.00%

Single steel entry doors in animal areas have been blocked on the interior. Sliding barn style door is not ADA compliant.

Level 0.00%

Sliding barn door on steel tracks is not ADA compliant.

Level NA

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

67.50%Level

The exterior walls of the building are clad in standing seam metal siding supported on wooden framing and girts with insulated wall cavities. A 2"x6" wooden tongue and groove band is around the perimeter of the structure at grade. The exterior walls are in good condition.

Level

Sliding, single pane glass, aluminum windows are in poor to fair condition and should be considered for replacement.

Level

Single steel entry doors with lever hardware, some with windows, are in fair to good condition. Several doors have been made inaccessible on the interior, these blockades should be removed and the doors made operable again. Sliding barn style doors on steel tracks with matching standing seam metal siding are in good condition. Aluminum overhead, insulated garage door is in good condition.

Level

The roofs are clad in an insulated, standing seam metal roofing system supported on wooden engineered roof trusses and purlin. A waterproof membrane has been added to the system and it is in adequate condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure has post hole footers which have been reinforced with concrete and reinforced concrete, slab on grade floors. Several posts have been repaired by cutting the post off at the ground, deteriorated sections were removed and new concrete piers have been poured, with brackets, and the posts have been bolted to these. The footings are in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

A pole barn structure, the building consists of 6"x6" wooden posts with engineered beams supporting engineered wooden roof trusses. A 2"x6" wooden tongue and groove knee wall surrounds the perimeter of the structure with standing seam metal siding and roofing systems installed on wooden girts and purlin. Several posts have been repaired by cutting the post off at the ground, deteriorated sections were removed, new concrete piers have been poured with steel post brackets installed and the posts have been bolted to these. The structure is sound and in adequate condition.

MEP

74.02%

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

FixturesLevel 1 **3** 75.00%

Floor mounted water closets, wall mounted lavatories, and urinals are in adequate condition. Two shower stalls, with plastic wall surrounds, are in adequate condition. Dual stainless steel sinks are located in the lab and kitchenette areas and are stained but remain adequate. PVC laundry sink is adequate. Animal pens have automatic watering systems which are heavily used but adequate. Several frost proof hydrants are located in the animal areas, along with hose bibs, which are worn but adequate. A water fountain is located in the hallway for students and staff.

Water Piping Inside BuildingLevel 1 **3** 75.00%

The domestic water system has insulated copper piping with some run underground to the animal pen areas for watering systems and frost proof hydrants. The piping is adequate.

Sanitary Vent PipingLevel 1 **3** 75.00%

The sanitary waste and vent system has bell & spigot cast iron piping which drains to pretreatment tanks then to the sewage treatment plant at the southeast corner of the property. The gravity flow animal waster removal system is starting to get gravel in the pits.

Water ServiceLevel 1 **3** 75.00%

2" water supply from the public utility is in good condition.

Storm PipingLevel 1 **3** 75.00%

Aluminum gutters and downspouts drain to cast iron boots then to vitrified clay pipe away from the structure. The boots are heavily rusted but they system remains adequate.

Hot Water SourceLevel 1 **3** 75.00%

Domestic gas fired 50-gallon hot water heater provides hot water, it is in adequate condition.

Natural Gas PipingLevel 1 **3** 75.00%

The structure has a 2" natural gas service with threaded steel pipe and malleable iron fittings from the local utility. The gas piping is in good condition.

Laboratory PipingLevel 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fuel Oil SystemLevel 1 **NA** NA

NA

Primary Heating Source Level 1 **3** 75.00%

Heating system consists of natural gas fired unit heaters, fan coil units and combination through walls AC units with electric heat. The unit heaters located in the animal areas are dirty and should be cleaned and tuned, they remain functional. The combination units in the office and sleeping quarters are in adequate condition.

Primary Cooling Source Level 1 **3** 75.00%

Through wall 1.5-ton AC units with electric heat and 1-1.5 window AC units located in the office and sleeping areas are in adequate condition.

Air System Equipment Level 1 **3** 75.00%

Area exhaust fans are interconnected with outside louvers and supply air fans.

Air System Distribution Level 1 **3** 75.00%

Sheet metal supply and exhaust air ducts for heating systems and poly-flex supply air tube ducts with air distribution holes. These should all be cleaned, they remain functional.

Hydronic Water Piping Level 1 **NA** NA

NA

Steam Piping Level 1 **NA** NA

NA

Building Controls Level 1 **3** 75.00%

Electric thermostats control ventilation, heaters, and AC units. These are in adequate condition.

Laboratory Exhaust System Level 1 **NA** NA

NA

Laboratory Hoods/Controls Level 1 **NA** NA

NA

Computer Room AC Equipment Level 1 **NA** NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%**Fire Service**Level 1 **3** 75.00%

Portable fire extinguishers.

/Hose cabinet with 100 feet of 1-1/4" fire hose (removed). Cabinet is rusting, but hose is used for cleaning floors.

StandpipesLevel 1 **NA** NA

NA

Sprinkler SystemLevel 1 **NA** NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

72.06%**Service Entrance**Level 1 **3** 75.00%

The structure has three - 200 amp, 208/120 3 phase services from AEP which are in good condition.

DistributionLevel 1 **3** 75.00%

The structure has three, 225 amp, 208/120 3 phase, lighting and power distribution panels with surge protectors installed on each panel. The systems are in good condition.

LightingLevel 1 **3** 75.00%

Lay-in and hung T-8 and T-12 fluorescents, 55-200 watt compact fluorescents, HID, and some incandescent lighting. Incandescent lighting should be replaced compact fluorescent bulbs and any remaining T-12's should be upgraded when feasible.

Exit SignsLevel 1 **3** 75.00%

Illuminated exit signs with battery back ups, some with emergency egress lights, are located through out. There are also several paper exit signs, with reflective lettering, located through out. These should be removed and illuminated signs installed in their place. Combination exit signs with emergency egress lights and battery back ups are recommended.

Fire Alarm SystemLevel 1 **2** 50.00%

The building lacks a fire alarm system. One should be installed for safety.

Emergency Egress LightingLevel 1 **3** 75.00%

Wall mounted emergency egress light packs with battery back ups are located through out. These are in good condition.

Lighting ControlsLevel 1 **3** 75.00%

Wall mounted light switches and weatherproof switches in animal areas are in adequate condition.

Security Systems Level 1

NA

Emergency Power Level 1

NA

Phone/Data Systems Level 1

The structure has adequate telephone and computer coverage.

Quantity of Receptacles Level 1

20 amp wall receptacles are located through out with adequate coverage.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts Level 1

NA

0327: Hay Storage

80.70%



Address:
3637 Kays
Avenue,
Columbus

Area:
6000

Construction Type:
Wood frame w / Metal skin

Auditor:
DMD & MAM

**Date
Constructed:**
2001

Construction Type 2:

Audit Date:
03/02/2015

Last Renovation:
NA

Structural Span:
Varies 24'0", 12'0"

Arch/MEP:
40% / 60%

LEED:
NA

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 16'0"

The Hay Storage building is a small pole barn with a gable roof. The structure consists of laminated 6"x6" posts and laminated 2"x10 beams supporting engineered wooden roof trusses. The exteriors are clad in standing seam metal wall and roofing systems supported on wooden girts and purlin. The structure's east elevation is completely open, with sliding barn doors on the remaining elevations. Four Brock grain bins are located on the north side of the building. This structure has a crushed limestone floor with a small concrete slab on grade in the northern most portion of the building. The structure is used for vehicle and hay storage and is well maintained and in good condition. The facility assessment team was escorted by and interviewed Mr. Gregg Fogle, Sheep Center Manager, while conducting their field work.

This building was previously numbered 0327 but was updated to 0327 per the University's revised numbering system. AS

Architectural

84.13%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors Level 1

NA

Stairways Level 1

NA

Walls Level 1

Interior walls are the exposed underside of the exterior standing seam metal wall systems supported on posts and wooden girts with 2"x6" wooden tongue and groove kneewalls around the north, west, and south elevations. The kneewalls are worn. The interior walls are in adequate condition.

Floors Level 1 **3** 75.00%

The structure has crushed limestone floors with a concrete slab in the northern portion of the structure. The floors are in adequate condition.

Ceilings Level 1 **3** 75.00%

Ceilings are the exposed underside of the exterior standing seam metal roofing system supported on engineered wooden trusses and purlin. The ceilings are in adequate condition.

Fixed Furnishings Level 1 **3** 75.00%

Three 9 ton and one 6 ton, Brock, grain bins are located on the north side of the building. These are in very good condition.

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

The east elevation of the structure is completely open providing adequate egress from the structure.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible **100.00%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%Level

Single sliding barn door on steel tracks is blocked by the grain bins. It is not ADA compliant.

Level

Double sliding barn doors on steel tracks are accessible but not ADA compliant.

Level

East elevation is completely open providing ADA compliant access.

Level

Double sliding barn doors on steel tracks are accessible but not ADA compliant.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

98.21%Level

Exterior walls are clad in standing seam metal siding supported on wooden framing and girts. The west elevation has translucent fiberglass eve light panels at the roof line. The siding is in very good condition.

Level

NA

Level

The barn has sliding barn doors on steel tracks which are in adequate condition.

Level

The gable roof is clad in a standing seam metal roofing system supported on wooden roof trusses and purlin. The roof is in very good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

12/20/2017

0327: Hay Storage

Post hole foundations which have been reinforced with concrete. A small, reinforced concrete slab on grade is installed in the northern most portion of the barn. These are in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

Pole barn construction with laminated 6"x6" posts and 2"x10" laminated beams supporting engineered wooden roof trusses. The exterior of the structure is clad in standing seam metal wall and roofing systems supported on wooden girts and purlin. The structure is sound and in good condition.

MEP**78.41%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fixtures Level 1 **3** 75.00%

Heated water troughs fixtures are in good condition.

Water Piping Inside Building Level 1 **3** 75.00%

The domestic water system is installed underground to frost proof hydrants or water troughs.

Sanitary Vent Piping Level 1 **NA** NA

NA

Water Service Level 1 **3** 75.00%

1" water supply from public utility is in good condition.

Storm Piping Level 1 **3** 75.00%

Aluminum gutters and downspouts drain directly onto the ground at the structure. This storm water should be diverted further away to prevent deterioration.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **NA** NA

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fire Service

Level 1

Portable fire extinguishers are in good condition.

Standpipes

Level 1

NA

Sprinkler System

Level 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

81.25%

Service Entrance

Level 1 4 100.00%

The structure has a 100 amp, 208/120 single phase service from AEP which is in good condition.

Distribution

Level 1 3 75.00%

100 amp 208/120 single phase lighting and power distribution panel. The panel is rusted but remains adequate.

Lighting

Level 1 3 75.00%

Surface mounted incandescent lighting that should be replaced with compact fluorescent bulbs.

Exit Signs

Level 1 NA NA

NA

Fire Alarm System

Level 1 NA NA

NA

Emergency Egress Lighting

Level 1 NA NA

NA

Lighting Controls

Level 1 3 75.00%

Wall mounted light switches.

Security Systems

Level 1 NA NA

NA

Emergency Power

Level 1 NA NA

NA

Phone/Data Systems

Level 1 NA NA

NA

Quantity of Receptacles

Level 1 3 75.00%

12/20/2017

0327: Hay Storage

20 amp GFIC wall receptacle.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

0328: Swine Isolation Building**73.57%**

Address:
3641 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/04/2015

Arch/MEP:
40% / 60%

Area:
832

**Date
Constructed:**
1973

Last Renovation:
NA

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 24'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 10'0"

The Swine Isolation Building is a small square structure with a gable roof. The structure consists of wooden framed walls supporting engineered wooden roof trusses. The exterior of the building is clad in horizontal standing seam metal siding which has been painted red. The roof is clad in a standing seam metal roofing system. One set of double steel doors provides egress to and from the structure. The interior walls have laminated panels installed over insulation. The ceilings are the same. The structure is split into three rooms with the largest holding 12 steel tube animal pens with automatic watering systems. The other two rooms are used as research space with limited fixed furnishings. The spaces are conditioned with electric unit heaters and there are 4 window AC units installed through the walls in the rooms. This building has not been used in several years with old equipment left in place but wrapped in plastic to protect it. The structure is sound and in good condition. The facility assessment team was escorted by and interviewed Mr. Ken Mays, Swine Operations Manager, while conducting field work.

This building was previously numbered 328 but was updated to 0328 per the University's revised numbering system. AS

Architectural**75.79%****Interior Finishes**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%**Doors**

Level 1 **3** 75.00%

Laminated doors with insulation and cylinder hardware, some with louvers, are in adequate condition.

Stairways

Level 1 **NA** NA

NA

Walls Level 1 3 75.00%

Interior walls have laminated panels installed over insulated wooden framed walls. These are worn but remain in adequate condition.

Floors Level 1 3 75.00%

The structure has reinforced concrete floors with have been sealed and the rooms off the animal pen area have had an epoxy coating applied. These floors are worn but remain adequate.

Ceilings Level 1 3 75.00%

The ceilings have laminated panels installed on the roof trusses with insulation above. The ceilings are in adequate condition.

Fixed Furnishings Level 1 3 75.00%

There are 12 steel tube animal pens which are in adequate condition. Wooden base cabinets with laminate countertop are in adequate condition as well.

Life Safety
 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 3 75.00%

The structure has adequate means of egress.

Roof Fall Protection Level 1 NA NA

NA

Accessibility
 C:Compliant with ADA; A:Accessible; N:Not Accessible **94.64%**

Signage Level 1 NA NA

NA

Restrooms Men Level 1 NA NA

NA

Restrooms Women Level 1 NA NA

NA

Vertical Access Level 1 NA NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible **75.00%**

NA Level

Level

Double steel entry doors are accessible.

NA Level

NA Level

NA Level

Exterior
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Level

Exterior walls are clad in standing seam metal siding which has been painted and is supported on wooden wall framing. The siding is run horizontal instead of vertically and has been patched several times. The exterior walls remain adequate.

NA Level

Level

Double, insulated, steel doors with lever hardware are in adequate condition.

Level

The gable roof is clad in a standing seam metal roofing system supported on wooden roof framing. The roof is in adequate condition.

Substructures
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Level

Continuous reinforced concrete footers with CMU block walls to grade and a reinforced concrete slab on grade floor. They are in adequate condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure consists of wooden stud framed walls supporting engineered wooden roof trusses. The walls and ceilings are insulated and the exterior standing seam metal wall and roofing systems are attached to the wooden framing members. The structure is in adequate condition.

MEP**72.09%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

73.40%**Fixtures** Level 1 **3** 75.00%

Automatic watering systems in animal pens have not been used for several years. A dual stainless steel sink is adequate.

Water Piping Inside Building Level 1 **3** 75.00%

The domestic water system has PVC piping though out which is in adequate condition.

Sanitary Vent Piping Level 1 **3** 75.00%

The sanitary waste and vent system has PVC piping which drains to a sewage treatment plant at the southeast corner of the property.

Water Service Level 1 **3** 75.00%

1" water supply from the public utility is adequate.

Storm Piping Level 1 **2** 50.00%

The building lacks gutters and downspouts, these should be installed to prevent deterioration of the structure.

Hot Water Source Level 1 **3** 75.00%

A small, 5 gallon, electric hot water tank has not been used in several years. It remains adequate.

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%**Fuel Oil System** Level 1 **NA** NA

NA

Primary Heating Source Level 1 **3** 75.00%

Heating system has electric unit heaters which are in adequate condition.

Primary Cooling Source Level 1 **3** 75.00%

Four 1-1.5 window AC units are in adequate condition.

Air System Equipment Level 1 **3** 75.00%

Animal exhaust fans interconnected with OA Louvers.

Air System Distribution Level 1 **3** 75.00%

Three directional roof ventilators.

Hydronic Water Piping Level 1 **NA** NA

NA

Steam Piping Level 1 **NA** NA

NA

Building Controls Level 1 **3** 75.00%

Electric thermostats control heaters and AC units.

Laboratory Exhaust System Level 1 **NA** NA

NA

Laboratory Hoods/Controls Level 1 **NA** NA

NA

Computer Room AC Equipment Level 1 **NA** NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%

Fire Service Level 1 **2** 50.00%

The structure is lacking a fire extinguisher, one should be installed prior to the structure being used.

Standpipes Level 1 **NA** NA

NA

Sprinkler System Level 1 **NA** NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

73.08%**Service Entrance**Level 1 **3** 75.00%

The building has a 200 amp, 208/120 3 phase service from AEP.

DistributionLevel 1 **3** 75.00%

The building has a 225 amp, 208/120 3 phase lighting and power distribution panel which has spare capacity and is in adequate condition.

LightingLevel 1 **3** 75.00%

Surface mounted T-8 fluorescent lighting and incandescent lighting through out. Incandescent lighting should be replaced with compact fluorescent bulbs.

Exit SignsLevel 1 **2** 50.00%

The structure lacks exit signage, this should be installed for safety. Combination exit signs with emergency lights are recommended.

Fire Alarm SystemLevel 1 **NA** NA

NA

Emergency Egress LightingLevel 1 **NA** NA

The structure lacks emergency egress lighting, this should be installed for safety. Combination exit signs with emergency lights are recommended.

Lighting ControlsLevel 1 **3** 75.00%

Wall mounted light switches and weather proof light switches.

Security SystemsLevel 1 **NA** NA

NA

Emergency PowerLevel 1 **NA** NA

NA

Phone/Data SystemsLevel 1 **NA** NA

NA

Quantity of Receptacles Level 1 **3**

Weather proof 20 amp wall receptacles with adequate coverage.

Conveying Systems
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Elevators and Lifts Level 1 **NA**

NA

0329: Vehicle Storage **63.43%**



Address:
3667 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/04/2015

Arch/MEP:
40% / 60%

Area:
768

**Date
Constructed:**
1971

Last Renovation:
NA

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 24'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 10'0"

The Vehicle Storage building is a pole barn structure which is open on it's east elevation. Consisting of 4"x6" post with 2"x10" and 2"x8" beams supporting engineered wooden trusses, there is a 2"x6" kneewall around the north, west, and south elevations to 5' above grade. The remaining portions of the structure are clad in standing seam metal and roofing systems supported of the wood framing and wooden girts and purlin. The low gable roof is lacking gutters and downspouts. The posts along the east open elevation are deteriorated and several repair attempts are now failing. These posts should be replaced and the new posts should be protected from potential vehicle damage. The interior is open and has an earthen floor which has some crushed limestone through out. The interior is illuminated by incandescent surface mounted lighting. The west elevation has painted particle boards installed above the kneewall which is damaged in several areas. While heavily worn, the barn is used for open storage and with minor repairs will remain function for some time.

This building was previously numbered 329 but was updated to 0329 per the University's revised numbering system. AS

Architectural **70.79%**

Interior Finishes **75.00%**
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

Doors Level 1

NA

Stairways Level 1

NA

Walls Level 1 **3** 75.00%

The interior walls are the exposed underside of the exterior standing seam metal wall system supported on wooden framing and girts. There is a 2"x6", wooden, tongue and groove kneewall to 5' above grade. The western interior wall has particle boards installed on portions of it. The interior walls are weathered and worn but remain adequate for the use of the structure.

Floors Level 1 **3** 75.00%

The structure has an earthen floor with crushed limestone over it. The floor is adequate for the use of the structure.

Ceilings Level 1 **3** 75.00%

The ceilings are the exposed underside of the exterior, standing seam metal roofing system supported on wooden trusses and purlin. The ceilings are adequate for the use of the structure.

Fixed Furnishings Level 1 **NA** NA

NA

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Means of Egress Level 1 **3** 75.00%

The east elevation is completely open providing adequate egress.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

94.64%

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible **75.00%**

NA Level

NA

Level

NA

Level

The eastern wall is completely open and accessible.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Level

Exterior walls have wooden, 2"x6" tongue and groove kneewalls to 5' above grade, with standing seam metal siding above supported on wooden posts and girts. The wood is weathered and has mildew growing on it. The siding is in adequate condition.

Level

NA

Level

NA

Level

The roof has a standing seam metal roofing system supported by wooden roof trusses and purlin.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **50.00%**

Level

Post hole footers which have been reinforced with cement. The posts along the east open end of the structure have rotted at their bases. New posts should be installed.

Level

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%Level

Pole barn structure consisting of 4"x6" posts, 2"x10" and 2"x8" beams supporting engineered wooden roof trusses. With a 2"x6" kneewall around the north, west, and south elevations to 5' above grade and exterior standing seam metal wall and roofing systems supported on wooden girts and purlin. The post along the open east elevation are rotten and damaged, with several repair attempts now failing. These posts should be replaced with new footers and protection from vehicle damage.

MEP

58.52%

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%

Fixtures Level 1

NA

Water Piping Inside Building Level 1

NA

Sanitary Vent Piping Level 1

NA

Water Service Level 1

NA

Storm Piping Level 1

The structure lacks gutters and downspouts, these should be installed to prevent further deterioration of the structure.

Hot Water Source Level 1

NA

Natural Gas Piping Level 1

NA

Laboratory Piping Level 1

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1

NA

Primary Heating Source Level 1

NA

Primary Cooling Source Level 1

NA

Air System Equipment Level 1

NA

Air System Distribution Level 1

NA

Hydronic Water Piping Level 1

NA

Steam Piping Level 1

NA

Building Controls Level 1

NA

Laboratory Exhaust System Level 1

NA

Laboratory Hoods/Controls Level 1

NA

Computer Room AC Equipment Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%

Fire Service Level 1

The structure is lacking a portable fire extinguisher, one should be installed for safety.

Standpipes Level 1

NA

Sprinkler System Level 1

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

65.63%

Service Entrance Level 1 **3** 75.00%

The structure has a 20 amp sub feed from the Swine Isolation Barn. It is in adequate condition.

Distribution Level 1 **NA** NA

NA

Lighting Level 1 **2** 50.00%

Surface mounted incandescent lighting that should be replaced with compact fluorescent bulbs.

Exit Signs Level 1 **NA** NA

NA

Fire Alarm System Level 1 **NA** NA

NA

Emergency Egress Lighting Level 1 **NA** NA

NA

Lighting Controls Level 1 **3** 75.00%

Wall mounted light switch.

Security Systems Level 1 **NA** NA

NA

Emergency Power Level 1 **NA** NA

NA

Phone/Data Systems Level 1 **NA** NA

NA

Quantity of Receptacles Level 1 **3** 75.00%

20 amp wall receptacle.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

0330: Beef Barn Shop **82.49%**



Address: 2400 West Case Road, Columbus	Area: 2750	Construction Type: Wood frame w / Metal skin
Auditor: DMD & MAM	Date Constructed: 2004	Construction Type 2:
Audit Date: 03/02/2015	Last Renovation: NA	Structural Span: Varies 24'0"
Arch/MEP: 40% / 60%	LEED: NA	Historic Significance: NA

Clear Floor Heights (1 Floor):

1 12'0"

The Beef Barn Shop is a long, rectangular, wood framed structure with a low gable roof. The structure consists of 2"x6" framing supporting engineered wooden trusses. The exterior walls are fully sheathed and clad in a red, standing seam metal wall system which is in good condition. The roof of the structure has a grey, standing seam metal roofing system supported on wooden purlin. The building is divided into two sections. Room 100 has been insulated and painted plywood has been installed on the perimeter and partition walls. This room's ceilings have also been insulated and white standing seam metal has been installed against the roof trusses. This room is conditioned by two small electric unit heaters. The open bay of the building has an exposed interior. A reinforced concrete slab covers two thirds of the building, with the remaining area being covered with crushed limestone. A 3/4" water supply provides domestic water to the building, there is no water heater, and two frost proof hydrants on the south side of the structure. Three insulated overhead garage doors provide access on the west elevation. A single steel entry door provides egress from the building. The structure is used to store vehicles and as a small shop. It is well maintained and in very good condition.

This building was previously numbered 0330 but was updated to 0330 per the University's revised numbering system. AS

Architectural **85.69%**

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Doors Level 1 3 75.00%

Double, insulated, metal door with metal frame and lever hardware is in good condition.

Stairways Level 1 NA NA

NA

Walls Level 1 3 75.00%

The interior walls of the shop area, room 100, are painted plywood with insulation. These are in adequate condition. The walls of the open bay portion of the building, room 101, are the exposed underside of the exterior sheathing and 2"x6" wall framing. These are also in adequate condition.

Floors Level 1 3 75.00%

The floor of room 100 and half of room 101 are reinforced concrete slabs which are in good condition. A portion of the slab has been cut out to repair the water service to the structure, this should be repaired. The remaining areas of room 101 are compacted limestone which is in adequate condition.

Ceilings Level 1 3 75.00%

Room 100 has standing seam metal installed against the roof trusses with insulation above. These are in good condition. The open bay has exposed ceilings which are also in good condition.

Fixed Furnishings Level 1 NA NA

NA

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **100.00%**

Means of Egress Level 1 4 100.00%

Multiple means of egress which meet current life safety codes.

Roof Fall Protection Level 1 NA NA

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **100.00%**

Signage Level 1 NA NA

NA

Restrooms Men Level 1 NA NA

NA

Restrooms Women Level 1 NA NA

NA

Vertical Access Level 1 NA NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%

Level

NA

Level

Single steel entry door with lever hardware is ADA compliant.

Level

NA

Level

Three insulated, overhead garage doors. One has an opener, the other two are manually operated. These doors are accessible but not ADA compliant.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

91.25%

Level

The exterior walls are clad in a standing seam metal wall system over fully sheathed walls. The siding is in good condition.

Level

Sliding, double pane, vinyl clad window is in adequate condition.

Level

Single steel entry door with half lite and lever hardware is in adequate condition. Three overhead, insulated, garage doors are in good condition.

Level

The roof is clad in a standing seam metal roofing system supported on the wooden roof trusses and purlin. The roof is in very good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure has continuous, reinforced concrete footers with CMU block foundation walls to grade. The footers and foundation are in good condition. A reinforced concrete slab is under room 100 and 1/2 of room 101 is in good condition. A portion of the slab has been cut out in room 100 to repair the water service to the structure. This should be repaired.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%Level

The structure consists of 2"x6" framing supporting engineered wooden trusses. The walls and ceiling of room 100 have been insulated and plywood has been installed over the walls and standing seam metal over the ceilings. The structure has been bolted to the foundation walls. It is sound and in good condition.

MEP

80.36%

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fixtures Level 1 **3** 75.00%

A pvc laundry sink is located in room 100. It is heavily stained but remains adequate. Two frost proof hydrants are located on the south exterior of the building.

Water Piping Inside Building Level 1 **3** 75.00%

The water system has pvc piping for cold water only.

Sanitary Vent Piping Level 1 **3** 75.00%

The sanitary waste and vent system has pvc piping.

Water Service Level 1 **3** 75.00%

The structure has a 3/4" pvc water supply from the public utility. The service was recently repaired and the slab should be repaired where cut out.

Storm Piping Level 1 **3** 75.00%

Aluminum gutters and downspouts deposit storm water onto the ground at the building. These should be diverted away from the structure to prevent erosion.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **3** 75.00%

Heating system has two 5 KW electric unit heaters located in room 100, which are in good condition.

Primary Cooling Source Level 1

NA

Air System Equipment Level 1

NA

Air System Distribution Level 1

NA

Hydronic Water Piping Level 1

NA

Steam Piping Level 1

NA

Building Controls Level 1

Unit heaters have an electric thermostat which is adequate.

Laboratory Exhaust System Level 1

NA

Laboratory Hoods/Controls Level 1

NA

Computer Room AC Equipment Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fire Service Level 1

Wall mounted portable fire extinguishers are located in both rooms of the building.

Standpipes Level 1

NA

Sprinkler System

Level 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

91.07%

Service Entrance

Level 1 4 100.00%

The building has a 200 amp, 240/120 single phase service from AEP which is in good condition.

Distribution

Level 1 4 100.00%

There is a 200 amp, 240/120 single phase lighting and power distribution panel which is in good condition.

Lighting

Level 1 3 75.00%

Surface mounted and hung T-8 fluorescent fixtures with wire mesh covers are located inside the building with HID exterior lighting.

Exit Signs

Level 1 4 100.00%

Combination exit signs with emergency egress lights and battery back ups are in very good condition.

Fire Alarm System

Level 1 NA NA

NA

Emergency Egress Lighting

Level 1 4 100.00%

Combination exit signs with emergency egress lights and battery back ups are in very good condition.

Lighting Controls

Level 1 3 75.00%

Wall mounted light switches are adequate.

Security Systems

Level 1 NA NA

NA

Emergency Power

Level 1 NA NA

NA

Phone/Data Systems

Level 1 NA NA

NA

Quantity of Receptacles

Level 1 3 75.00%

20 amp GFCI wall receptacles provide adequate coverage.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

0333: Range Shelter 1 - OSU Equine Program

72.97%



Address:
3660 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
08/20/2014

Arch/MEP:
40% / 60%

Area:
2688

**Date
Constructed:**
1972

Last Renovation:
2015

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 32'0", 8'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 10'0"

The Department of Animal Sciences offers students hands-on experience with horses through courses, internships, research, and part-time student employment. The Equine Facility at The Ohio State University is operated by faculty and staff of the Department of Animal Sciences. The facility houses thirty to forty Quarter Horses. The facility features a heated indoor arena, a hot/cold wash rack, 28 box stalls, two large foaling stalls equipped with cameras, two large stallion stalls, breeding lab, and classroom with seating for fifty students. There is also a large outdoor arena and several paddocks with turn-out shelters.

The Range Shelter is a simple one story, gable roof structure. A 32'x36' unconditioned, addition along the south side of the shelter house was completed in early 2015. It is a wooden post and beam structure clad in vertical, standing seam metal siding. Some areas of siding have been dented and scooped along the base. The interior has exposed walls, an asphalt floor with saw dust covering, and an exposed ceiling. The building has limited electrical and plumbing infrastructure. The shelter house is partially enclosed by an electric fence that remains operational; however, there are no warning signs. Warning signs should be installed for safety. There is no tele-data infrastructure, mechanical systems, or bathroom. The shelter house remains in adequate condition. The facility assessment team was escorted by and interviewed Mr. Dan Rhodeback, Barn Manager with Department of Animal Sciences while conducting their field work.

This building was previously numbered 333 but was updated to 0333 per the University's revised numbering system. AS

Architectural

75.79%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors

Level 1 NA NA

NA

Stairways

Level 1

NA

Walls

Level 1

The interior walls are mostly exposed perimeter walls. The lower half has unpainted plywood boards fasten horizontally to the 6"x6" wooden posts to protect the walls and standing seam siding.

Floors

Level 1

The floors of the run-in are asphalt with saw dust over them. The floors are in adequate condition.

Ceilings

Level 1

The ceiling is open and exposed. There is no bird netting to keep nest from forming in the trusses. The ceiling remains adequate and functional.

Fixed Furnishings

Level 1

NA

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Means of Egress

Level 1

The shelter met all life safety and building codes when it was designed and built. There are two exits on the east wall which lead directly to the outside and discharge at grade.

Roof Fall Protection

Level 1

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

94.64%

Signage

Level 1

NA

Restrooms Men

Level 1

NA

Restrooms Women

Level 1

NA

Vertical Access

Level 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

75.00%

Level

NA

Level

NA

Level

The east wall has two openings which are at grade. There are no doors. The approach to the shelter is across rough but compacted dirt. The east approach is accessible but not ADA compliant.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The exterior walls consist of painted, standing seam metal wall system fasten to wood posts and girts. The metal panels are dented and scooped along the base. Some refinishing and repair work was completed in 2012. Panel connections appear to be tight. Only minor surface corrosion has started to occur in a few isolated spots. The exterior walls remain adequate and functional.

Level

NA

Level

NA

Level

The shelter has a simple and continuous gable roof. It is clad in an older standing seam metal roofing system with flashing and trim. Some minor

leaks occur during heavy rain. Roof remain adequate and functional

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure has post hole footers with concrete reinforcement. The footers are in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The shelter has post and beam construction with 6"x6" and 4"x6" wooden load bearing posts with double 2"x10 and 2"x12" beams supporting engineered wooden roof trusses with gusset plate connections. The exterior standing seam metal wall and roofing systems are supported on 2"x4" girts and purlin. The structure remains sound and in adequate condition.

MEP

71.09%

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fixtures

Level 1 **3** 75.00%

The shelter has one frost proof hydrant and heated automatic waterer. The plumbing fixtures are older units but they remain adequate and functional.

Water Piping Inside Building

Level 1 **3** 75.00%

The shelter has pvc water piping run from the frost proof hydrant to the automatic waterer. The pipw remains adequate.

Sanitary Vent Piping

Level 1 **NA** NA

NA

Water Service

Level 1 **3** 75.00%

A 3/4" water supply line feeds the three range shelter sheds from street. The shelters have one frost proof hydrant located outside the building on the east side area.

Storm Piping

Level 1 **3** 75.00%

The shelter has aluminum gutters and downspouts which drain into splashes against the structure. The base of the downspouts have been dented but they remain adequate and functional.

Hot Water Source

Level 1 **NA** NA

NA

Natural Gas Piping

Level 1 **NA** NA

NA

Laboratory Piping

Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System

Level 1 **NA** NA

NA

Primary Heating Source

Level 1 **NA** NA

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service

Level 1

NA

Standpipes

Level 1

NA

Sprinkler SystemLevel 1 **NA** NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

68.75%**Service Entrance**Level 1 **3** 75.00%

The electrical service entrance originates from a utility pole located to the northeast of the shelter. Power feed comes to the building via an overhead line. The power feed line goes to one 100 Amp 208/120/3 phase panels. The electrical service entrance remains adequate and functional.

DistributionLevel 1 **3** 75.00%

The shelter has a 30 Amp 208/120/3 phase lighting and power distribution panel. The panel has started to rust. Wiring runs in rigid conduit that is surface mounted. There is an electric fence which runs from the north half of the east wall, around the north exercise area, and portions of the south wall. The electric fence remains in operation. There are no warning signs; some should be installed to help improve safety. The electrical distribution remains adequate and functional.

LightingLevel 1 **3** 75.00%

The shelter has six, single bulb, light fixtures, with compact fluorescents, mounted to the trusses with no protective covers. There is one pole mounted HID fixture located in the front northeast corner.

Exit SignsLevel 1 **2** 50.00%

The shelter lacks exit signs. A combination exit signs with emergency egress lights should be installed for safety.

Fire Alarm SystemLevel 1 **2** 50.00%

The shelter lacks a fire alarm system. A fire alarm system should be installed due to the building's location and to improve safety.

Emergency Egress LightingLevel 1 **2** 50.00%

The shelter lacks emergency egress lighting. A combination exit signs with emergency egress lights should be installed for safety.

Lighting ControlsLevel 1 **3** 75.00%

The building has a wall mounted light switch. The light controls are original but they remain adequate and functional.

Security SystemsLevel 1 **NA** NA

NA

Emergency PowerLevel 1 **NA** NA

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

The shelter has it's original 20 amp wall receptacles with cover. The box has started to rusted. The receptacle remains adequate and functional.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

0334: Range Shelter 2 - OSU Equine Program**71.97%**

Address:
3660 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/02/2015

Arch/MEP:
40% / 60%

Area:
1536

**Date
Constructed:**
1972

Last Renovation:
NA

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 32'0", 8'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 10'0"

The Department of Animal Sciences offers students hands-on experiences with horses through courses, internships, research, and part-time student employment. The Equine Facility at The Ohio State University is operated by faculty and staff of the Department of Animal Sciences. The facility houses Quarter Horses and has sixteen (16) box stalls for boarding.

The Range Shelter is a single story, gable roofed structure situated north to south. The structure consists of wooden post and beam construction supporting engineered wooden trusses. It is clad in standing seam metal siding and roofing systems supported on wooden girts and purlin. The interior has exposed walls with unpainted plywood installed to 4' above grade. A center dividing wall has been added with 4"x4" posts supporting wooden tongue and groove, and plywood walls. At the west side of this dividing wall a plexi-glass window has been installed. The interior has exposed ceilings and an asphalt floor covered with saw dust. The shelter is enclosed by an electric fence, however there are no warning signs for the fence. The structure has no mechanicals, restrooms or tele-data infrastructure. The center dividing wall is very worn and has many areas of wood which have been chewed on by the animals. The shelter remains sound and in adequate condition. The facility assessment team was escorted by an interviewed Mr. Dan Rhodeback, Barn Manager with the Department of Animal Sciences, while conducting their field work.

This building was previously numbered 334 but was updated to 0334 per the University's revised numbering system. AS

Architectural**73.29%****Interior Finishes**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

67.86%**Doors**

Level 1

NA

Stairways

Level 1 NA NA

NA

Walls

Level 1 2 50.00%

The interior walls are mostly exposed with the lower portions covered to 4' with plywood. A center divider wall has been added. It has 2"x6" wooden tongue and groove to 3' above grade and a section covered with plywood which has a plexi-glass viewing window. The interior walls are very worn and chewed on, they remain adequate.

Floors

Level 1 3 75.00%

The shelter has asphalt floors with saw dust installed over them. They are very worn but remain adequate.

Ceilings

Level 1 3 75.00%

The shelter has an exposed ceiling which remains adequate.

Fixed Furnishings

Level 1 NA NA

NA

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Means of Egress

Level 1 3 75.00%

The shelter has two openings along the east side which met life safety codes when built and remain adequate.

Roof Fall Protection

Level 1 NA NA

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

94.64%

Signage

Level 1 NA NA

NA

Restrooms Men

Level 1 NA NA

NA

Restrooms Women

Level 1 NA NA

NA

Vertical Access

Level 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

75.00%

Level

NA

Level

NA

Level

There are two openings along the east elevation at grade. These are accessible but not ADA compliant.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

Exterior walls are clad in vertical, standing seam metal siding supported on wooden girts. The siding has been painted red and is in adequate condition.

Level

NA

Level

NA

Level

The gable roof of the structure is a standing seam metal roofing system supported on wooden purlin. The roof appears sound.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure has post hole footers which have been reinforced with concrete. The footers are in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The shelter is post and beam construction with 6"x6" and 4"x6" posts with double 2"x12" and 2"x10" beams supporting engineered wooden trusses. A 2"x6" tongue and groove wooden knee wall, supported on 4"x4" posts, runs across the center of the building, west to east. The shelter is in adequate condition.

MEP**71.09%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fixtures Level 1 **3** 75.00%

The shelter has one frost proof hydrant and a heated automatic waterer. The plumbing fixtures are older but they remain adequate.

Water Piping Inside Building Level 1 **3** 75.00%

The animal water system is installed underground to the frost proof hydrants and heater water troughs with pvc piping. They are in adequate condition.

Sanitary Vent Piping Level 1 **NA** NA

NA

Water Service Level 1 **3** 75.00%

A 3/4" water line feeds the three range shelters from street. The shelters have one frost proof hydrant located outside the building on the east side area.

Storm Piping Level 1 **3** 75.00%

Aluminum gutters and downspouts drain into splashes against the structure. They remain in adequate condition.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **NA** NA

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service

Level 1

NA

Standpipes

Level 1

NA

Sprinkler SystemLevel 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

68.75%**Service Entrance**Level 1 3 75.00%

The electrical service originates from a utility pole located to the northeast of the shelter. The power feed goes to one 100 amp 208/120/3 phase panel. The electrical service remains adequate.

DistributionLevel 1 3 75.00%

The shelter has a 30 amp 208/120/3 phase lighting and power distribution panel. The panel has begun to rust. There is an electrical fence around the shelter, however there are no warning signs for this. The distribution system remains adequate.

LightingLevel 1 3 75.00%

The shelter has single bulb light fixtures, with compact fluorescents, mounted to the trusses with no protective covers. There is a pole mounted HID fixture located on the northeast corner of the building. The lighting is adequate.

Exit SignsLevel 1 2 50.00%

The shelter lacks exit signs. A combination exit sign with emergency egress lights should be installed for safety.

Fire Alarm SystemLevel 1 2 50.00%

The shelter lacks a fire alarm system. One should be installed for safety.

Emergency Egress LightingLevel 1 2 50.00%

The shelter lacks emergency egress lighting. A combination exit sign with emergency egress lights should be installed for safety.

Lighting ControlsLevel 1 3 75.00%

The building has wall mounted light switches. They are the original controls and remain adequate.

Security SystemsLevel 1 NA NA

NA

Emergency PowerLevel 1 NA NA

NA

Phone/Data SystemsLevel 1 NA NA

NA

Quantity of Receptacles

Level 1 **3** 75.00%

The shelter has it's original, 20 amp wall receptacle which remains in adequate condition.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1 **NA** NA

NA

0335: Range Shelter 3 - OSU Equine Program

72.97%



Address:
3660 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/02/2015

Arch/MEP:
40% / 60%

Area:
1536

**Date
Constructed:**
1972

Last Renovation:
NA

LEED:
NA

Construction Type:
Wood frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 32'0", 8'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 10'0"

The Department of Animal Sciences offers students hands-on experiences with horses through courses, internships, research, and part-time student employment. The Equine Facility at The Ohio State University is operated by faculty and staff of the Department of Animal Sciences. The facility houses Quarter Horses and has sixteen (16) box stalled for boarding.

The Range Shelter is a single story, gable roofed structure situated north to south. The structure consists of wooden post and beam construction supporting engineered trusses. It is clad in standing seam metal siding and roofing systems supported on wooden girts and purlin. The interior has exposed walls with unpainted plywood installed to 4' above grade. A center dividing wall has been added with 4"x4" posts supporting wooden tongue and groove 2"x6"s. The wall has been repaired in several places where it was damaged by animals chewing. The interior has exposed ceilings and an asphalt floor which has been covered with saw dust. The shelter is enclosed by an electric fence, however, there are no warning signs for the fence. The structure has no mechanicals, restrooms or tele-data infrastructure. The shelter is quite worn, several posts have had to be repaired due to rot at the base, however it remains adequate. The facility assessment team was escorted by and interviewed Mr. Dan Rhodeback, Barn Manager with Department of Animal Sciences, while conducting their field work.

This building was previously numbered 335 but was updated to 0335 per the University's revised numbering system. AS

Architectural

75.79%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors

Level 1

NA

Stairways

Level 1

NA

Walls

Level 1

The interior walls are mostly exposed with the lower portions covered to 4' with plywood. A center divider wall has been added. It has 2"x6" wooden tongue and groove to 3' above grade and 2"x6" boards spaced above it. The interior walls are very worn and chewed on, they remain adequate.

Floors

Level 1

The shelter has asphalt floors which are covered with saw dust. The floors are worn but remain adequate.

Ceilings

Level 1

The shelter has exposed ceilings which are in adequate condition.

Fixed Furnishings

Level 1

NA

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Means of Egress

Level 1

The shelter has two openings along the east side which met life safety codes when built and remain adequate.

Roof Fall Protection

Level 1

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

94.64%

Signage

Level 1

NA

Restrooms Men

Level 1

NA

Restrooms Women

Level 1

NA

Vertical Access

Level 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

75.00%

Level

NA

Level

NA

Level

There are two openings along the east elevation at grade. These are accessible but not ADA compliant.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

Exterior walls are clad in vertical, standing seam metal siding supported on wooden girts. The siding has been painted red and is in adequate condition.

Level

NA

Level

NA

Level

The gable roof of the structure is a standing seam metal roofing system supported on wooden purlin. The roof appears sound.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure has post hole footers which have been reinforced with concrete. The footers are in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The shelter is post and beam construction with 6"x6" and 4"x6" posts with double 2"x12" and 2"x10" beams supporting engineered wooden trusses. A 2"x6" tongue and groove wooden knee wall, supported on 4"x4" posts, runs across the center of the building, west to east. The shelter is in adequate condition.

MEP**71.09%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fixtures Level 1 **3** 75.00%

The shelter has one frost proof hydrant and a heated automatic waterer. The plumbing fixtures are older but they remain adequate.

Water Piping Inside Building Level 1 **3** 75.00%

The animal water system is installed underground to the frost proof hydrants and heater water troughs with pvc piping. They are in adequate condition.

Sanitary Vent Piping Level 1 **NA** NA

NA

Water Service Level 1 **3** 75.00%

A 3/4" water line feeds the three range shelters from street. The shelters have one frost proof hydrant located outside the building on the east side area.

Storm Piping Level 1 **3** 75.00%

Aluminum gutters and downspouts drain into splashes against the structure. They remain in adequate condition.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **NA** NA

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service

Level 1

NA

Standpipes

Level 1

NA

Sprinkler SystemLevel 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

68.75%**Service Entrance**Level 1 3 75.00%

The electrical service originates from a utility pole located to the northeast of the shelter. The power feed goes to one 100 amp 208/120/3 phase panel. The electrical service remains adequate.

DistributionLevel 1 3 75.00%

The shelter has a 30 amp 208/120/3 phase lighting and power distribution panel. The panel has begun to rust. There is an electrical fence around the shelter, however there are no warning signs for this. The distribution system remains adequate.

LightingLevel 1 3 75.00%

The shelter has single bulb light fixtures, with compact fluorescents, mounted to the trusses with no protective covers. There is a pole mounted HID fixture located on the northeast corner of the building. The lighting is adequate.

Exit SignsLevel 1 2 50.00%

The shelter lacks exit signs. A combination exit sign with emergency egress lights should be installed for safety.

Fire Alarm SystemLevel 1 2 50.00%

The shelter lacks a fire alarm system. One should be installed for safety.

Emergency Egress LightingLevel 1 2 50.00%

The shelter lacks emergency egress lighting. A combination exit sign with emergency egress lights should be installed for safety.

Lighting ControlsLevel 1 3 75.00%

The building has wall mounted light switches. They are the original controls and remain adequate.

Security SystemsLevel 1 NA NA

NA

Emergency PowerLevel 1 NA NA

NA

Phone/Data SystemsLevel 1 NA NA

NA

Quantity of Receptacles

Level 1 **3** 75.00%

The shelter has it's original, 20 amp wall receptacle which remains in adequate condition.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1 **NA** NA

NA

0361: Research Barn

76.65%



Address:
3620 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/02/2015

Arch/MEP:
40% / 60%

Area:
6720

**Date
Constructed:**
1972

Last Renovation:
2004

LEED:
NA

Construction Type:
Steel frame w / Metal skin

Construction Type 2:
Wood frame w / Metal skin

Structural Span:
Varies 40'0", 24'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 14'0"

The Research Barn is a long, rectangular barn with a gable roof and a feed bunk with awning along the west elevation. This barn is an engineered steel building with combination posts/columns and roof trusses. The north and south elevations were repaired with reinforced, poured concrete walls to 4' above grade and a reinforced concrete feed bunk with retaining wall was added to the west elevation. The structure utilizes these as foundation walls. Exteriors are clad in red, standing seam metal siding supported on steel girts. The roof over the barn has a grey, standing seam metal roofing system supported on steel purlin. An awning was added over the feed bunk. It has 2"x4" and 2"x6" wooden framing and a red standing seam metal roofing system supported on wooden purlin. This structure is used to feed and water large animals. The east elevation is open to the yard with feed stations and automatic watering systems. The barn is divided into sections using steel tube animal pen sections. The barn has limited electric but no other mechanicals. It is designed to feed and water large farm animals. While heavily used and worn, the structure is sound and in good condition.

This building was previously numbered 360 but was updated to 0360 per the University's revised numbering system. AS

Architectural

86.65%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors

Level 1 NA NA

NA

Stairways

Level 1 NA NA

NA

Walls Level 1 **3** 75.00%

The interior walls are the exposed underside of the exterior standing seam metal wall systems supported on steel girts. The structure also has a poured concrete kneewall to 4' above grade on the north and south elevations with a poured feed bunk along the length of the west elevation. The walls are in adequate condition. Steel tube animal pen sections divide portions of the barn.

Floors Level 1 **3** 75.00%

The barn has an earthen floor which is covered in straw for the animals. It is adequate for the use of the structure.

Ceilings Level 1 **3** 75.00%

The ceilings of the barn are the exposed underside of the standing seam metal roofing system supported on steel purlins. The ceilings are in adequate condition.

Fixed Furnishings Level 1 **3** 75.00%

Concrete feed bunk along entire west elevation of structure and bulk feed stations in east yard. These are in adequate condition.

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

The east elevation is open, however, the structure is used to feed large animals and not intended for human occupancy, the animals are fenced in. There is adequate egress.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **85.00%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

0.00%

NA Level

NA Level

NA Level

The east elevation is completely open, however, there is no accessible route to the structure through the animal forge areas.

NA Level

NA Level

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%

Level

Exterior walls are clad in a red, standing seam metal wall system supported on steel girts with a poured, reinforced concrete kneewall along the north and south elevations and a poured, reinforced concrete feed bunk along the west elevation. The exterior walls are in very good condition.

NA Level

NA Level

Level

The barn has a grey standing seam metal roofing system supported on steel purlin and the feed bunk has a red standing seam metal roofing system supported on wooden purlin. The roofs are in very good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%

Level

The north and south walls have continuous reinforced concrete footers with poured, reinforced concrete walls to 4' above grade. These are in very good condition. The post/columns along the east elevation have concrete piers which continue to 4' above grade. The west elevation has a reinforced concrete feed bunk with continuous reinforced concrete footers and retaining wall along the entire length. These are all in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

An engineered steel structure with combination steel posts/columns and roof trusses supporting exterior standing seam metal wall and roofing systems with steel girts and purlin. The awning over the feed bunk along the west elevation has wooden 2"x4" and 2"x6" framing supporting the standing seam metal roofing system with wooden girts. These are sound and in good condition.

MEP**69.98%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

72.84%

Fixtures Level 1 **3** 75.00%

Heated, automatic animal waterers are located on the east side of the building and are in adequate condition

Water Piping Inside Building Level 1 **3** 75.00%

The animal water system is installed underground to heated animal watering stations.

Sanitary Vent Piping Level 1 **NA** NA

NA

Water Service Level 1 **3** 75.00%

The barn has a 1" water supply from the public utility.

Storm Piping Level 1 **2** 50.00%

The structure lacks gutters and downspouts, these should be considered for installation when feasible.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **NA** NA

NA

Primary Cooling Source	Level 1	NA	NA
NA			
Air System Equipment	Level 1	NA	NA
NA			
Air System Distribution	Level 1	NA	NA
NA			
Hydronic Water Piping	Level 1	NA	NA
NA			
Steam Piping	Level 1	NA	NA
NA			
Building Controls	Level 1	NA	NA
NA			
Laboratory Exhaust System	Level 1	NA	NA
NA			
Laboratory Hoods/Controls	Level 1	NA	NA
NA			
Computer Room AC Equipment	Level 1	NA	NA
NA			

Fire Protection
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **50.00%**

Fire Service Level 1 **2** 50.00%
The structure lacks a portable fire extinguisher, one should be installed for safety.

Standpipes Level 1 NA NA
NA

Sprinkler System Level 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

72.92%**Service Entrance** Level 1 **3** 75.00%

The barn has a 100 amp, 208/120 single phase service from AEP.

Distribution Level 1 **3** 75.00%

The barn has a 100 amp, 208/120 single phase lighting and power distribution panel located on the south interior of the structure. It has rusted and the cover is bent and will not shut. It remains functional but should be repaired.

Lighting Level 1 **3** 75.00%

Surface mounted incandescent lighting that should be replaced with compact fluorescent bulbs when feasible. They remain adequate.

Exit Signs Level 1 **NA** NA

NA

Fire Alarm System Level 1 **NA** NA

NA

Emergency Egress Lighting Level 1 **NA** NA

NA

Lighting Controls Level 1 **2** 50.00%

Wall mounted light switches next to electric panel is damaged and should be replaced.

Security Systems Level 1 **NA** NA

NA

Emergency Power Level 1 **NA** NA

NA

Phone/Data Systems Level 1 **NA** NA

NA

Quantity of Receptacles Level 1 **3** 75.00%

One 20 amp wall receptacle next to the panel is in adequate condition.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

0982: Sheep Annex

67.14%



Address: 2400 West Case Road, Columbus	Area: 6200	Construction Type: Steel frame w / Metal skin
Auditor: DMD & MDM	Date Constructed: 1976	Construction Type 2:
Audit Date: 03/02/2015	Last Renovation: NA	Structural Span: Varies 60'0"
Arch/MEP: 40% / 60%	LEED: NA	Historic Significance:

Clear Floor Heights (1 Floor):

1 14'0"

The Sheep Annex is an engineered steel building with a gable roof. The structure consists of combination steel columns and open span roof trusses. The exterior has standing seam metal wall and roofing systems supported on steel girts and purlin. The south elevation has face brick installed, around portions of the west and east elevation as well, to 3' above grade. The siding, and face brick, are damaged in many areas. The west elevation has a steel entry door, overhead garage door, fixed pane windows, and several hinged steel openings. The hinged steel members are rusted and no longer function as designed. The south elevation has an aluminum and full glass entry door and fixed pane windows. This entrance is blocked on the interior with storage. The east elevation has two openings through the walls which are now blocked on the interior and exterior. The north elevation provides the main access to the structure with a steel entry door and overhead garage door. The interior has standing seam metal installed with spray on insulation covering all surfaces. This insulation is falling down and missing in areas. A CMU block room has been constructed in the northwest corner which is being used as office space. A small electric unit heater conditions the space. The structure is used for storage and is sound and in good condition.

This building was previously numbered 982 but was updated to 0982 per the University's revised numbering system. AS

Architectural

69.97%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

71.88%

Doors Level 1 2 50.00%

Hollow metal doors in metal frames, one with half lite, are in poor to fair condition. The door and frame are heavily rusted and should be repainted and adjusted so it operates easily.

Stairways Level 1 NA NA

NA

Walls Level 1 **3** 75.00%

The interior perimeter walls of the structure are standing seam metal which has been installed over steel girts and has been sprayed with insulation. These walls are worn but remain adequate. A CMU block room has been constructed in the northwest corner of the building. The CMU has been painted and wooden paneling has been installed to 4' on the interior of the room. These walls are in adequate condition.

Floors Level 1 **3** 75.00%

The building has exposed, reinforced concrete floors which are heavily stained but remain adequate for the use of the structure.

Ceilings Level 1 **3** 75.00%

The ceilings in the open bay are the exposed metal roof framing and the underside of the standing seam metal roofing system which has been sprayed with insulation. Several areas are missing insulation. The small CMU block office has commercial drop ceilings with 2'x4' tiles and insulation above. This ceiling is in adequate condition.

Fixed Furnishings Level 1 **NA** NA

NA

Life Safety
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

The building has adequate means of egress.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility
C:Compliant with ADA; A:Accessible; N:Not Accessible **75.00%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical AccessLevel 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

75.00%Level

Single steel entry door with cylinder hardware is accessible but not ADA compliant. Overhead garage door with automatic opener is accessible but not ADA compliant.

Level

Single aluminum and full glass door with pull hardware is accessible but not ADA compliant.

Level

NA

Level

Single steel entry door with lever hardware is accessible but not ADA compliant. Overhead garage door with automatic opener is accessible but not ADA compliant.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

63.75%Level

Exterior walls are clad in standing seam metal siding which is supported on the steel framing and girts. This siding has begun to rust and is damaged in many areas. The south elevation of the building, including approx. 20 lineal feet on the west and east elevations, has face brick to approx. 3' above grade. Several areas have cracked.

Level

Aluminum sliding and fixed, single pane windows are original and in poor condition. Hinged wall panels on west elevation are damaged and rusted. The windows and panels should be considered for replacement.

Level

Single, aluminum and full glass door is in adequate condition, the pull hardware on the exterior needs adjusted. Two single steel entry doors, one with cylinder hardware and one with lever, are in adequate condition. Two overhead, garage doors, with insulation, are in adequate condition as well.

Level

Roof is clad in a standing seam metal roofing system supported on steel roof framing and purlin. The roof is in good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

Continuous reinforced concrete footers with piers at columns and a reinforced concrete, slab on grade floor. These are in adequate condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure is an engineered steel building with combination columns and open span roof trusses. Exterior standing seam metal wall and roof systems are supported on steel girts and purling. The structure is sound and in good condition.

MEP**65.25%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%**Fixtures**Level 1

NA

Water Piping Inside BuildingLevel 1

The domestic water system is installed underground to a frost proof yard hydrant in the building.

Sanitary Vent PipingLevel 1

NA

Water ServiceLevel 1

1" water supply from the public utility is in adequate condition.

Storm PipingLevel 1

Aluminum gutters and downspouts drain to clay boots then underground to vitrified pipe and away from the building.

Hot Water SourceLevel 1

NA

Natural Gas PipingLevel 1

NA

Laboratory PipingLevel 1

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

56.06%**Fuel Oil System**Level 1

NA

Primary Heating SourceLevel 1

Heating system has a newer electric unit heater with thermostat in the office.

Primary Cooling Source Level 1 NA NA

NA

Air System Equipment Level 1 2 50.00%

Area exhaust fans interconnected with outside air louvers. The fan is nearing the end of its useful lifecycle and should be considered for replacement.

Air System Distribution Level 1 NA NA

NA

Hydronic Water Piping Level 1 NA NA

NA

Steam Piping Level 1 NA NA

NA

Building Controls Level 1 2 50.00%

Electric thermostats control exhaust fan. The fan and controls are nearing the end of their useful lifecycle and should be considered for replacement.

Laboratory Exhaust System Level 1 NA NA

NA

Laboratory Hoods/Controls Level 1 NA NA

NA

Computer Room AC Equipment Level 1 NA NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fire Service Level 1 3 75.00%

Wall mounted, portable fire extinguishers are located at the main entry and are in adequate condition.

Standpipes Level 1 NA NA

NA

Sprinkler System Level 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

67.86%**Service Entrance**Level 1 **3** 75.00%

100 amp, 208/120 single phase service from AEP is in adequate condition.

DistributionLevel 1 **3** 75.00%

100 amp, 208/120 single phase, lighting and power distribution panel is in adequate condition.

LightingLevel 1 **2** 50.00%

Surface mounted and hung T-8 and T-12 fluorescent fixtures, compact fluorescent, and HID wall packs. The exterior lighting is in poor condition and should be replaced. T-12 fluorescents should be upgraded to T-8's when feasible.

Exit SignsLevel 1 **2** 50.00%

The building lacks exit signs, these should be installed for safety. Combination exit signs with emergency egress lights are recommended.

Fire Alarm SystemLevel 1 **NA** NA

NA

Emergency Egress LightingLevel 1 **NA** NA

The building lacks emergency egress lighting, this should be installed for safety. Combination exit signs with emergency egress lights are recommended.

Lighting ControlsLevel 1 **3** 75.00%

Wall mounted light switches are in adequate condition.

Security SystemsLevel 1 **NA** NA

NA

Emergency PowerLevel 1 **NA** NA

NA

Phone/Data SystemsLevel 1 **3** 75.00%

Adequate telephone coverage.

Quantity of ReceptaclesLevel 1 **3** 75.00%

12/20/2017

0982: Sheep Annex

20 amp wall receptacles are adequate.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1120: Working Chute 2 **80.66%**



Address: Godown Road, Columbus	Area: 288	Construction Type: Wood frame w / Wood skin
Auditor: DMD & MAM	Date Constructed: 2010	Construction Type 2:
Audit Date: 03/04/2015	Last Renovation: NA	Structural Span: 24'
Arch/MEP: 40% / 60%	LEED: NA	Historic Significance: NA

Clear Floor Heights (1 Floor):

1 8'

The Working Chute 2 is a pole barn structure with a gable roof which is used as a shelter. Consisting of laminated 6"x6" posts with 2"x6" beams and 2"x6" roof framing, the four sides of the structure are open. The roof is clad in standing seam metal supported on wooden purlin. The shelter has a Palco Livestock Cattleboss chute under it which is sitting on a small, reinforced concrete slab. The structure has a frost proof hydrant located adjacent to it. There are no other MEP's associated with this building. It is in good condition and well maintained.

Architectural **89.15%**

Interior Finishes **75.00%**
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

Doors	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Stairways	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Walls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Floors	Level 1	<input type="text" value="3"/>	<input type="text" value="75.00%"/>

A reinforced concrete slab provides a base for the farm equipment in the structure. The remaining areas are earthen. The floors are in adequate condition.

Ceilings Level 1 **3** 75.00%

The structure has open ceilings which are in adequate condition.

Fixed Furnishings Level 1 **3** 75.00%

A Palco Livestock, Cattleboss 485 chute is located under the canopy of this structure. It is in adequate condition.

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

The structure is completely open providing adequate means of egress.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **85.00%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances C:Compliant with ADA; A:Accessible; N:Not Accessible **0.00%**

Level **0.00%**

The north elevation is open, however, there is no accessible route to this structure.

Level **0.00%**

The south elevation is open, however, there is no accessible route to this structure.

Level

The east elevation is open, however, there is no accessible route to this structure.

Level

The west elevation is open, however, there is no accessible route to this structure.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%

Level

NA

Level

NA

Level

NA

Level

The roof is clad in standing seam metal roofing supported on the wooden roof framing and purlins. The roof is in very good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%

Level

The structure has post hole footers which have been reinforced with concrete. A reinforced concrete slab on grade covers a portion of the interior of the shelter. These are in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%

Level

The shelter type structure consists of pole barn construction with laminated 6"x6" posts and 2"x6" beams supporting 2"x6" roof framing. The roof is clad in standing seam metal supported on purling. The four walls of the shelter are open. The structure is sound and in good condition.

MEP **75.00%**

Plumbing System
 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Fixtures Level 1 3 75.00%

A frost proof hydrant is located on the south side of the shelter. It is in adequate condition.

Water Piping Inside Building Level 1 NA NA

NA

Sanitary Vent Piping Level 1 NA NA

NA

Water Service Level 1 3 75.00%

The frost proof hydrant is tied into a 1" line to the site from the public utility.

Storm Piping Level 1 NA NA

NA

Hot Water Source Level 1 NA NA

NA

Natural Gas Piping Level 1 NA NA

NA

Laboratory Piping Level 1 NA NA

NA

HVAC System
 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Fuel Oil System Level 1 NA NA

NA

Primary Heating Source Level 1 NA NA

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service

Level 1

NA

Standpipes

Level 1

NA

Sprinkler System

Level 1

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1

NA

Distribution

Level 1

NA

Lighting

Level 1

NA

Exit Signs

Level 1

NA

Fire Alarm System

Level 1

NA

Emergency Egress Lighting

Level 1

NA

Lighting Controls

Level 1

NA

Security Systems

Level 1

NA

Emergency Power

Level 1

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1123: Swine Run-In Sheds

75.44%



Address:
3671 Kays
Avenue,
Columbus

Area:
840

Construction Type:
Wood frame w / Wood skin

Auditor:
DMD & MAM

**Date
Constructed:**
1980

Construction Type 2:

Audit Date:
03/03/2015

Last Renovation:
NA

Structural Span:
12'

Arch/MEP:
40% / 60%

LEED:
NA

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 4'

There are ten Swine Run-In Sheds located in the pasture behind the Swine Barn. Five are 96 square feet and five are 72 square feet. The shelters have shed roof which are clad in corrugated metal. Some of the sheds rear walls have had plywood installed to shelter the animals from the elements. No MEP's are associated with these. The shelters are in adequate condition and function as intended.

Architectural

75.44%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors

Level 1 NA NA

NA

Stairways

Level 1 NA NA

NA

Walls

Level 1 3 75.00%

Some shelters have three of their walls enclosed with plywood. The exposed underside is visible from the interiors. These are in adequate condition.

Floors

Level 1 3 75.00%

Earthen floors.

Ceilings Level 1

Ceilings are the exposed roof framing and the underside of the corrugated metal roofs. These are in adequate condition.

Fixed Furnishings Level 1

NA

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1

The shelters are not intended for human occupants, they are open and adequate.

Roof Fall Protection Level 1

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **85.00%**

Signage Level 1

NA

Restrooms Men Level 1

NA

Restrooms Women Level 1

NA

Vertical Access Level 1

NA

Entrances C:Compliant with ADA; A:Accessible; N:Not Accessible **0.00%**

Level

The shelters are open on their northern elevations, however, they are in a pasture and there is no accessible route.

Level

NA

Level

NA

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

Exterior walls are clad in plywood which is weathered but remains adequate for the use of the structure.

Level

NA

Level

NA

Level

The roofs of the structures are clad in corrugated metal which has been painted. The roofs remain in adequate condition for the use of the structures.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Level

NA

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structures consist of 4"x4" posts with 2"x4" roof framing. The structures are partially clad in plywood and slat siding. These shelters are intended

to be mobile and remain in adequate condition.

MEP

NA

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fixtures Level 1

NA

Water Piping Inside Building Level 1

NA

Sanitary Vent Piping Level 1

NA

Water Service Level 1

NA

Storm Piping Level 1

NA

Hot Water Source Level 1

NA

Natural Gas Piping Level 1

NA

Laboratory Piping Level 1

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1

NA

Primary Heating Source Level 1

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service

Level 1

NA

Standpipes

Level 1

NA

Sprinkler System

Level 1

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1

NA

Distribution

Level 1

NA

Lighting

Level 1

NA

Exit Signs

Level 1

NA

Fire Alarm System

Level 1

NA

Emergency Egress Lighting

Level 1

NA

Lighting Controls

Level 1

NA

Security Systems

Level 1

NA

Emergency Power

Level 1

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1124: Pony Run-In Sheds **72.90%**



Address: 3658 Kays Avenue, Columbus	Area: 160	Construction Type: Wood frame w / Wood skin
Auditor: DMD & MAM	Date Constructed: 1980	Construction Type 2:
Audit Date: 03/02/2015	Last Renovation: NA	Structural Span: 10'
Arch/MEP: 40% / 60%	LEED: NA	Historic Significance: NA

Clear Floor Heights (1 Floor):

1 4'

There are two Pony Run-In Sheds located adjacent to the larger Horse Run-in Sheds. These are 80 square feet each and consist of 4"x4" posts with 2"x4" framing. The small sheds have gable roofs which are clad in corrugated metal and three of their walls have had plywood installed on their exteriors to shelter the animals. There are no MEP's associated with these sheds. They are in adequate condition and function as intended.

Architectural **72.90%**

Interior Finishes
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Doors Level 1 NA NA

NA

Stairways Level 1 NA NA

NA

Walls Level 1 3 75.00%

The interior walls are the exposed framing and underside of the exterior plywood sheathing. The walls are worn but remain adequate.

Floors Level 1 3 75.00%

Earthen floors.

Ceilings

Level 1

The ceilings are the exposed framing and the underside of the corrugated metal roofs. They are worn but remain adequate.

Fixed Furnishings

Level 1

NA

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Means of Egress

Level 1

The east elevations are completely open, however the shelters are not intended for human occupants.

Roof Fall Protection

Level 1

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible

85.00%

Signage

Level 1

NA

Restrooms Men

Level 1

NA

Restrooms Women

Level 1

NA

Vertical Access

Level 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

0.00%

Level

NA

Level

NA

Level

The east elevations are open, however, they are in an enclosed run and there is no accessible route.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

Exterior walls are clad in plywood which is weathered and worn but remains adequate for the use of the structure.

Level

NA

Level

NA

Level

The roofs are clad in corrugated metal which has begun to rust but remains adequate for the intended use of the structure.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%

Level

The structures have post hole footers which have been backfilled with earth.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The sheds consist of 4"x4" posts with 2"x4" framing. The exterior walls are clad in plywood and the roof is clad in corrugated metal. The structures are

worn and weathered but remain adequate for their intended use.

MEP

NA

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fixtures Level 1 NA NA

NA

Water Piping Inside Building Level 1 NA NA

NA

Sanitary Vent Piping Level 1 NA NA

NA

Water Service Level 1 NA NA

NA

Storm Piping Level 1 NA NA

NA

Hot Water Source Level 1 NA NA

NA

Natural Gas Piping Level 1 NA NA

NA

Laboratory Piping Level 1 NA NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 NA NA

NA

Primary Heating Source Level 1 NA NA

NA

Primary Cooling Source

Level 1

NA

Air System Equipment

Level 1

NA

Air System Distribution

Level 1

NA

Hydronic Water Piping

Level 1

NA

Steam Piping

Level 1

NA

Building Controls

Level 1

NA

Laboratory Exhaust System

Level 1

NA

Laboratory Hoods/Controls

Level 1

NA

Computer Room AC Equipment

Level 1

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service

Level 1

NA

Standpipes

Level 1

NA

Sprinkler System

Level 1

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1

NA

Distribution

Level 1

NA

Lighting

Level 1

NA

Exit Signs

Level 1

NA

Fire Alarm System

Level 1

NA

Emergency Egress Lighting

Level 1

NA

Lighting Controls

Level 1

NA

Security Systems

Level 1

NA

Emergency Power

Level 1

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1126: Hay Storage Quonset

75.44%



Address:
3640 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/02/2015

Arch/MEP:
40% / 60%

Area:
256

**Date
Constructed:**
1980

Last Renovation:
NA

LEED:
NA

Construction Type:
Steel frame w / Precast Concrete skin

Construction Type 2:

Structural Span:
NA

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 8'

The Hay Storage Quonset is located north of the Cow Barn and sits west to east. The quonset hut consists of steel tube framing with corrugated metal siding. The west end call is capped with steel framing and corrugated metal panels. The structure is used to store hay. It is weathered and worn but remains adequate for it's intended use. There are no MEP's associated with this structure.

Architectural

75.44%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors Level 1 NA NA

NA

Stairways Level 1 NA NA

NA

Walls Level 1 3 75.00%

Interior walls are the exposed underside of the exterior corrugated metal wall systems. They are adequate.

Floors Level 1 3 75.00%

The structure has an earthen floor.

Ceilings Level 1

Ceilings are the exposed underside of the exterior corrugated metal wall systems. They are adequate.

Fixed Furnishings Level 1

NA

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1

The structure has adequate egress.

Roof Fall Protection Level 1

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **85.00%**

Signage Level 1

NA

Restrooms Men Level 1

NA

Restrooms Women Level 1

NA

Vertical Access Level 1

NA

Entrances C:Compliant with ADA; A:Accessible; N:Not Accessible **0.00%**

Level

NA

Level

NA

Level

The east elevation is open, however, there is no accessible route to this structure.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

Exterior walls are clad in a corrugated metal wall system supported on steel framing. They have begun to rust but remain adequate.

Level

NA

Level

NA

Level

NA

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Level

NA

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

A steel framed quonset hut structure with corrugated metal exterior. The structure is sound and in adequate condition.

MEP

NA

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fixtures Level 1 NA NA

NA

Water Piping Inside Building Level 1 NA NA

NA

Sanitary Vent Piping Level 1 NA NA

NA

Water Service Level 1 NA NA

NA

Storm Piping Level 1 NA NA

NA

Hot Water Source Level 1 NA NA

NA

Natural Gas Piping Level 1 NA NA

NA

Laboratory Piping Level 1 NA NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 NA NA

NA

Primary Heating Source Level 1 NA NA

NA

Primary Cooling Source	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Distribution	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Hydronic Water Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Steam Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Building Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Exhaust System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Hoods/Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Computer Room AC Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fire Service	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Standpipes	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Sprinkler System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1 NA NA

NA

Distribution

Level 1 NA NA

NA

Lighting

Level 1 NA NA

NA

Exit Signs

Level 1 NA NA

NA

Fire Alarm System

Level 1 NA NA

NA

Emergency Egress Lighting

Level 1 NA NA

NA

Lighting Controls

Level 1 NA NA

NA

Security Systems

Level 1 NA NA

NA

Emergency Power

Level 1 NA NA

NA

Phone/Data Systems

Level 1 NA NA

NA

Quantity of Receptacles

Level 1 NA NA

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1310: Swine Nursery D

74.12%



Address:
3639 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/04/2015

Arch/MEP:
40% / 60%

Area:
1050

**Date
Constructed:**
2000

Last Renovation:
NA

LEED:
NA

Construction Type:
Steel frame w / Metal skin

Construction Type 2:

Structural Span:
Varies 24'0"

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 8'0"

The Swine Nursery D is an engineered modular trailer with a low gable roof which rests on CMU block piers. The exterior of this trailer is clad in standing seam metal wall and roofing systems. The structure is insulated and moisture resistant panels with seam covers are installed on all interior surfaces. This trailer is used as an animal nursery. There are steel tube animal pens with automatic watering and feeding systems. The structure is heated by electric unit heaters and large intake and exhaust fans circulate air. The trailer has adequate electrical service, with room for expansion. The trailer is being used as designed and is in good condition. The facility assessment team was escorted by and interviewed Mr. Ken Mays, Swine Operations Manager, while conducting their field work.

This building was previously numbered D85 but was updated to 1310 per the University's revised numbering system. AS

Architectural

75.14%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors Level 1 **3** 75.00%

The structure has insulated, metal doors with moisture resistant panels, windows, and cylinder hardware. The doors are in good condition.

Stairways Level 1 **NA** NA

NA

Walls Level 1 **3** 75.00%

Interior walls are wooden stud framed, with insulation and 4'x8' laminated wall panels with seam covers installed. Animal pens have painted, galvanized steel pipe walls. The walls are worn but remain in good condition.

Floors Level 1 **3** 75.00%

The trailer has metal and wooden floor joists with vinyl sheet flooring. Feed alleys and raised pen floors have a heavy duty fabric vinyl coating glued to the under-flooring. The floors are worn but remain in adequate condition.

Ceilings Level 1 **3** 75.00%

Ceilings have wooden roof trusses with insulation and 4'x8' laminated panels with seam covers installed over them. These are in adequate condition.

Fixed Furnishings Level 1 **3** 75.00%

Automatic feeding and watering equipment located in animal pens are in good condition.

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

Multiple exits met life safety codes when built and remain adequate.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **78.57%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

0.00%Level

Single steel entry door with cylinder hardware is not ADA compliant.

Level

NA

Level

Single steel entry door with cylinder hardware is not ADA compliant.

Level

Single steel entry door with cylinder hardware is not ADA compliant.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

An engineered, modular trailer with insulated standing seam metal exterior walls supported on metal and wood framing. The walls are in good condition.

Level

NA

Level

Single steel entry doors, some with windows, in metal frames with cylinder hardware and laminated panels installed on the interior are in good condition.

Level

The low gable roof is clad in a standing seam metal roofing system supported on wooden roof framing. It is in adequate condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The engineered, modular trailer is sitting on CMU block piers on compacted earth and gravel. These are adequate.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure is an engineered, modular trailer with wood and metal framing clad in standing seam metal siding and roofing systems. The structure is sound and in good condition.

MEP**73.44%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

73.16%

Fixtures Level 1 **3** 75.00%

Automatic watering systems in animal pens are in good condition.

Water Piping Inside Building Level 1 **3** 75.00%

The domestic water system has insulated copper piping and pvc piping which is adequate.

Sanitary Vent Piping Level 1 **3** 75.00%

The sanitary waste and vent system has PVC piping which drains to a sewage treatment plant at the southeast corner of the property. The system was backed up at the time of the assessment due to freezing temps. It remains in adequate condition.

Water Service Level 1 **3** 75.00%

The structure has a 1" water supply from the public utility which is in adequate condition.

Storm Piping Level 1 **2** 50.00%

The structure lacks gutters and downspouts, these should be considered for installation.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **3** 75.00%

Heating system has electric unit heaters and wall mounted heaters which are in good condition.

Primary Cooling Source Level 1 **3** 75.00%

Evaporative cooling system with pad, gutter to sump, make-up water float, sump pump, distribution pipe and 4' x 4' cooling pad media.

Air System Equipment Level 1 **3** 75.00%

Area exhaust fans interconnected with outside air louvers are in good condition.

Air System Distribution Level 1 **NA** NA

NA

Hydronic Water Piping Level 1 **NA** NA

NA

Steam Piping Level 1 **NA** NA

NA

Building Controls Level 1 **3** 75.00%

Electric thermostats control heaters and evaporative cooling system units.

Laboratory Exhaust System Level 1 **NA** NA

NA

Laboratory Hoods/Controls Level 1 **NA** NA

NA

Computer Room AC Equipment Level 1 **NA** NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fire Service Level 1 **3** 75.00%

The structure has portable fire extinguishers which are in good condition.

Standpipes Level 1 **NA** NA

NA

Sprinkler SystemLevel 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

71.43%**Service Entrance**Level 1 3 75.00%

The trailer has a 100 amp, 208/120 single phase service run underground from the Swine Barn/AEP. It is in adequate condition.

DistributionLevel 1 3 75.00%

The trailer has a 100 amp, 208/120 single phase lighting and power distribution panel with spare capacity which is in good condition.

LightingLevel 1 3 75.00%

Surfaced mounted T-8 fluorescent lighting is adequate.

Exit SignsLevel 1 2 50.00%

The structure lacks exit signs, these should be installed for safety. Combination exit signs with emergency egress lights are recommended.

Fire Alarm SystemLevel 1 NA NA

NA

Emergency Egress LightingLevel 1 2 50.00%

The structure lacks emergency egress lighting, this should be installed for safety. Combination exit signs with emergency egress lights are recommended.

Lighting ControlsLevel 1 3 75.00%

Wall mounted light switches and weather proof light switches are in good condition.

Security SystemsLevel 1 NA NA

NA

Emergency PowerLevel 1 NA NA

NA

Phone/Data SystemsLevel 1 NA NA

NA

Quantity of Receptacles Level 1 **3**

Weather proof 20 amp GFCI wall receptacles with adequate coverage.

Conveying Systems
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Elevators and Lifts Level 1 **NA**

NA

1311: Swine Nursery C **74.12%**



<p>Address: 3669 Kays Avenue, Columbus</p> <p>Auditor: DMD & MAM</p> <p>Audit Date: 03/04/2015</p> <p>Arch/MEP: 40% / 60%</p>	<p>Area: 1290</p> <p>Date Constructed: 2000</p> <p>Last Renovation: NA</p> <p>LEED: NA</p>	<p>Construction Type: Steel frame w / Metal skin</p> <p>Construction Type 2:</p> <p>Structural Span: Varies 16'0"</p> <p>Historic Significance: NA</p>
---	--	--

Clear Floor Heights (1 Floor):

1 8'0"

The Swine Nursery C is an engineered modular trailer with a low gable roof which rests on CMU block piers. The exterior of this trailer is clad in standing seam metal wall and roofing systems. The structure is insulated and moisture resistant panels with seam covers are installed on all interior surfaces. This trailer is used as an animal nursery. There are steel tube animal pens with automatic watering and feeding systems. The structure is heated by electric unit heaters and large intake and exhaust fans circulate air. The trailer has adequate electrical service, with room for expansion. The trailer is being used as designed and is in good condition. The facility assessment team was escorted by and interviewed Mr. Ken Mays, Swine Operations Manager, while conducting their field work.

This building was previously numbered D86 but was updated to 1311 per the University's revised numbering system. AS

Architectural **75.14%**

Interior Finishes **75.00%**
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

Doors Level 1 3 75.00%

The structure has insulated, metal doors with moisture resistant panels, windows, and cylinder hardware. The doors are in good condition.

Stairways Level 1 NA NA

NA

Walls Level 1 3 75.00%

Interior walls are wooden stud framed, with insulation and 4'x8' laminated wall panels with seam covers installed. Animal pens have painted, galvanized steel pipe walls. The walls are worn but remain in good condition.

Floors Level 1 **3** 75.00%

The trailer has metal and wooden floor joists with vinyl sheet flooring. Feed alleys and raised pen floors have a heavy duty fabric vinyl coating glued to the under-flooring. The floors are worn but remain in adequate condition.

Ceilings Level 1 **3** 75.00%

Ceilings have wooden roof trusses with insulation and 4'x8' laminated panels with seam covers installed over them. These are in adequate condition.

Fixed Furnishings Level 1 **3** 75.00%

Automatic feeding and watering equipment located in animal pens are in good condition.

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

Multiple exits met life safety codes when built and remain adequate.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **78.57%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

0.00%Level

NA

Level

Single steel entry door with cylinder hardware is not ADA compliant.

Level

Single steel entry door with cylinder hardware is not ADA compliant.

Level

Single steel entry door with cylinder hardware is not ADA compliant.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

An engineered, modular trailer with insulated standing seam metal exterior walls supported on metal and wood framing. The walls are in good condition.

Level

NA

Level

Single steel entry doors, some with windows, in metal frames with cylinder hardware and laminated panels installed on the interior are in good condition.

Level

The low gable roof is clad in a standing seam metal roofing system supported on wooden roof framing. It is in adequate condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The engineered, modular trailer is sitting on CMU block piers on compacted earth and gravel. These are adequate.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure is an engineered, modular trailer with wood and metal framing clad in standing seam metal siding and roofing systems. The structure is sound and in good condition.

MEP**73.44%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

73.16%

Fixtures Level 1 **3** 75.00%

Automatic watering systems in animal pens are in good condition.

Water Piping Inside Building Level 1 **3** 75.00%

The domestic water system has insulated copper piping and pvc piping which is adequate.

Sanitary Vent Piping Level 1 **3** 75.00%

The sanitary waste and vent system has PVC piping which drains to a sewage treatment plant at the southeast corner of the property. It remains in adequate condition.

Water Service Level 1 **3** 75.00%

The structure has a 1" water supply from the public utility which is in adequate condition.

Storm Piping Level 1 **2** 50.00%

The structure lacks gutters and downspouts, these should be considered for installation.

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **3** 75.00%

Heating system has electric unit heaters and wall mounted heaters which are in good condition.

Primary Cooling Source Level 1 **3** 75.00%

Evaporative cooling system with pad, gutter to sump, make-up water float, sump pump, distribution pipe and 4' x 4' cooling pad media.

Air System Equipment Level 1 **3** 75.00%

Area exhaust fans interconnected with outside air louvers are in good condition.

Air System Distribution Level 1 **NA** NA

NA

Hydronic Water Piping Level 1 **NA** NA

NA

Steam Piping Level 1 **NA** NA

NA

Building Controls Level 1 **3** 75.00%

Electric thermostats control heaters and evaporative cooling system units.

Laboratory Exhaust System Level 1 **NA** NA

NA

Laboratory Hoods/Controls Level 1 **NA** NA

NA

Computer Room AC Equipment Level 1 **NA** NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fire Service Level 1 **3** 75.00%

The structure has portable fire extinguishers which are in good condition.

Standpipes Level 1 **NA** NA

NA

Sprinkler SystemLevel 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

71.43%**Service Entrance**Level 1 3 75.00%

The trailer has a 100 amp, 208/120 single phase service run underground from the Swine Barn/AEP. It is in adequate condition.

DistributionLevel 1 3 75.00%

The trailer has a 100 amp, 208/120 single phase lighting and power distribution panel with spare capacity which is in good condition.

LightingLevel 1 3 75.00%

Surfaced mounted T-8 fluorescent lighting is adequate.

Exit SignsLevel 1 2 50.00%

The structure lacks exit signs, these should be installed for safety. Combination exit signs with emergency egress lights are recommended.

Fire Alarm SystemLevel 1 NA NA

NA

Emergency Egress LightingLevel 1 2 50.00%

The structure lacks emergency egress lighting, this should be installed for safety. Combination exit signs with emergency egress lights are recommended.

Lighting ControlsLevel 1 3 75.00%

Wall mounted light switches and weather proof light switches are in good condition.

Security SystemsLevel 1 NA NA

NA

Emergency PowerLevel 1 NA NA

NA

Phone/Data SystemsLevel 1 NA NA

NA

Quantity of Receptacles

Level 1 **3** 75.00%

Weather proof 20 amp GFCI wall receptacles with adequate coverage.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1 **NA** NA

NA

1312: Working Chute 1

75.79%



Address:
3647 Kays
Avenue,
Columbus

Auditor:
DMD & MAM

Audit Date:
03/02/2015

Arch/MEP:
40% / 60%

Area:
1728

**Date
Constructed:**
2000

Last Renovation:
NA

LEED:
NA

Construction Type:
Steel frame w / Metal skin

Construction Type 2:

Structural Span:

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 8'0"

Working Chute 1 consists of two, steel framed, gable roofed, shelters with open sides and standing seam metal siding installed on the roofs. These structures sit side by side, with their gable peaks facing north and south. The standing seam metal siding is run horizontally and supported by the steel framing members. These shelters cover cattle working equipment with a squeeze chute. There are no mechanicals associated with this structure. The structure is designed to provide cover from the elements while working with the animals. It is functioning as intended and is in good condition.

This building was previously numbered D87 but was updated to 1312 per the University's revised numbering system. AS

Architectural

75.79%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors Level 1

NA

Stairways Level 1

NA

Walls Level 1

NA

Floors Level 1 **3** 75.00%

The structure has a reinforced concrete slab on grade floor which is in adequate condition.

Ceilings Level 1 **3** 75.00%

The ceiling is the exposed underside of the standing seam metal roofing system supported on steel framing. It is in adequate condition.

Fixed Furnishings Level 1 **3** 75.00%

There is cattle working equipment with a squeeze chute located inside this structure. These are heavily used and worn but remain in good condition.

Life Safety
 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 **3** 75.00%

The structure is open on all sides providing adequate egress.

Roof Fall Protection Level 1 **NA** NA

NA

Accessibility
 C:Compliant with ADA; A:Accessible; N:Not Accessible **94.64%**

Signage Level 1 **NA** NA

NA

Restrooms Men Level 1 **NA** NA

NA

Restrooms Women Level 1 **NA** NA

NA

Vertical Access Level 1 **NA** NA

NA

Entrances
 C:Compliant with ADA; A:Accessible; N:Not Accessible **75.00%**

Level 1 75.00%

The north elevation is open, however, the structure is not ADA compliant.

Level

The south elevation is open, however, the structure is not ADA compliant.

Level

The east elevation is open, however, the structure is not ADA compliant.

Level

The west elevation is open, however, the structure is not ADA compliant.

Level

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

NA

Level

NA

Level

NA

Level

The gable roofs of the structure are clad in standing seam metal siding, run horizontally, supported on steel framing. They are in adequate condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The steel structures are bolted to a reinforced concrete slab on grade which is in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

Level

The structures consist of combination, steel, posts and trusses which are mechanically fastened to a reinforced concrete slab. The gable roofs meet at their soffit areas with a small gap between. They are in adequate condition.

MEP

NA

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fixtures Level 1

NA

Water Piping Inside Building Level 1

NA

Sanitary Vent Piping Level 1

NA

Water Service Level 1

NA

Storm Piping Level 1

NA

Hot Water Source Level 1

NA

Natural Gas Piping Level 1

NA

Laboratory Piping Level 1

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1

NA

Primary Heating Source Level 1

NA

Primary Cooling Source	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Distribution	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Hydronic Water Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Steam Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Building Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Exhaust System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Hoods/Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Computer Room AC Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			

Fire Protection
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Fire Service	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Standpipes	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Sprinkler System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1

NA

Distribution

Level 1

NA

Lighting

Level 1

NA

Exit Signs

Level 1

NA

Fire Alarm System

Level 1

NA

Emergency Egress Lighting

Level 1

NA

Lighting Controls

Level 1

NA

Security Systems

Level 1

NA

Emergency Power

Level 1

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1317: Hoop Structure **94.79%**



Address:
3638 Kays
Avenue,
Columbus

Area:
4000

Construction Type:
Reinforced Concrete frame w / Metal skin

Auditor:
DMD & MAM

**Date
Constructed:**
2012

Construction Type 2:
Wood frame w / Other skin

Audit Date:
03/02/2015

Last Renovation:
NA

Structural Span:

Arch/MEP:
40% / 60%

LEED:
NA

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 20'

The Hoop Structure was constructed in 2012 and sits west to east with the east elevation being open. The structure has 4' and 5' high, reinforced concrete, cast in place knee walls along the south, west, and north elevations. The south and north elevations support the steel, arched, roof trusses, which are mechanically fastened to the reinforced concrete. The west end wall has a 2"x6" wooden framed wall with wooden girts supporting standing seam metal siding. The structure has a canvas covering which is stretched and secured on the north and south elevations. Wooden and steel portable bleachers provide seating for educational programs. Steel tube animal pen gates separate students from the animals and enclose the east elevation. No MEP's are associated with this building. An earthen floor has been covered with mulch and straw. The structure is used as classroom space. The structure is sound and in very good condition. The facility assessment team was escorted by and interviewed Mr. Dan Rhodeback, Equine Facilities Coordinator, while conducting their field work.

Architectural **94.79%**

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

90.00%

Doors Level 1 NA NA

NA

Stairways Level 1 NA NA

NA

Walls Level 1 4 100.00%

The interior walls are the exposed, cast in place, reinforced concrete knee walls with brick face stamping, 2"x6" west end wall framing, and the underside of the exterior standing seam metal end wall siding and fabric coverings for the hoop structure. These are in very good condition. There are also wooden posts with steel tube animal pen gates which are in good condition.

Floors Level 1 3 75.00%

The building has an earthen floor which is covered with mulch and straw. They are in adequate condition.

Ceilings Level 1 4 100.00%

The ceiling of the structure is the exposed underside of the fabric covering and it's steel framing.

Fixed Furnishings Level 1 3 75.00%

There are wooden and steel, portable bleachers located inside the structure which are in good condition.

Life Safety 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 3 75.00%

There are multiple means of egress from the structure which are in adequate condition.

Roof Fall Protection Level 1 NA NA

NA

Accessibility C:Compliant with ADA; A:Accessible; N:Not Accessible **94.64%**

Signage Level 1 NA NA

NA

Restrooms Men Level 1 NA NA

NA

Restrooms Women Level 1 NA NA

NA

Vertical Access Level 1 NA NA

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

75.00%Level

NA

Level

NA

Level

The east elevation is open with animal pen style gates. There is no accessible route to this elevation.

Level

The west elevation has a steel entry door and aluminum, roll up, overhead garage door which are both accessible but not ADA compliant.

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%Level

The exterior walls of the south, west, and north elevation have 5' and 4' high, reinforced, cast in place, concrete walls with a brick face stamping on them. The west end wall is clad in standing seam metal siding supported on wooden framing and girts. The structure has a stretched canvas cover reaching from the north to south with plastic covering the cut outs in the cast in place walls. The exterior walls are in very good condition.

Level

NA

Level

The structure has a steel entry door with lever hardware and roll up, overhead garage door on the west elevation which are in very good condition. The east elevation has steel tube animal pen gates which are also in very good condition.

Level

The roof of the hoop structure is stretched canvas which is in very good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%Level

There are continuous, reinforced concrete footers with cast in place, reinforced, concrete walls to 5' and 4' above grade along the south, west, and north elevations. These are in very good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

100.00%Level

An engineered structure, it consists of cast in place, reinforced concrete knee walls on the south, west, and north elevations supporting steel arched roof trusses and a 2"x6" wooden framed end wall. The wooden framed end wall has standing seam metal siding installed on wooden girts. The steel arched roof trusses support a canvas covering which is stretched over the framing. The structure is sound and in very good condition.

MEP

NA

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fixtures Level 1

NA

Water Piping Inside Building Level 1

NA

Sanitary Vent Piping Level 1

NA

Water Service Level 1

NA

Storm Piping Level 1

NA

Hot Water Source Level 1

NA

Natural Gas Piping Level 1

NA

Laboratory Piping Level 1

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1

NA

Primary Heating Source Level 1

NA

Primary Cooling Source	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Distribution	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Hydronic Water Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Steam Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Building Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Exhaust System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Hoods/Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Computer Room AC Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			

Fire Protection
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Fire Service	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Standpipes	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Sprinkler System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1

NA

Distribution

Level 1

NA

Lighting

Level 1

NA

Exit Signs

Level 1

NA

Fire Alarm System

Level 1

NS

Emergency Egress Lighting

Level 1

NA

Lighting Controls

Level 1

NA

Security Systems

Level 1

NS

Emergency Power

Level 1

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1318: Range Shelter 4

74.25%



Address:
3638 Kays
Avenue,
Columbus

Area:
288

Construction Type:
Wood frame w / Wood skin

Auditor:
DMD & MAM

**Date
Constructed:**
1970

Construction Type 2:

Audit Date:
03/02/2015

Last Renovation:
NA

Structural Span:
24'

Arch/MEP:
40% / 60%

LEED:
NA

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 6'

Range Shelter 4 is a small, shed roofed structure used for sheltering animals. It consists of 4"x4" posts and 2"x6" beams supporting 2"x4" roof framing. The low roof is fully sheathed and has corrugated metal installed over it. Exterior walls are clad in wooden slat siding which is weathered, worn, and curled. The exterior should be repaired and painted to protect it from the elements. There are no MEP's associated with this building. The interior is exposed with 2"x6" kneewalls around the enclosed portions. An earthen floor is covered with straw for the animals. The structure is weathered and worn but remains adequate for it's intended use. The facility assessment team was escorted by and interviewed Mr. Dan Rhodeback, Equine Facilities Coordinator, while conducting their field work.

Architectural

73.12%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors Level 1

NA

Stairways Level 1

NA

Walls Level 1

Interior walls are the exposed underside of the exterior wooden slat siding supported on wooden girts with 2"x6" wooden kneewalls around the north, west, and south elevations. The walls are worn and weathered but remains adequate for the use of the structure.

Floors Level 1

The structure has an earthen floor covered with straw which is adequate for the use of the structure.

Ceilings Level 1

The ceilings are the exposed underside of the roof sheathing and framing. They are weathered and worn but remain adequate for the use of the structure .

Fixed Furnishings Level 1

NA

Life Safety
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1

The east elevation is open providing adequate egress.

Roof Fall Protection Level 1

NA

Accessibility
C:Compliant with ADA; A:Accessible; N:Not Accessible **78.57%**

Signage Level 1

NA

Restrooms Men Level 1

NA

Restrooms Women Level 1

NA

Vertical Access Level 1

NA

Entrances
C:Compliant with ADA; A:Accessible; N:Not Accessible **0.00%**

Level

NA

Level

NA

Level

The east elevation is completely open however, there is no accessible route to this structure.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

69.23%

Level

The exterior is clad in wooden slat siding which is in poor to fair condition. Missing or curled boards should be replaced and the wood should be painted to protect it from the elements.

Level

NA

Level

NA

Level

The roof has corrugated metal installed over sheathing. The roof is in adequate condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The structure has post hole footers which have been reinforced with cement. They are in adequate condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure consists of post and beam construction with 4"x4" posts and 2"x6" beams supporting 2"x4" roof framing. The exterior is clad in wooden slat siding which is weathered and the roof is fully sheathed with corrugated metal installed over it. The structure is sound and in adequate condition.

MEP**75.00%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Fixtures Level 1 **3** 75.00%

Automatic waterer located on the east side of the structure.

Water Piping Inside Building Level 1 **NA** NA

NA

Sanitary Vent Piping Level 1 **NA** NA

NA

Water Service Level 1 **3** 75.00%

1" water service to frost proof hydrant then underground to automatic waterer.

Storm Piping Level 1 **NA** NA

NA

Hot Water Source Level 1 **NA** NA

NA

Natural Gas Piping Level 1 **NA** NA

NA

Laboratory Piping Level 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1 **NA** NA

NA

Primary Heating Source Level 1 **NA** NA

NA

Primary Cooling Source	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Distribution	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Hydronic Water Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Steam Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Building Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Exhaust System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Hoods/Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Computer Room AC Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			

Fire Protection
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Fire Service	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Standpipes	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Sprinkler System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1 NA NA

NA

Distribution

Level 1 NA NA

NA

Lighting

Level 1 NA NA

NA

Exit Signs

Level 1 NA NA

NA

Fire Alarm System

Level 1 NA NA

NA

Emergency Egress Lighting

Level 1 NA NA

NA

Lighting Controls

Level 1 NA NA

NA

Security Systems

Level 1 NA NA

NA

Emergency Power

Level 1 NA NA

NA

Phone/Data Systems

Level 1 NA NA

NA

Quantity of Receptacles

Level 1 NA NA

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1319: Range Shelter 5

73.12%



Address:
3638 Kays
Avenue,
Columbus

Area:
288

Construction Type:
Wood frame w / Wood skin

Auditor:
DMD & MAM

**Date
Constructed:**
1970

Construction Type 2:

Audit Date:
03/02/2015

Last Renovation:
NA

Structural Span:
24'

Arch/MEP:
40% / 60%

LEED:
NA

Historic Significance:
NA

Clear Floor Heights (1 Floor):

1 6'

Range Shelter 5 is a small, shed roofed structure used for sheltering animals. Consisting of 4"x4" posts and 2"x8" beams supporting 2"x4" roof framing. The low roof is fully sheathed and has corrugated metal installed over it. Exterior walls are clad in wooden slat siding which is weathered, worn, and missing sections. The exterior should be repaired and painted to protect it from the elements. There are no MEP's associated with this building. The interior is exposed with 2"x6" kneewalls around the enclosed portions of the structure and plywood down the center creating two stalls. An earthen floor is covered with straw for the animals. The structure is weathered and worn but remains adequate for it's intended use. The facility assessment team was escorted by and interviewed Mr. Dan Rhodeback, Equine Facilities Coordinator, while conducting their field work.

Architectural

73.12%

Interior Finishes

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Doors Level 1

NA

Stairways Level 1

NA

Walls Level 1

Interior walls are the exposed underside of the exterior wooden slat siding supported on wooden girts with 2"x6" kneewalls around the north, west, and east elevations. The center of the structure has a low plywood kneewall. These walls are worn and weathered but remain adequate for the use of the structure.

Floors Level 1

The shelter has an earthen floor covered with straw with is adequate for the use of the structure.

Ceilings Level 1

The ceilings are the exposed underside of the roof sheathing and framing. They are weathered and worn but remain adequate for the use of the structure.

Fixed Furnishings Level 1

NA

Life Safety

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1

The east elevation is open providing adequate egress.

Roof Fall Protection Level 1

NA

Accessibility

C:Compliant with ADA; A:Accessible; N:Not Accessible **78.57%**

Signage Level 1

NA

Restrooms Men Level 1

NA

Restrooms Women Level 1

NA

Vertical Access Level 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible **0.00%**

Level

NA

Level

NA

Level

The east elevation is open, however, there is no accessible route to this structure.

Level

NA

Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

69.23%

Level

The exterior wall are clad in wooden slat siding which is in poor to fair condition. Missing or damaged boards should be replaced and the wood should be painted to protect it from the elements.

Level

NA

Level

NA

Level

The roof has corrugated metal installed over sheathing. The roof is in adequate condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%

Level

The shelter has post hole footers which have been reinforced with cement. They are in adequate condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure consists of post and beam construction with 4"x4" posts and 2"x8" beams supporting 2"x4" roof framing. The exterior is clad in wooden slat siding which is in poor condition. The roof is fully sheathed with corrugated metal installed over it. The structure remains sound.

MEP

NA

Plumbing System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fixtures Level 1

NA

Water Piping Inside Building Level 1

NA

Sanitary Vent Piping Level 1

NA

Water Service Level 1

NA

Storm Piping Level 1

NA

Hot Water Source Level 1

NA

Natural Gas Piping Level 1

NA

Laboratory Piping Level 1

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Fuel Oil System Level 1

NA

Primary Heating Source Level 1

NA

Primary Cooling Source	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Air System Distribution	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Hydronic Water Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Steam Piping	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Building Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Exhaust System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Laboratory Hoods/Controls	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Computer Room AC Equipment	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			

Fire Protection
4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **NA**

Fire Service	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Standpipes	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>
NA			
Sprinkler System	Level 1	<input type="text" value="NA"/>	<input type="text" value="NA"/>

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Service Entrance

Level 1 NA NA

NA

Distribution

Level 1 NA NA

NA

Lighting

Level 1 NA NA

NA

Exit Signs

Level 1 NA NA

NA

Fire Alarm System

Level 1 NA NA

NA

Emergency Egress Lighting

Level 1 NA NA

NA

Lighting Controls

Level 1 NA NA

NA

Security Systems

Level 1 NA NA

NA

Emergency Power

Level 1 NA NA

NA

Phone/Data Systems

Level 1 NA NA

NA

Quantity of Receptacles

Level 1 NA NA

NA

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

1323: Horse Barn North - OSU Equine Program**69.33**
%**Address:**
3658 Kays
Avenue,
Columbus**Auditor:**
DMD & MAM**Audit Date:**
03/02/2015**Arch/MEP:**
40% / 60%**Area:**
5025**Date
Constructed:**
1972**Last Renovation:**
2013**LEED:**
NA**Construction Type:**
Wood frame w / Metal skin**Construction Type 2:****Structural Span:****Historic Significance:**
NA

Clear Floor Heights (1 Floor):1 **10'**

The Equine Facility at The Ohio State University is operated by faculty and staff of the Department of Animal Sciences. Currently, the facility houses Quarter Horses and is the central location for all equine-related teaching, research, and Extension activities. The facility features a hot/cold wash rack, 28 box stalls, 2 large foaling stalls equipped with cameras, 2 large stallion stalls, breeding lab, and a classroom with seating for up to 50 students. A large outdoor arena with several paddocks with turn-out shelters complete the facility. The experiences offered by The Ohio State University Equine Program provide students with the opportunity to enhance their formal education with hands-on experience. Routine care of the animals and facilities comes first, everyone is expected to do whatever is needed around the farm. The facility also offers full-care horse boarding with 16 box stalls available for public boarding.

In 2011, a storm took out a portion of the roof over the arena portion of this barn. As a repair, the entire roof was removed from the arena but the end walls were left. In 2013, repairs were made to the exposed walls of the service and stall areas of the building. The end walls of the arena were removed and the now exterior walls were covered in plywood on the interior and standing seam metal siding was installed on the now southern structure, while corrugated metal was added to the now northern section. A total of 13,651 square feet of covered arena area was lost due. The Equine program is currently using Plumb Hall's covered arena.

The Horse Barn is a long post and beam structure with a shed roof. The structure consists of 6"x6" post framing with double 2"x10" headers supporting engineered roof trusses. The interior of the structure is completely utilitarian as the majority of areas in it are animal stalls. The southern portion of this building was recently enclosed when the arena portion of the structure was removed. This side of the building had galvanized corrugated metal installed over the length of it which remains silver. The rest of the exterior of the structure is clad in painted, standing seam metal siding and roofing systems. This portion of the barn has 18 animal stalls with 2"x6" wooden tongue and groove walls with metal bars installed above 4' for viewing. The stalls have sliding barn doors constructed of the same materials. The building has running water but lacks a sanitary tie in. The laundry sinks in the lab/tack room empty into buckets underneath and the wash rack has a floor drain. The furnishings are dated and worn but remain functional. There are no restrooms in this building. The barn is tied into building 0323's electrical services. A single, Reznor unit supplies conditioned air to the interior of the building. Animals have buckets of water in the stalls as there are no automatic waterers. The floors are asphalt with rubber mats and saw dust added to the animal stalls. The lighting is dim but adequate. The structure, while sound, was once one building and is now two due to the removal of the roof and walls of the arena. The barn is worn due to heavy usage. Additional life safety measures should be considered for the building such as illuminated exit signs with egress lighting and the addition of fire extinguishers. The facility assessment was escorted by and interviewed Mr. Dan Rhodeback, Equine Facilities Coordinator, while conducting field work.

Architectural**70.80%****Interior Finishes**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

67.65%**Doors**Level 1 **3** 75.00%

Stalls have sliding wooden tongue and groove doors with metal barns and edging to prevent chewing. These are in adequate condition. There is a single, hollow metal door providing to the lab room of the side. This door is worn due to heavy usage. It remains adequate. In addition, there is a wooden, sliding barn door on a steel track into rooms 102 and 104. This door is in adequate condition.

StairwaysLevel 1 **NA** NA

NA

Walls Level 1 2 50.00%

The interior wall along the southern portion of the building has unfinished plywood installed to create an exterior wall for the building after the attached arena was damaged and removed. The stalls have 2"x6" wooden tongue and groove wall systems which are worn but remain adequate. The wash rack has laminated panels installed over the plywood to prevent moisture from penetrating. The base of these walls are showing water damage where the laminated panels stop. The lab/tack room has unfinished plywood installed. Room 102 has moisture resistant board laminated over the interior walls. The walls range from poor condition to adequate due to the heavy use of the building.

Floors Level 1 3 75.00%

The floors are asphalt throughout, with rubber mats installed over it in the stalls with saw dust. The floors are worn but remain adequate.

Ceilings Level 1 3 75.00%

The structure has exposed ceilings which are in adequate condition.

Fixed Furnishings Level 1 2 50.00%

The lab/tack room has metal base cabinets with plywood countertops. These are worn and beginning to rust.

Life Safety
 4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed **75.00%**

Means of Egress Level 1 3 75.00%

The barn has multiple means of egress which met life safety codes when built and remain adequate.

Roof Fall Protection Level 1 NA NA

NA

Accessibility
 C:Compliant with ADA; A:Accessible; N:Not Accessible **100.00%**

Signage Level 1 NA NA

NA

Restrooms Men Level 1 NA NA

NA

Restrooms Women Level 1 NA NA

NA

Vertical AccessLevel 1

NA

Entrances

C:Compliant with ADA; A:Accessible; N:Not Accessible

100.00%Level

The north elevation has two, sliding single barn doors with corrugated steel over the wood framing. These doors are not ADA compliant.

Level

The south elevation has two single, steel entry doors with lever hardware. The doors are ADA compliant. It was noted that the southeast door is completely blocked on the interior side by hay storage. A clear path to egress should be established in this area.

Level

The east elevation has an overhead aluminum garage door and a double sliding barn door covered with standing seam metal siding. These doors are accessible but not ADA compliant.

Level Level

NA

Exterior

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

67.50%Level

The exterior walls of the building are clad in painted, standing seam metal siding. The paint has begun to chip and peel. The southern side of the building was recently enclosed due to the removal of the arena between the wings. This side is clad in corrugated steel which is galvanized and has not been painted. The exterior walls are in adequate condition.

Level

The building has a single, aluminum sliding window with single pane glass which is functional. This window should be considered for replacement as it allows air infiltration now.

Level

The structure has sliding barn doors with corrugated metal installed on the exterior. There are single, steel entry doors with lever hardware and a single overhead garage door. The doors are worn but remain adequate.

Level

The shed roof of the barn is clad in a standing seam metal roofing system. The roof appears sound and in good condition.

Substructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure has post hole footers which are reinforced with concrete and a reinforced concrete slab on grade floor. The footers remain in good condition.

Level

NA

Superstructures

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

75.00%Level

The structure consists of post and beam construction with wooden 8"x8" post, 6"x8" end wall post, 2"x6" tongue and groove wooden walls, double 2"x10" beams, with 2"x8" banding, and 2"x6" wooden girts and purlin, supporting engineered roof trusses. interior partition walls are wood stud framed with either plywood or tongue and groove wood. A new wall was created along the south side of the building to enclose the area due to the removal of the arena. This wall has 4"x4" posts with 2"x10" beams supporting 2"x6" roof framing. The structure is sound and remains adequate.

MEP**68.35%****Plumbing System**

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

64.12%**Fixtures**Level 1 **2** 50.00%

The lab/tack room has two, pvc laundry sinks with hot and cold water. The sinks are heavily stained. The wash rack has cold and hot faucets which attached to a hose as a blend valve. The fixtures are worn but remain functional and in adequate condition.

Water Piping Inside BuildingLevel 1 **3** 75.00%

The domestic water system has insulated copper piping. Some domestic water piping is installed underground to the frost proof yard hydrants. The pipe is in adequate condition.

Sanitary Vent PipingLevel 1 **2** 50.00%

The structure lacks a sanitary waste removal system. The laundry sinks drain into buckets underneath. The sinks should be tied into the the sanitary line in the southern barn.

Water ServiceLevel 1 **3** 75.00%

The structure has a 2" water supply from the public utilities. The service is adequate for the use of the structure.

Storm PipingLevel 1 **3** 75.00%

The building has aluminum gutters and downspouts which drain to pvc boots then to vitrified clay pipe to lower areas. The storm water management system is adequate.

Hot Water SourceLevel 1 **3** 75.00%

The structure has an 80 gallon, electric Whirlpool hot water tank which is in adequate condition.

Natural Gas PipingLevel 1 **2** 50.00%

There is a gas supply to the exterior Rexnor unit which is run underground from the southern building. The 2" line is welded and threaded steel pipe. The pipe is rusted due to exposure and should be painted to protect it from further deterioration.

Laboratory PipingLevel 1 **NA** NA

NA

HVAC System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

71.55%**Fuel Oil System**Level 1 **NA** NA

NA

Primary Heating Source Level 1 2 50.00%

There is a single, Reznor unit located on the exterior southwest corner of the building which supplies conditioned air for the structure. It is sitting away from the building and has exterior duct work. The unit while good sized, is not adequate for the structure, it should be considered for an upgrade when feasible.

Primary Cooling Source Level 1 NA NA

NA

Air System Equipment Level 1 3 75.00%

A Reznor AHU supplies conditioned air to the interior of the structure. It is in adequate condition.

Air System Distribution Level 1 3 75.00%

The system utilized rigid pipe on the exterior of the building to round rigid pipe inside with supply registers added along it. The system is in good condition.

Hydronic Water Piping Level 1 NA NA

NA

Steam Piping Level 1 NA NA

NA

Building Controls Level 1 3 75.00%

The system utilizes electric thermostats to control the unit. This is in adequate condition.

Laboratory Exhaust System Level 1 3 75.00%

The animal stalls have manually operated exhaust fans in each. These are in adequate condition.

Laboratory Hoods/Controls Level 1 NA NA

NA

Computer Room AC Equipment Level 1 NA NA

NA

Fire Protection

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

50.00%

Fire Service Level 1 2 50.00%

The building lacks fire extinguishers, these should be installed for safety.

StandpipesLevel 1 NA NA

NA

Sprinkler SystemLevel 1 NA NA

NA

Electrical System

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

71.43%**Service Entrance**Level 1 3 75.00%

This structure is tied into the electric for 0323 as this was one structure prior to the removal of the arena. It has a 600 amp, 208/120/3 phase from AEP which is in good condition.

DistributionLevel 1 3 75.00%

This building is tied into the panels located in 0323 as this was one structure prior to the removal of the arena. There is a 400 amp and four 225 amp, 208/120/3 phase lighting and power distribution panels located in room 139. The panels and switches have begun to rust, however, they remain adequate.

LightingLevel 1 3 75.00%

The interior lighting for the building are explosion proof fixtures with compact fluorescents installed. They are in good condition. HID lighting for the exterior of the building is in adequate condition.

Exit SignsLevel 1 2 50.00%

The building has combination exit signs with emergency egress lights above the southern elevations exterior doors. The sign has been removed from the door with the hay storage in front of it. The building also has non-illuminated, paper exit signs above several doors. It is recommended that illuminated exit signs be installed in their place and that the hay storage be removed from in front of the door and it's exit sign reinstalled.

Fire Alarm SystemLevel 1 NA NA

NA

Emergency Egress LightingLevel 1 2 50.00%

The building has a combination exit sign with emergency egress light above the southwest man door. Additional emergency lighting should be considered. Combination exit signs with emergency lighting are recommended.

Lighting ControlsLevel 1 3 75.00%

The lights have wall mounted switches. They are in adequate condition.

Security SystemsLevel 1 NA NA

NA

Emergency Power

Level 1

NA

Phone/Data Systems

Level 1

NA

Quantity of Receptacles

Level 1

The building has 20 amp and 20 amp GFCI wall receptacles with good coverage throughout.

Conveying Systems

4 Excellent; 3 Adequate; 2 Minor Renovation; 1 Major Renovation; X Missing & Needed

NA

Elevators and Lifts

Level 1

NA

Appendix E - Survey Summary

1.0 Introduction

As an airport with many functions and roles, KOSU interacts with users of the airport and the surrounding community. To accurately assess their needs and views, a survey was conducted. The survey included a total of 44 questions, and a total of 219 individuals responded. These 44 questions are divided into three categories, which are discussed below:

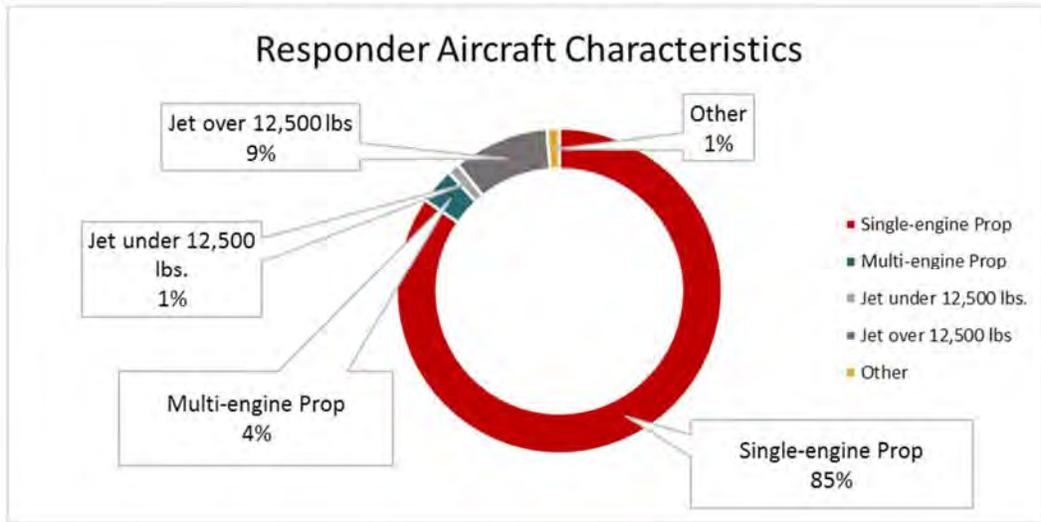
- User Characteristics (19 Questions)
- Airport Services (9 Questions)
- Airport Facilities (16 Questions)

2.0 User Characteristics

Nineteen questions allowed for the characterization of the survey respondents. Of the 219 individuals who responded, 10 identified as students. Of these students, half are pursuing a degree in Air Transportation. Other individuals included airport employees, pilots, and residents from the surrounding residential areas.

Seventy-three percent of respondents have visited the airport within the last year. The most often cited, primary reasons for visiting the airport are business and education, totaling over 45 percent. Nearly all the businesses that utilize the airport are located in central Ohio, and 27 percent of them employ more than 100 employees.

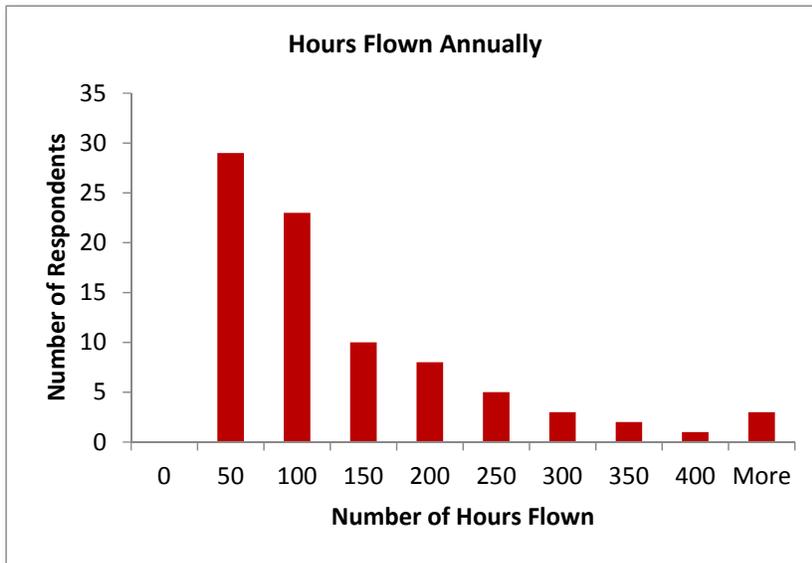
Exhibit E-2.1



Source: KOSU Airport Staff, 2018; Woolpert, 2018.

Sixty-five percent of respondents are pilots based at KOSU, or have aircraft based at KOSU. The largest percentage of respondents have been using KOSU for less than five years. However, 34 percent have been utilizing the airport for 15 or more years. Exhibit E-2.1 above shows the distribution of aircraft for the respondents who are pilots. On average, these respondents fly out of KOSU three times a week (**Exhibit E-2.2**)

Exhibit E-2.2



Source: KOSU Airport Staff, 2018; Woolpert, 2018.

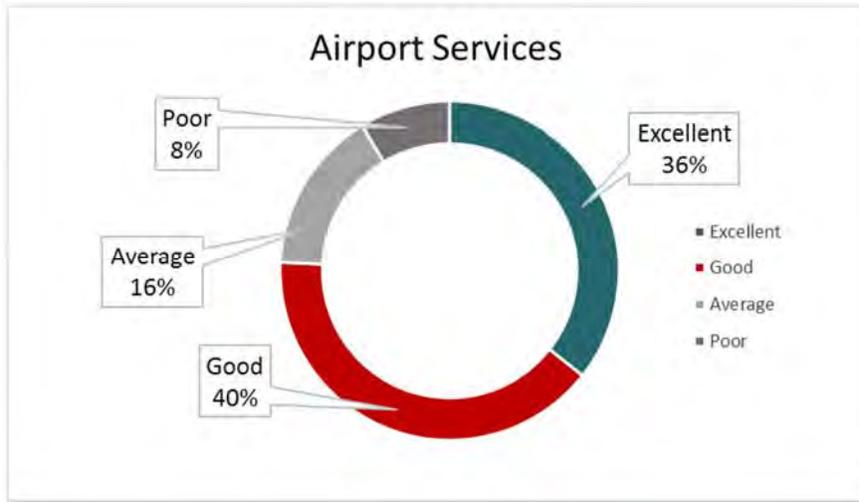
3.0 Airport Services

Respondents were asked about their perception on the following services:

- Fueling
- Flight training
- Aircraft parking
- Pilot shop
- Aircraft maintenance
- Fixed Base Operator (FBO)
- Rental car
- Barnstormer Restaurant
- ATC Services
- Line Services
- Customer Service

Overall, the listed services were rated between excellent and good (see **Exhibit E-3.1**). Of the respondents who had used the mentioned services, the greatest percentage considered ATC, line services, and customer services to be excellent; flight training, aircraft parking, aircraft maintenance, the FBO, rental car services, fueling services, and the restaurant to be good; and the pilot shop to be average.

Exhibit E-3.1



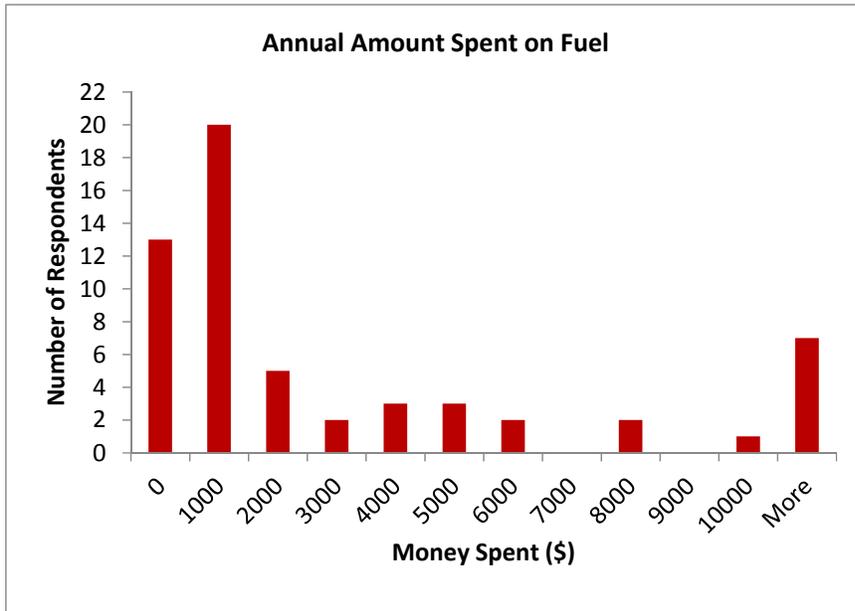
Source: KOSU Airport Staff, 2018; Woolpert, 2018.

The largest concern for respondents was the price of fuel at the airport. Seventy-seven percent of respondents stated that they would purchase more fuel at KOSU if prices were reduced (see **Exhibit E-3.2** for the distribution of respondent's annual fuel expenses at KOSU). Other airports that respondents purchase fuel from include:

- Carroll County – Tolson Airport
- Madison County Airport
- Union County Airport
- Fayette County Airport
- Delaware Municipal Airport – Jim Moore Field

Users also suggested adding wireless internet in the hangars, offering multi-engine aircraft for rental, and providing more on-airport space for community use. All in all, however, 82% said that no further services were needed.

Exhibit E-3.2



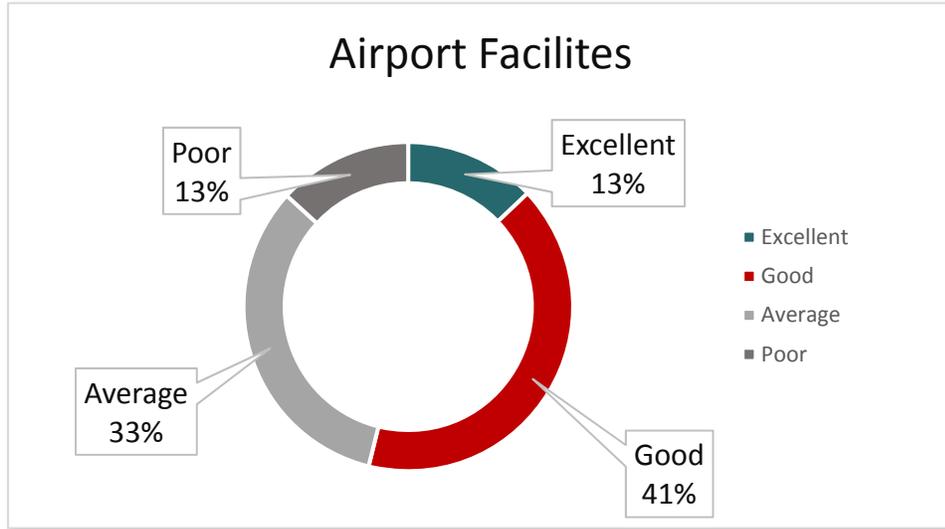
Source: Source: KOSU Airport Staff, 2018; Woolpert, 2018.

4.0 Airport Facilities

Exhibit E-5.1 summarizes the overall breakdown of user ratings for the airport facilities. **Exhibit E-5.2** below further expounds on how respondents assess specific facility components. Generally, users consider the facilities good to average, with a large percentage of users never having utilized the T-hangars or corporate hangars. The air traffic control tower, instrument approach procedures, and runway length were also discussed. All three were rated excellent, though a few individuals stated that an additional ILS would be beneficial.

The majority of respondents (86 percent), stated that the facilities at KOSU in no way restrict their [respondents'] operations.

Exhibit E-5.1



Source: Source: KOSU Airport Staff, 2018; Woolpert, 2018.

Exhibit E-5.2

Rate your satisfaction with the following Ohio State Airport features.	Excellent	Good	Average	Poor	No Opinion
Outside terminal building	5.11%	34.31%	29.93%	14.60%	16.06%
Inside terminal building	6.57%	28.47%	30.66%	17.52%	16.79%
Airport signage	9.49%	37.96%	36.50%	10.95%	5.11%
Airport signage & lighting	10.37%	38.52%	33.33%	10.37%	7.41%
Aircraft aprons	11.19%	41.04%	24.63%	5.22%	17.91%
Aircraft parking	14.29%	45.11%	21.05%	6.02%	13.53%
T-hangars	23.44%	26.56%	15.63%	3.91%	30.47%
Corporate hangars	5.51%	18.90%	10.24%	4.72%	60.63%
Vehicle parking	8.40%	25.95%	35.88%	22.14%	7.63%

Source: KOSU Airport Staff, 2018; Woolpert, 2018.

Appendix F: Public Involvement Program

F.1 Introduction

The public involvement program (PIP) provided the community, stakeholders, airport users and staff an opportunity to be informed, consulted and involved in shaping The Ohio State University Airport master plan update. In return, The Ohio State University Airport received valuable insight and feedback so its blueprint for the airport's long-term vision and development for the next 20 years reflects public input.

The following is a summary of how the PIP was implemented, and includes engagement methods, stakeholder and public meeting input, and public comments and responses. The PIP is included in sub-appendix F1.

F.2 Stakeholder and Public Involvement Summary

Due to The Ohio State University Airport master plan's benefits and potential impacts to the community, stakeholder and public involvement was an important component to the success of the project. The project team tasked with coordinating community engagement included members from The Ohio State University, The Ohio State University Airport, Engage Public Affairs and Woolpert.

The objectives of this program were to:

- Inform key stakeholders and the public about the master plan effort
- Seek a dialogue with the community to ensure multiple interests were considered
- Provide multiple opportunities for input

To achieve these objectives, a series of proactive steps were planned to ensure that stakeholders and the public were engaged and informed in a methodical, consistent way that was also responsive to their concerns.

The first step called for a kick-off visioning and strategic planning session with the airport's existing Community Outreach Committee (COC). During this meeting a visioning exercise was held to uncover the airport's strengths and weaknesses, build consensus by identifying common goals for the 20-year vision, and ensure the master plan was consistent with the strategic goals of the airport, university and Ohio State College of Engineering. Information from the Airport Community Outreach Council meeting can be found in sub-appendix F2.

During autumn 2017, a PIP was drafted and a set of communication tools and strategies were developed. The PIP included a project name and brand that followed university brand guidelines, a message to succinctly explain what the master plan project was, an overview of the involvement process, a toolkit of communication materials, and a list of stakeholders. A stakeholder database, project micro website, presentation and fact sheet were also developed.

Early in the project a Technical Advisory Committee (TAC) was formed to provide advisory input on the airport master plan process as it related to university, aviation, community, political, planning and legal issues. TAC members reviewed study documents, contributed technical input, shared feedback from organizations they represented, and engaged their constituents during opportunities for public input.

TAC members included university, aviation, community and business leaders from a diverse representation of community interests and opinions relative to airport development and long-range planning. Four TAC meetings were held during the project. TAC members were also tasked with identifying goals and providing review and input to several chapters that correlated to components of the master plan process. These master plan chapters included an inventory of existing conditions, environmental overview, aviation forecasts, facility requirements, alternatives analysis, airport layout plan and the implementation plan/feasibility analysis. TAC meetings were also held prior to public meetings for members to vet and comment on the technical content being shown at each public meeting.

TAC input helped the project team further develop easy to understand presentation and handout materials, and also identified possible public concerns to be prepared to address.

Two public meetings for the Ohio State University Airport master plan were held. The focus of the first public meeting (Dec.5, 2017) was to let people know about the study, solicit input on the community's vision and aspirations for the airport, and ask for feedback on community values that would be used to develop criteria for developing alternatives and investment priorities as the study progressed. The second public meeting (Mar. 12, 2019) shared technical findings and solicited public input on preliminary and preferred master plan alternatives. Over the course of the project, a total of 178 participants attended both public meetings.

Several community meetings were also held over the course of the project with representatives from the City of Worthington, City of Dublin, Village of Riverlea and Northwest Civic Association.

F.3 Engagement Elements and Methods

The following section outlines the methods and communication tools deployed to engage the public and gather input.

F.3.1 Branding, Templates and Messaging

To establish an identity for the project, the project team created a project brand and over-arching message for the airport master plan.

- Logo, Tagline and Templates

The logo and font treatment act as the project's identity. The Ohio State University team selected the University's traditional "Block-O" logo with the airport secondary signature and the historical "wings" graphic for the airport master plan effort. Both the logo and graphic follow the university's brand guidelines. Templates with the images were created for Word, PowerPoint presentation slides/exhibits, a fact sheet, e-newsletter and working paper/report covers.



- Message Framework

A message framework was created to provide consistent language to explain the project. Edited versions of this message – as it fit within the context of the various communication tools – were used throughout the course of the project.

Message:

The Ohio State University Airport began updating its master plan fall, 2017 to identify current and future needs and gain consensus on investment priorities for the next 20 years.

The airport is one of the leading general aviation facilities in the nation. With less than 30 university airports nationwide, including three owned by tier-1 research institutions, The Ohio State University Airport is considered one of the nation's premier university-owned and operated facilities. This important teaching and research laboratory supports interdisciplinary learning, discovery and engagement. The airport is also an important contributor to the economic vitality of the central Ohio region by providing key services to Columbus area businesses.*

The master plan will combine community engagement with the university's strategic vision to formulate the blueprint for the airport's long-term development. The Federal Aviation Administration will cover 90 percent of the nearly \$873,000 study.

** The Federal Aviation Administration cited The Ohio State University Airport as one of 84 national priority general aviation airports in its General Aviation Airports: A National Asset, 2012 (www.faa.gov/airports/planning_capacity/qa_study).*

F.3.2 Communication Tools

Once the brand and messaging were finalized, the following communication materials were developed to facilitate stakeholder and public understanding and solicit feedback.

- **Microsite (Website)**

A microsite was created for the project with the goal to engage the public and provide opportunities to provide feedback. The microsite was included as a separate section on The Ohio State University Airport's existing website at <https://osuairport.org/> and housed under the "Airport Facilities" tab with a link on the home page.

The easy-to-navigate webpage allowed stakeholders, the public and other interested parties to access and share information about The Ohio State University Airport Master Plan process. It also served as a resource for people interested in following the progress, reviewing master plan documents, signing up to be added to the project stakeholder database, and providing comments. A PDF of the microsite content is in sub-appendix F3.

The microsite included the following:

- UPDATE – An overview of the master plan update
- SCHEDULE – Calendar of study processes, deliverables and engagement opportunities
- DOCUMENTS – Links to master plan report chapters and appendices
- GET INVOLVED – Opportunity to sign up to the mailing list and provide feedback
- MEETINGS – A list of advisory and public meetings with links to presentations, exhibits and meeting summaries
- RESOURCES – Links to project fact sheets

- **Handouts**

Two fact sheets and comment forms were created over the course of the project – one for each public meeting. Both facts sheets provided a project overview, included a schedule and contact information, and were posted to the microsite. The second handout also included master plan evaluation criteria, the preferred runway and terminal area alternatives and the preliminary forecasted noise contours. Comment forms were available at public meetings and provided an opportunity for the public to provide written comments and ask questions, to which the university responded.

- **Presentations**

PowerPoint presentations were developed and customized for TAC meetings, providing stakeholders a review of past information and new updates, and for public meetings, informing the community about proposed updates to the airport.

- **eBlasts**

Electronic newsletters, or eBlasts, were sent to stakeholders and the public prior to each public meeting and to announce the availability of various master plan chapters ready for public review on the microsite. The Ohio State University Airport’s Constant Contact e-newsletter software was used to facilitate the transmission of information to these audiences in a visually compelling manner. A compilation of the project eBlasts are in sub-appendix F4.

- News Releases

Prior to each public meeting the project team drafted a news release for the university’s distribution to its media list to alert the public about the upcoming meeting. The Ohio State University College of Engineering Communication Director tapped into additional university media sources to announce the public meetings.

- Social Media

Social media graphics for Facebook were another communication tool used to promote public meetings. These were posted on university social media pages and made available to TAC members so they could post them on their Facebook pages.

- Paid Advertising

Prior to each public meeting advertisements were created and placed in the Worthington, Dublin and Northwest Columbus editions of This Week, a weekly neighborhood newspaper published by the Columbus Dispatch (Gatehouse Media).

- User Survey

A user survey of The Ohio State University Airport was conducted from October 24 to December 31, 2017 and was distributed through The Ohio State University Airport’s electronic contact list, TAC members and the microsite. The survey included 44 questions and sought feedback about the airport’s facilities, services and flights in and out of the airport. The user survey can be found in sub-appendix F5.

F.4 Technical Advisory Committee (TAC)

A Technical Advisory Committee (TAC) was formed in 2017 which represented a diverse breadth of community interests from airport user groups and aviation experts to neighboring communities. The committee’s role was to provide advisory input related to university, aviation, land use, community, political, planning and legal issues. TAC members were tasked to review study documents, contribute technical input, share feedback from the organizations they represent, and engage their constituents during opportunities for widespread public input. TAC members were also asked to engage key leaders and agency representatives from the local community to help guide and direct the study throughout the process.

F.4.1 TAC Members

The table below lists TAC members by organization.

Name	Organization
Tom Baxter	Capital City Aviation
Deral Carson	Midwest Air Traffic Control Services/Federal Aviation Administration (FAA)
Graham Cochran	The Ohio State University - College of Food, Agriculture, and Environmental Sciences (CFAES)
Katie Delaney	Federal Aviation Administration (FAA)

Name	Organization
Lowell Dowler	Worthington Industries
Mike Eppley	The Ohio State University - Airport Fixed Base Operations
Dale Gelter	The Ohio State University – Airport
Mark Gerko	Columbus State Community College
Nick Gill	Mid-Ohio Regional Planning Commission (MORPC)
John Ginley	The Ohio State University Aviation Alumni Society
Jim Giuliani	The Ohio State University - College of Engineering (COE)
Marilyn Goodman	Northwest Civic Association
Donna Goss	City of Dublin
Jim Gregory	The Ohio State University - College of Engineering (COE)
Mike Hagenberger	The Ohio State University - College of Engineering (COE)
Doug Hammon	The Ohio State University Airport
Quinten Harris	City of Columbus - Department of Development
John Hauelsen	We Oppose The Ohio State University Airport Expansion (WOOSE)
Hannah Higgins	The Ohio State University - Planning and Real Estate (PARE)
John Horack	The Ohio State University - College of Engineering (COE) / Center for Aviation Studies
Beth Linston	Ohio House of Representatives
Eric MacGilvray	Village of Riverlea
Brandon Mann	The Ohio State University - Flight Education Division
Javier Melendez-Galinsky	The Ohio State University - Student
Rob Mendez	The Ohio State University - Student
Jack Miner	The Ohio State University - Office of Academic Affairs (OAA) / Worthington resident
Stephanie Morgan	The Ohio State University - College of Engineering / Center for Aviation Studies
Julie Morris	The Ohio State University - College of Food, Agriculture, and Environmental Sciences (FAES)
Kim Moss	The Ohio State University - Planning and Real Estate (PARE)
Ross Neice	ODOT- Aviation
Carlos Ruiz-Coll	The Ohio State University - Airport
Matt Schutte	The Ohio State University - College of Engineering (COE)
Mark Scott	The Ohio State University - College of Engineering (COE)
Matt Sikora	The Ohio State University - College of Engineering (COE)
Richard Smith	National Intercollegiate Flying Association (NIFA)
Robyn Stewart	City of Worthington
Adam Stiffler	Cardinal Health
Bob Tanner	NetJets
David Wall	Columbus Regional Airport Authority (CRAA)
Kevin Wheeler	City of Columbus - Department of Development
David Williams	The Ohio State University - College of Engineering (COE)
David Zoll	Advisor to City of Worthington

F.4.2 TAC Meetings

The table below lists these TAC meeting dates and locations. Meeting materials (agendas, presentations and meeting summaries) can be found in sub-appendix F6.

TAC Meeting/Date	Location
Meeting 1 – October 30, 2017	The Ohio State University Airport, Aerospace Research Center Classroom 2300 West Case Rd., Columbus, OH 43235
Meeting 2 – March 5, 2018	The Ohio State University Airport, Aerospace Research Center Classroom 2300 West Case Rd., Columbus, OH 43235
Meeting 3 – September 10, 2018	The Ohio State University Airport, Knowlton Flight Center Classroom 1 (Rm 235), 2160 West Case Road, Columbus, OH 43235
Meeting 4 – May 29, 2019	The Ohio State University Airport, Knowlton Flight Center Classroom 1 (Rm 235), 2160 West Case Road, Columbus, OH 43235

F.5 Public Meetings

Two public meetings were held for The Ohio State University Airport Master Plan update. The focus of these meetings was to inform the public and interested stakeholders about the ongoing status of the project and to solicit public comment to help shape the master plan. A brief summary of both meetings is shown in the sections below. Meeting materials (announcements, handouts, exhibits, presentations and meeting summaries) are in sub-appendix F7.

F.5.1 Public Meeting #1

The first public meeting was held December 5, 2017 in Hangar 1 at The Ohio State University Airport. The purpose of this meeting was to let people know about the study, solicit input on the community's vision and aspirations for the airport, and ask for feedback on community values that would be used to develop criteria for developing alternatives and investment priorities as the study progressed. The meeting was held from 6-8 p.m. and 113 participants attended. The public meeting was held in an open house format with a presentation and question and answer session from 6:30-7:30 p.m. Before and following the presentation, participants were invited and encouraged to review exhibits and provide input through an interactive discussion exercise asking attendees about the strengths, weaknesses, and their goals for The Ohio State University Airport. During the two-week comment period 18 comment forms and one email response were received.

F.5.2 Public Meeting #2

Prior to the public meeting an open house of The Ohio State University Airport's new Austin E. Knowlton Executive Terminal & Aviation Learning Center was held from 3-5 p.m. on March 12, 2019. Community members of all ages were able to meet with airport staff and aviation students, take interactive, self-guided tours of the new terminal and flight education center, watch takeoffs and landings from the observation deck and check out Ohio State University Airport flight simulators. In all, several hundred attended the open house and a few dozen stayed or came back for the master plan public meeting.

The second and final public meeting for The Ohio State University Airport Master Plan Update was held the same day from 6-8 p.m. at Austin E. Knowlton Executive Terminal & Aviation Learning Center. The purpose of this meeting was to share technical findings and solicit public input on preliminary and preferred master plan alternatives. The public meeting was held in an open house format with a presentation and question and answer session from 6:30-7:45 p.m. Before and following the presentation, participants were invited and encouraged to review exhibits and provide input on the airport's master plan recommendations. A total of 65 people signed in at the meeting. During the two-week comment period six comment forms and one email response were received.

F.6 Other Meetings

Over the course of the project The Ohio State University Airport working group, which was comprised of university and airport staff, attended regular meetings with the College of Engineering and various other departments. Members of the working group also met with nearby communities and organizations including the City of Worthington, City of Dublin, Village of Riverlea and Northwest Civic Association. University stakeholder meetings were also conducted by members of the university planning team on November 27, 2017; March 26, 2018; October 9, 2019; and May 29, 2019. The purpose of these meetings was to inform stakeholders about the master plan effort and collect insights into their and their constituents' expectations.

F.7 Public Comments and Responses

A summary of public comments and responses to questions regarding The Ohio State University Airport Master Plan is included below.

Airport Community Outreach Council Meeting

Date	Question/Comment	Response (if applicable)
July 27, 2017	Does forecasting continue through the entire project?	We start with an operations forecast to identify needs and justify any recommendations. Once that is completed there may be adjustments.
July 27, 2017	Is there a specific number of public meetings required for this process, and if so, will you do online versions? How will you seek public input?	A specific number is not required but two public meetings will be conducted during this process. The meeting presentations will be made available on the OSU Airport website and offer people the ability to give input online. We will also have a Technical Advisory Committee (TAC) representing a wide breadth of interests, a master plan page on OSU Airport's website, provide stakeholder and community briefings, and conduct stakeholder interviews.

TAC

Date	Question/Comment	Response (if applicable)
March 5, 2018	What is the percent completion for the new hangars?	The recent construction of hangars is complete.
March 5, 2018	Has FAA's Terminal Area Forecast (TAF) been accurate in their projections in the past?	No. Forecasts, by their nature, are never fully accurate. Their intent is to give an order of magnitude estimate of what we might expect in the future based on a number of FAA criteria and local growth trends.
March 5, 2018	Then why compare The Ohio State University Airport projections to the TAF if they are not accurate?	The FAA prepares macro level forecasts for all airports. The master plan forecasts are a micro level forecast. All airport prepared forecasts are required by the FAA to be compared to the TAF for consistency. If the forecast is not consistent with the TAF, differences must be resolved, which may include revisions to the airport submitted forecasts, adjustments to the TAF, or both.
March 5, 2018	From a linear perspective it appears based-jets will double by 2037, though there are most likely more jets out there right now that could utilize The Ohio State University Airport – is that correct?	Although there is expressed interest to base more jet aircraft at the airport, there is currently no hanger space available for more jets to be based at the airport. The ability to hangar more jets will be analyzed in the facility requirements and alternatives analyses.
March 5, 2018	Airport growth is based on business needs.	Comment noted.
March 5, 2018	If companies like Worthington Industries want jet space (hangars) could they build their own?	FAA's current policy is that airports can let companies build their own facilities. Because the airport is owned by The Ohio State University it comes under state laws which impose legal issues on new facilities. We are looking at this issue.
March 5, 2018	Will SAFECON be held every year?	The next one that will be held at Don Scott Field will be in 2019.
March 5, 2018	Did you gather destinations of the C-II/D-II Fleet?	No, we looked at the flight plans, but that does not include final destinations. Aircraft may take off without full fuel because of the runway length and stop for fuel before reaching their final destinations. We do know the parameters of the design aircraft to make assumptions/ decisions on their facility needs.
March 5, 2018	Will we be able to review the draft Inventory of Existing Conditions and Aviation Activity Forecasts?	Yes, we will give the TAC and the public the opportunity to review the chapters of the report. Once the draft Forecast is finalized, it will be sent to FAA for review and concurrence. Both chapters will be posted on the airport master plan website.

Date	Question/Comment	Response (if applicable)
March 5, 2018	When do you anticipate these two chapters can be reviewed?	We have already completed an internal review. Once the OSU team reviews, the TAC will have a final review before they are posted online. Approximately the next few weeks.
March 5, 2018	On the Critical Aircraft Assessment can we find out more specifics about the airplanes?	FAA design criteria is generally determined by the design code of the largest family of aircraft, which operates 500 or more times over a one-year period at the airport. This is ARC C-II for KOSU. Although larger aircraft currently utilize the facility, and that use is expected to continue in the future, the larger aircraft do not meet the operating threshold to justify moving to the next design level.
March 5, 2018	Are there any new noise abatement protocols expected?	The university completed a comprehensive noise study of the airport in 2011. Based on the noise levels at the time, the FAA would not support mandatory noise abatement procedures. Instead, the university continued its voluntary measures that were already in place. New aircraft technologies and operating projections allow us to anticipate lower noise levels in the future. Nonetheless, new noise contours will be generated for the preferred development plan, in order to determine if new noise abatement protocols are warranted.
March 5, 2018	Does the critical aircraft designation affect the existing conditions and forecast?	The critical aircraft design group (C-II) is key in determining the FAA design requirements applied to the airport, not the forecasted number of operations or based aircraft.
March 5, 2018	How does the airport's business plan fit into this airport master plan?	Traditionally, the master plan is strictly a physical development plan, and only considers business operations in a secondary role for identifying facility requirements. Nonetheless, the FAA has agreed to allow the university to develop an airport business plan that will be incorporated into the final plan document. As the master plan identifies the "what" (what facilities are needed at the airport), the business plan will look at the "how" (how will these facilities be utilized). The business plan will also identify future business opportunities, including academic & research initiatives as well as aircraft services.
March 5, 2018	How much are we locked into the business use? Can we increase the facilities at the airport?	Our focus is on providing a premier academic environment. Having corporate flights occur here enhances that learning environment because students get to work with the latest technologies and systems, including navigational aids, communications, and an air traffic control tower. Without these advanced operations, the FAA would be less likely to fund the systems that provide Ohio State students with learning opportunities not available at many other college flight programs.
September 10, 2018	What is the difference between the content of the first and second public meetings?	The first public meeting focused on answering the question "What is this study about?" and "What are the project goals?"; while the second meeting will discuss future projected growth of the airport and proposed facilities.
September 10, 2018	How do you forecast data? Is it based on current demand?	We forecast on unconstrained demand but build on realized demand.
September 10, 2018	When looking at the wind knots, which runways are most conducive for aircraft take-off?	The parallel runways provide coverage over 90 percent of the time. Adding the crosswind increases that to 95 percent, so the runways are physically oriented correctly (regarding winds).

Date	Question/Comment	Response (if applicable)
September 10, 2018	Why are we trying to help corporate users?	While the main focus of the airport is academic in nature, the current airport facility wouldn't exist without corporate users, as their usage subsidizes the costs of providing a state-of-the-art facility with modern navigational aids, an air traffic control tower, and a professional environment. Without corporate users, these facilities would not exist. With them, OSU students learn in the same environment they will go to work in, providing them an advantage over others who don't have these facilities and allowing for an easier transition into the industry.
September 10, 2018	Do aircraft take off and land in both directions?	All operations are into the wind if possible.
September 10, 2018	What prevented the airport from expanding the runway to 6,000 ft. the last time there was a study?	Lack of funding.
September 10, 2018	Would the new configuration of the runways have a potential impact on noise?	Yes, by extending the runway – aircraft would no longer need to execute a “step-down” approach from the east but instead use a 3-degree glide path, that would reduce noise from aircraft in the area.
September 10, 2018	When looking at the category of “100% of these large aircraft at 60% useful load” – what percentage is needed or is serviceable by 6,000 ft. of runway?	That's not calculatable, those categories are set by the FAA at 60% and 90% useful load and interpolation between the charts is not allowed.
September 10, 2018	What destinations are reachable with the 60% useful load?	Aircraft won't be able to reach Europe but could possibly reach the east and west coasts (of the US) depending on the type of aircraft, without refueling. Today, flights from The Ohio State University Airport can reach different destinations as far as Kansas based on aircraft type and air temperatures.
September 10, 2018	Who are the 4% that use the crosswind runway? If students are utilizing this runway it shouldn't be closed.	The State of Ohio is the most prevalent user of the crosswind runway, because its hangar facilities are closest to this runway. Students do not typically use the crosswind because OSU policy prevents them from training in high wind conditions.
September 10, 2018	I like the idea of closing the crosswind runway down. What you've proposed in the alternatives are all positive.	Comment noted.
September 10, 2018	I like the longer runway.	Comment noted.
September 10, 2018	Would a 6,000 ft. runway accommodate your needs?	Yes.
September 10, 2018	Could aircraft use the crosswind runway as a taxiway to the new runway end?	There would be FAA concerns since it looks like a runway but providing an efficient taxiway between the terminal and the runway ends would be included after a preferred alternative is chosen.
September 10, 2018	You've said that a longer runway may help address the noise over Worthington – has a noise study been completed as part of this plan?	A noise study was completed in 2011 and is not part of this master planning effort, though noise contours for the preferred alternative will be included in the chapter on environmental conditions. The environmental conditions chapter won't be completed until the end of the study.
September 10, 2018	Could you close the crosswind runway now?	We could, but it might take years for the FAA to approve the closure. We would also have to pay for its removal. A previous

Date	Question/Comment	Response (if applicable)
		crosswind runway that was closed hasn't been removed yet because of funding.
September 10, 2018	Are there any land use impacts?	The only major concern is keeping students and their planes away from jets, and students walking between facilities.
September 10, 2018	Will you show the environmental impacts at the next public meeting?	The environmental information, specifically noise contours for the preferred alternative, will be presented to the public at the final workshop, anticipated to be held Winter 2019.
September 10, 2018	Will a new instrument landing system be planned? Currently only runway 9R (primary, south) has an ILS.	The proposal will include either a new or relocated ILS on the existing parallel (north) runway.
May 29, 2019	Has the noise forecast changed since the public meeting?	No.
May 29, 2019	What date will the crosswind runway be closed and removed?	We don't have a specific date, as the master plan will need to be approved by FAA/OSU Board of Trustees which will take a few months. Realistically it will take some time and even when the crosswind runway is officially decommissioned, the physical runway will still exist as funds will need to be raised to remove the concrete. Realistically, when the crosswind needs major maintenance is when it will likely be closed.
May 29, 2019	Will the north runway improvements follow a similar pattern of time (as the crosswind closure)?	The improvements listed and shown in the airport master plan are part of a wish list in order of priority because some things have to occur before specific improvements can be constructed. For example, the crosswind runway would have to be closed before a new academic building or an apron expansion can be constructed on the west side of the terminal area.
May 29, 2019	If there is a change in the size or shape of a proposed building would the master plan need to be updated?	No. If a new building is constructed the building dimensions/shape do not have to exactly match those shown of the ALP sheets.
May 29, 2019	Are there major changes on the remaining master plan chapters?	No. The major content has already been shown. The Airport Layout Plan and Financial Implementation chapters just put the narrative around it.
May 29, 2019	How large will the final version of the airport master plan be?	Big. When printed out it will be a few inches thick.
May 29, 2019	What type of aircraft would the runways serve at 75% at 90% useful load?	The runways at OSU will mostly serve aircraft 60,000 pounds or less. This includes the general aviation training and corporate fleet, which are not commercial airliners like at John Glenn International.
May 29, 2019	Will an executive summary be made available to the OSU Board of Trustees? If, so will it be made available to the public?	We could provide an executive summary to the project website.
May 29, 2019	Comment: I think we need to plan in local transportation, especially with various student-focused activities (research labs, academic buildings, and flight training) being spread across a wide area. We should have extensive sidewalks and/or bike paths established as far as we can along with the W. Case Rd. corridor (not on the air side). The current conditions are extremely hazardous for pedestrians, and as we grow that problem will only get worse. We are planning an extensive internal roadway system. One of the priorities is a road that will connect the main terminal area with ARC and the points beyond to the west. In speaking with Mike Hagenberger, he is very interested in a campus-airport link, either by CABS or COTA. If	

Date	Question/Comment	Response (if applicable)
	we can get a park-n-ride that we've been seeking for years, this will help drive the need for the internal road, as we need to get people off of West Case Road.	
May 29, 2019	I'm not sure if it matters, but I could provide input on what we are thinking regarding the size, shape, and location of one or two buildings in the academic/research area. If it really doesn't matter, then we can skip that. But if providing refined input now will save us time down the road, I'm happy to provide details.	Building specifics are not necessary for the Airport Master Plan, however please coordinate with PARE and provide details as plans for the academic area progress.

Public Meetings

Date	Question/Comment	Response (if applicable)
December 5, 2017	Who determines the aviation forecast requirements?	The FAA has specific guidelines for forecasting aviation activity that must be followed, and the agency will approve the OSU forecasts as part of the airport master plan, which will include projections for based aircraft and operations.
December 5, 2017	How is the forecast developed?	The consultant team's comprehensive forecast for based aircraft and operations evaluates the airport from several angles, including socioeconomic indicators, historic trends, and the airport's market share today vs. the FAA's 20-year predications. It includes both FAA information and The Ohio State University Airport-specific information.
December 5, 2017	Central Ohio is expected to grow by 500,000 to a million people by 2050, is that being considered in the forecast?	Yes. The airport is aware of the anticipated population increase and is taking this into consideration as plans are developed.
December 5, 2017	Central Ohio has an air transport network that includes Rickenbacker and John Glenn International Airports. Is this being taken into consideration in the master plan update?	The Ohio State University Airport considers themselves a part of the air transport network and includes a representative of the Columbus Regional Airport Authority in many of its planning/development projects, including the master plan update.
December 5, 2017	Security does not appear in the list of elements being developed for the master plan. How is security being addressed?	The Ohio State University Airport was the first general aviation airport in the state to develop a comprehensive security plan, following the guidelines set forth by the Transportation Security Administration, and considers security a high priority. Security is not a stand-alone element of the master plan but will be incorporated into the facility requirements section.
December 5, 2017	Is drone usage being considered? How will this be handled?	The Ohio State University Airport is working with drone pilots to proactively develop solutions. The airport was the first site with drones and manned aircrafts occupying the same air space.
December 5, 2017	What's going to happen with the north runway?	The master plan is in the early stages of development. User surveys and data collected as part of the forecast and facility requirements are being reviewed to help determine future functions, needs and long-term investment priorities.

Date	Question/Comment	Response (if applicable)
December 5, 2017	Is there a decibel limit being considered?	Decibel limits are determined by the FAA. The FAA defines acceptable noise based on an average of all noise occurrences during the course of a day.
December 5, 2017	Who is represented on the Technical Advisory Committee (TAC)?	The TAC is made up of numerous airport stakeholders, including city of Columbus, Franklin County, MORPC, Ohio State administrators, surrounding communities, airport users, local residents and businesses.
December 5, 2017	How are you planning to handle green space such as the sheep farm?	The master plan is being updated based on research and community and stakeholder input. The planning process is in the early stages and will continue during the next twelve months. Details will continue to be shared on the website and at public meetings, as it's made available. The sheep farm is part of a separate project and comments regarding that property should be submitted to Erin Prosser, Director of Community Relation, The Ohio State University - Physical Planning & Real Estate Department, via email at prosser.20@osu.edu .
December 5, 2017	Is the master plan being implemented now?	No. The master plan is still in the research and development phase. We will be working to finalize the plan during the next twelve months. Implementation of the plan will follow.
December 5, 2017	There wasn't enough notice about the public meeting.	Comment noted.
December 5, 2017	Parking for the meeting was bad because it was dark and there was construction. Suggest having students assist with flashlights.	Comment noted.
December 5, 2017	More outreach/engagement is needed if the airport is committed to public involvement.	Comment noted.
December 5, 2017	Keep the cattle.	Comment noted.
December 5, 2017	Expand West Case Rd. to improve traffic.	Comment noted.
December 5, 2017	The noise study showed that a lot of the noise is because of CMH.	Comment noted.
December 5, 2017	Giving pilots feedback on their noise levels in relation to other pilots would encourage them to be less noisy. Pilots want to be part of the solution and help the community. Providing other feedback to pilots in an educational/constructive way would also help, for example share the community's request to limit touch and goes after night	Comment noted.
December 5, 2017	Community/residents need to be better educated. Things are busier, but technology has helped planes become quieter. In the past, there were fewer planes, but they were noisier.	Comment noted.

Date	Question/Comment	Response (if applicable)
December 5, 2017	The airport's facilities are functional but dilapidated. It would be nice to fix things up but the public needs to be realistic. A good facility doesn't necessarily mean it's pretty. Things should be in good repair, but it's more important to put money where it matters most.	Comment noted.
December 5, 2017	It may be helpful to the public to break up concerns into topics and educate on each: facilities, green space, noise, curb appeal, etc.	Comment noted.
December 5, 2017	Airport needs to have more competitive fuel costs. Many pilots go to Delaware or other airports to fuel up.	Comment noted.
December 5, 2017	<p>Comment Form – Airport Strengths (38 comments)</p> <ul style="list-style-type: none"> • Location (5) • Offers pilot training to OSU students and new pilots; serves student needs (3) • Helps restrict development (and any additional traffic that would come with development) (3) • Associated with a Tier 1 university (2) • Historic (2) • Helps to keep green space (2) • A restaurant that is open to public (Jack & Benny's) (2) • Close to the heart of the city, to OSU, downtown Columbus, Muirfield Village. It's perfectly situated to be a show park and gateway for visitors to the university and for all facility users • Easy access • Capacity • Able to serve private pilots as well as corporate jets • Flight volume remains within what is reasonable given that it's surrounded by residences • Status as research and educational institution maintains quality and state-of-the art practices Established presence • Stable • Shares resources with the College of Agriculture to showcase how mixed-use development can work—housing, livestock, agriculture, aviation, green space • Provides good airport for small (2-4 seat) airplanes • Students want to come to airport for instruction due to instruction from private pilots through multi-channel engines and instruction ratings • Has a control tower • Observation deck open to public • Businesses • Local attraction • Hosts many events such as SAFECON; school; scout OSU athletics activities; military jumps 	Comments noted.

Date	Question/Comment	Response (if applicable)
	<ul style="list-style-type: none"> • I enjoy seeing and hearing the planes, the open space, the grazing cattle and horses. It's great for children to be around/see • Asset to community as it's one of the only unique institutions within our boundaries • Good neighbor as it seeks community input 	
December 5, 2017	<p>Comment Form – Airport Weaknesses (20 comments)</p> <ul style="list-style-type: none"> • Noise (4) • Lack of community outreach (4) • Landlocked by previous development, limits expansion (2) • Location • Lack of support for private pilots • Outdated facilities and buildings • Planes and drones shouldn't be flown in the same air space • Too close to residential areas • Selling off the sheep farm and reducing green space • No real "pop." Something is needed to make the airport stand out from the others • Vulnerable to privatization • Doesn't generate enough income to make its own improvements • Two-lane road leading to location 	Comments noted.
December 5, 2017	<p>Comment Form – Goals for the Next 20 Years? (32 comments)</p> <ul style="list-style-type: none"> • A Restrict growth around airport lands (2) • Convert 57 acres of sheep farm to a community hub and showplace for all visitors and airport users. Hub could consist of a library, senior center, cultural/arts center, community gardens, walking paths, bike paths connecting to Olentangy trail (2) • Becomes one of the premier flight education airports • Facilities continue to be upgraded and expanded • Expanded facilities, areas and/or bleachers for audience to observe operations and events such as SAFECOM competitions • More open and inviting to public • Nice big park • More cows. The presence of cows in an urban/suburban environment is important as it represents one of Ohio's primary industries. I hope to be able to drive my children by the cows in 20 years • Healthy, small airport • Hold onto as much green space as possible • Calming presence that helps to slow down the changing neighborhood • To have airport not try to compete for traffic with Port Columbus/John Glenn - I've lived in the area for 40 years and am alarmed at how rapidly development is occurring - the airport doesn't need to join the parade • Support development of OSU sheep farm into a community park with bike trails connecting Scioto and Olentangy trails, community gardens, library and spacious community center, preserve green space, protect watersheds and minimize traffic • Stable economy along Bethel and Sawmill 	Comments noted.

Date	Question/Comment	Response (if applicable)
	<ul style="list-style-type: none"> • Specialized facilities for pilots and pilot family club, in addition to OSU students • Airport could provide community outreach and go into schools, clubs, meetings, etc. to explain flight fundamentals, etc. • Remain owned and managed by OSU, not developers, 3rd party managers • Keep control tower • Relatively same blueprint that was presented with state-of-the-art offerings • Airport returns to its educational mission, training and research • Students participate in SAFECON at far off airports to practice cross-country flying • Airport checks with communities in path of historic activities before planning to limit noise overhead • Change flight that are strictly over schools • Airport would be closed or used only as a demonstration airport with minimal to no traffic • Continue seeing cattle and horses • Sheep farm property turned into a park and library. There isn't a library in the area and what better place than directly across from the airport? • Improved "curbside appeal" so airport appearance enhances neighborhood instead of buildings looking like factories (i.e. better paint colors) • Offer more flight experience beyond just for travel to general public and then adequately publicize the opportunities • Minimal capacity increase • Use land near West Case as a park for public 	
December 5, 2017	<p>Comment Form – Define Success for The Master Plan Update Process (22 comments)</p> <ul style="list-style-type: none"> • Creation of a holistic, fiscally sound plan that clearly articulates the needs of the airport and community while also establishing appropriate boundaries; the plan should be realistic and certain timelines, checkpoints and lists of things to be accomplished (2) • Values comments from airport neighbors (residents) at least as much as those of the business community, who live far away and well out of range of increasing noise levels (2) • Make sure local communities are well informed (2) • Developing a plan that won't impact surrounding communities with noise or increased traffic • To not be mostly driven by business interests • Local communities become airport's cheerleaders • Airport would explain to all parties affected by the plan of increase in traffic/noise, threats, flight paths for CMH using Next Gen flight control • Meetings at least every two months to share plans including usage of sheep and cattle grazing land, plans for parking of aircrafts and cars, noise abatement • North runway doesn't need to be lengthened • Transparency and honesty 	Comments noted.

Date	Question/Comment	Response (if applicable)
	<ul style="list-style-type: none"> • Airport listens to residents and abides by their desires to reduce or eradicate noise pollution and putting their homes in danger • Community involvement, listen to community/neighborhood feedback • Meets the needs of the airport without adding to climate issues, congestion or environmental concerns • Be creative and forward thinking in its approach • Keep the area as beautiful as possible • Majority of public feeling their input was heard • No significant increase in capacity • Future capacity increase would be distributed among existing airports • Consideration of need for an additional airport in central Ohio 	
December 5, 2017	<p>Comment Form – Other Comments (11 comments)</p> <ul style="list-style-type: none"> • This airport is an indicator of one of the things that makes OSU great. The size could be leveraged to offer more research opportunities in agriculture, aviation, planning and development, and environmental science. • Plans for the main building look good and can only enhance the area. • We enjoy the lookout tower and close access to the airport. • I do not want the airport to expand. • Please value public input from residential neighbors as much as businesses that use the airport. • The number of operations has greatly increased with the SAFECON meets (and other activities). Students from other schools arrive early to practice, increasing the noise. Spread the practice/noise among other schools. I flew in two national meets. • Vague documents on project website suggest that airport is being deceptive. • I attended the Dec. 5, 2017 meeting in Hangar 1. • I envision as people leave the airport they would be directed to tour the Don Scott Memorial Park to see what true cooperation among OSU, city of Columbus and the community looks like: A beautiful gateway to the university and city of Columbus. • As a member of the N.W. community, I'm very interested in converting the sheep farm to a community hub, as it's one of the last open parcels in the area. • Post compilation of public comments to website with repetitive comments indicated. 	Comments noted.
March 12, 2019	Is noise from helicopters included in the noise analysis?	Yes.
March 12, 2019 April 16, 2018	What if you are radically wrong about the future forecasts? For example, a recent article mentioned there would be Uber air taxis in the near future. Will you have to go through this whole process again?	Things like Uber air taxis would be treated like helicopters and are include in the forecast. Our master plan is also designed to be flexible to allow us to respond to changing industry conditions.
March 12, 2019	I am disheartened to see that runway 5-23 (crosswind runway) is	The recommendation to potentially close the crosswind runway was made due to its very limited use (only about 4% during the

Date	Question/Comment	Response (if applicable)
	recommended to be decommissioned. I'm a pilot and it is a great resource for training and for landings in certain wind events.	year) and to eliminate FAA designated hot spots, but we will consider your input. We've heard this comment a few times tonight.
March 12, 2019	Assuming the runway(s) are extended, won't that mean we'll see larger aircraft?	No, the airport already serves the full range of business aircraft. The current fleet also includes those aircraft types which can operate at a Class IV, Part 139 Airport, mostly serving Ohio State and competing universities' athletic teams. The university has no plans for standard air passenger service like you see at the John Glenn Columbus International Airport and Rickenbacker Airport.
March 12, 2019	I am a nearby resident and would like to show support for the runway extension. Longer runways allow for steeper aircraft approaches, which will actually reduce aircraft noise. I'm also grateful that the airport property will only include airport buildings and not be redeveloped with apartments.	Comment noted.
March 12, 2019	The current early a.m. flights produce a lot of noise and is a concern. (Others in the crowd agree).	We have around 12 flight operations during the night/early a.m. and approximately ten of these involve MedFlight and/or Labcorp, which involves medical-related transportation. We are sensitive to these noise issues and have worked with their pilots to fly higher to avoid noise issues. They have a lot of pilot turnover so it is a constant effort to train pilots, but both companies work with us. If you have a complaint, please contact The Ohio State University Airport and we will work with these companies.
March 12, 2019	With the recommendation for a longer runway to the north, would additional hangars and buildings also be built on the north side of the airport?	Access routes are planned to get aircraft to and from the north runway to hangars and facilities located on the south side of the airport. Currently no buildings are being planned on the north, though the airport does own acreage where future hangars/building could be built. These ideas most likely fall outside the 20-year planning period for this master plan but may be looked at in the next master plan update.
March 12, 2019	I'm a longtime nearby resident and we hope you will not get rid of the "fun" things, like the parachute jumps and blimp landings. This new terminal is beautiful and a community asset, and it will be more enjoyable viewing from here than hanging on the old fence.	Yes, we schedule around four parachute jumps a year and other "fun" operations like blimp landings will still occur in the future.
March 12, 2019	Comment Form – Crosswinds runway (6 comments) <ul style="list-style-type: none"> • Disagrees with closing the crosswinds runway (4) • Crosswinds runway improves safety (2) 	Comments noted.
March 12, 2019	Comment Form – Airport services (3 comments) <ul style="list-style-type: none"> • Would like better internet connectivity in hangar areas (2) • Consider upgrading food services for public, students, staff, air crews (1) 	Comments noted.
March 12, 2019	Comment Form – Community Connectivity (3 comments)	Comments noted.

Date	Question/Comment	Response (if applicable)
	<ul style="list-style-type: none"> As a neighbor to the airport we consider it an asset to the community Appreciate airport education and community dynamic Like the parachutes, cows and new facility 	
March 12, 2019	Comment Form – Hot-spot improvements (2 comments) <ul style="list-style-type: none"> Taxiway realignment and hot-spot improvements are a waste of money Disagrees with hot spot improvement for area C, as it is difficult for pilots to see. 	Comments noted.
March 12, 2019	Comment Form – Greenspace (1 comment) <ul style="list-style-type: none"> The OSU airport and farm provide needed greenspace 	Comments noted.
March 12, 2019	Comment Form – Noise (1 comment) <ul style="list-style-type: none"> After all the previous meetings there were no major complaints about noise 	Comments noted.

City of Worthington Correspondence

Date	Question/Comment	Response (if applicable)
April 16, 2018	Doug – We had an opportunity to review the materials sent out to the TAC members on April 2nd, which included the inventory and aviation forecast chapters (chapters 1 and 3). Our review raised several questions, which are included in the attached file. Responses to these questions will help us better understand the material in these chapters. Please let me know if you want additional information or clarification regarding the questions. Thanks, Robyn	Robyn – Attached is the university’s response to your comments, dated April 16, 2018, regarding draft Chapters 1 and 3 of The Ohio State University Airport master plan. Please let me know if you have any further questions. Thank you for your continued participation in this important project – Doug Questions and responses follow.
April 16, 2018	The number of jet operations in 2007 was 7,688. The number in 2017 was 4,800. Doesn’t this show a reduction in jet operations, rather than the significant increase OSU projects? How do you reconcile this seeming discrepancy?	It is difficult to compare the 2007-based Noise Study forecast to the Master Plan forecast based on 2017 conditions. The 2007 numbers reflect pre-recession conditions and did not anticipate a significant economic downturn. General aviation operations at towered airports nationwide dropped 25% in the period 2007-2011. Likewise, The Ohio State University Airport experienced its lowest level of based aircraft in 2011 with 157 airplanes based at the facility, and its lowest activity level in 2012, recording 66,371 total operations. Similar to the rest of the economy, airport operations nationally have stabilized since 2011. The rebound in airport activity, both nationally and locally, took several years but growth has picked up again in recent years. By comparison, The Ohio State University Airport had 187 based aircraft in 2017 and 90,687 operations. Jet activity is anticipated to be the sector that experiences the largest growth over the next 20 years as projected by the FAA. In addition, Central Ohio population is expected to grow by 50

Date	Question/Comment	Response (if applicable)
		<p>percent by 2050 according to Mid-Ohio Regional Planning Commission (MORPC).</p> <p>These factors support the projected increase as shown in the forecasts.</p>
April 16, 2018	<p>The total number of operations in 2007 was 87,186. Reducing this number by the 358 military operations results in 86,828 for 2007. At page 2-16 OSU states: Methodology 3 – Historic Growth – Between 2007 and 2017, total general aviation operations at KOSU grew at an average annual rate of 1.2%. This rate of growth is applied to 2017 operations to yield 115,500 operations by 2037. However, applying a 1.2% annual growth rate to the 2007 base of 86,828 would result in 97,828 operations in 2017. The actual number of 2017 general aviation operations was 90,687. Can you explain this calculation better? See Ex. 3.5.3-1 and Table 2-11 from the 2010 Part 150 Study.</p>	<p>The 2007 data from the previous forecast appears to have used multiple sources and is based on the Federal Fiscal Year. For this study, actual operations from the last 10 calendar years were used from one source: FAA ATADS database tower counts. Estimated night operations were then added to account for operations that occurred when the tower is closed. We believe this allows for an accurate comparison from year-to-year. Based on this data, there were 80,364 annual operations, not 86,828.</p>
April 16, 2018	<p>The projected KOSU based Aircraft Fleet Mix shows a dramatic increase in based jets, from 16 to 30. There is no disclosed basis for this prediction, other than “Source: Marr Arnold Planning.” The methodology is not disclosed. (3.5.2 – Based Aircraft Forecast Fleet Mix). Can you explain the basis for the significantly increased number of based jets?</p>	<p>The methodology factors existing conditions and national trends, both historic and predicted, in the development of this forecast. The recommended forecast recognized that nationally, the turboprop, business jet, light sport and experimental fleets are growing at a faster rate than the single-engine piston aircraft fleets, which is also shown in Chapter 3 Exhibit 3.4.2-1.</p>
April 16, 2018	<p>The 2010 Aviation Activity Forecast did not provide a baseline for the number of based jets in 2007. Has there been an increase in the number of based jets since 2007?</p>	<p>There has not been an increase in jets since 2007 because of the economic downturn and lack of available hangars to accommodate additional jets. The university currently has requests for 20+ additional businesses to base jets at the airport beyond current capacity.</p>
April 16, 2018	<p>The actual number of Jet operations in 2007 was 7,688, amounting to 8.8% of all operations. The actual number of Jet operations in 2017 was 4,800, amounting to 5.3% of all operations. Thus, the historical numbers show a significant decline in Jet operations over the past 10 years. Is it realistic to predict that the number of jet operations will</p>	<p>The 2017 jet operations for this study are estimated based on the most recent year radar data, IFR data, and discussions with the air traffic control tower. See the response to question #1 regarding predicted jet growth.</p>

Date	Question/Comment	Response (if applicable)
	increase from 5.3% of all operations in 2017 to 10% of all operations in 2037, given the historical decline?	
April 16, 2018	The KOSU General Aviation Operations Forecasts (Ex. 3.5.3-1) selected the Employment Growth Method 2 to forecast the rate of growth of general aviation operations. Do you agree that the selected growth rate of 1.06% is 3.4 times higher than the FAA Growth Rate (Method 4), and more than 2.5 times higher than the FAA's TAF projections of .4% per year? If so, is this realistic given the historical growth trends have actually shown an historical decline over the past 40 years?	From 2016-2017, KOSU operations were up 14% and nationally operations were flat (0%). Based on recent growth, the level of activity discussed in the Section 3.3 Present and Future Airport Role of Chapter 3, and the airport location, we believe that growth at KOSU will outpace national growth. This is reasonable based on Central Ohio's anticipated growth from 2 million to 3 million people by 2050 as forecast by MORPC (getinsight2050.org). Additionally, jet growth has been artificially constrained due to limited large aircraft hangar space while this forecast assumes an unconstrained condition.
April 16, 2018	The number of based aircraft in 2007 was 230. That number decreased to 187 in 2017. How do you explain that drop?	General aviation declined nationally during the economic downturn. Many individuals, especially those not actively flying, sold their aircraft during this time. Others, in an effort to further protect their investments, moved their aircraft from a tie-down at KOSU to other airports where hangar space was available. Now the university is seeing an increase that is anticipated to continue based on voiced demand and the region's predicted economic growth.
April 16, 2018	The 2010 report (https://osuairport.org/sites/osuairport.org/files/uploads/report2010/chapter_2_aviation_activity_forecast.pdf) indicates that basing additional jet aircraft at KOSU will reduce the number of operations by those aircraft (p. 2-21). Does OSU still subscribe to that statement?	Some aircraft operators that are looking to base at KOSU currently operate to/from the airport on a regular basis. This requires a trip in/out to pick up and a second trip in/out to drop off passengers. If the aircraft was based here, they would instead make one trip out and one back in. Based on that scenario, yes, we subscribe to our previous statement for those aircraft in that situation.
April 16, 2018	How many additional aircraft will the new hangars accommodate by hanger?	A plan for a specific number of hangars does not currently exist. Alternatives will be explored in the Alternatives Analysis chapter of the Master Plan, which has not yet been developed. We will likely preserve a footprint of land for potential hangars but not a specific number of hangars nor a specific number of aircraft to be housed in specific buildings. Keep in mind that this is a forecast of anticipated demand. The university will consider the development of individual corporate hangars based on actual demand and many will be considered on a build-to-suit basis.
April 16, 2018	What type of additional aircraft do you anticipate to be accommodated by the new hangars? And what percentage of each type do you anticipate?	We anticipate serving only those aircraft types that are currently utilizing the airport. The actual percentage of each type, as forecasted, is shown in Chapter 3 Exhibit 3.5.2-1.

Date	Question/Comment	Response (if applicable)
April 16, 2018	Is there a rule of thumb to calculate hangar square footage per plane? If so, what calculation do you use?	There is no one standard rule-of-thumb for calculating hangar square footage. For an airport managed community hangar, the airport staff will determine the desired building size based on aircraft number and types for which space is being requested at the time. Criteria for determining hangar size includes not only the size of the aircraft, but also an appropriate space between aircraft and along the walls in order to minimize hangar rash (e.g., the smaller the buffer between aircraft the greater the likelihood of minor incidents involving damage to aircraft that typically originate due to improper ground handling in a hangar). For privately owned hangars, in which the owner is responsible for the movement of their own aircraft, the size of the hangar depends not only on the size and number of aircraft to be housed in the hangar, but also the owner's accepted level of risk related to the space between aircraft.
April 16, 2018	How many additional hangars would be required to accommodate the projected growth of Based Aircraft from the current 187 to the projected 220 by the year 2027? For the projected 266 in 20 years? Is there currently room for that level of hangar construction?	The number of hangars ultimately developed will depend on how aircraft are stored, company preferences, and site availability. As noted previously, options for storing these additional aircraft will be analyzed in the Alternatives Analysis chapter of the master plan. We anticipate the land envelope that exists within the airport boundary (as defined by the study area) will be sufficient to accommodate the forecasted demand over the 20-year planning period.
January 16, 2019	The Worthington City Council adopted a resolution that supported the 21 Noise Abatement and Mitigation Alternatives identified in the Noise Compatibility Plan. Was this implemented and are they in place today?	Specifics to each of the 21 identified alternatives can be found in Chapter 12 of the noise study report. Please be advised that the noise levels generated by airport operations do not meet the critical level as defined by the FAA, EPA, HUD, USAF, etc., the Airport's Noise Abatement Guidelines are voluntary in nature, and cannot legally be enforced by the airport.
January 16, 2019	The Worthington City Council adopted a resolution that asked for revisions to the Single Event Noise Maps to include noise sensitive facilities, including schools, churches and outdoor public spaces. Was this implemented and are they in place today?	I do not know of a Single Event Noise Map. I can assure you that the airport's Noise Exposure Maps (NEMs), those which the FAA recognizes for noise mitigation/abatement programs and the City of Columbus recognizes for zoning purposes, do include noise sensitive facilities. You can find these on Figures 6-9 & 6-10 of the noise study report.
January 16, 2019	The Worthington City Council adopted a resolution that asked to extend the definition of noise sensitive hours from 11:00 p.m. – 6:00 a.m. to 10:00 p.m. – 7:00 a.m. Was this implemented and are they in place today?	Noise sensitive hours have been extended for specific operations, as reflected in the Noise Abatement Guidelines

E-mail Correspondence

Date	Question/Comment	Response (if applicable)
February 11, 2019	Has the sheep farm closing happened?	The answer is very likely "no," as the article from 27 December in the Columbus Dispatch

Date	Question/Comment	Response (if applicable)
		<p>(https://www.dispatch.com/news/20181227/columbus-delays-closing-on-ohio-state-sheep-farm-property) indicated the closing date had been moved to 30 April 2019, which is still in the future. However, events may have occurred in-between and I've asked Ms. Hannah Higgins (who was also at the meeting tonight and cc'd here) to engage with the Admin and Planning professionals at Ohio State to update you with the latest information, and we'll provide this as soon as possible.</p> <p>Additional Response: Councilmember Robinson – Thank you for your interest in the sale of agricultural property located across from the Don Scott Airport on the south side of Case Road. As the article from the Dispatch indicates, we are currently in contract with the City of Columbus and the closing date is expected to be on or before April 30th, 2019. The City's environmental consultant's assessments disclosed some minor on-site environmental issues which we are working collaboratively with the City to determine how they would propose to address the findings. At this time, the University expects that we will close on the property as planned.</p> <p>The environmental issues were found where former underground storage tanks were properly removed and closed out by OSU, with the Ohio Bureau of Underground Storage Tank Regulation providing, at the time, a No Further Action determination. Nothing in the City's assessments suggest any relation to the airport operations, and the disclosed environmental issues appear to be solely related to the removed tanks.</p>
February 12, 2019	I'm confused that the University that is a leading voice in combating climate change is in the process of contributing enormously to it in our community. I would be interested in your thoughts on this.	<p>On the first point of investments at Don Scott Field / KOSU, we are focused on understanding any and all impacts the proposed investment trajectory may have. The improvements to 9L/27R are not the only portion of our investment strategy but is an important part of the overall discussion. Working with the communities, the FAA, and other key stakeholders, we are committed to improving the safety, usability, and value of the aviation/aerospace campus. As Mr. Hammon noted, there are data that indicate overall we may be looking at a more quiet situation in the future, due to both the inherent reduction of noise from newer-generation aircraft that will be able to utilize the facility, as well as the ability for approach, landing, and take-off routes using the improved runway that are beneficial from the perspective of noise. We continue to work these and will continue to share what we learn, as we learn it, through the public discussion channels mentioned at the meeting.</p> <p>Your concern about carbon footprint, climate change, and fossil fuels is extremely well-founded. We share this concern, and are doing significant research, along with operational changes at Ohio State, that are dedicated to reducing this footprint significantly, rather than increasing it, and therefore helping with the sustainability of our planet. I would cite just one example of many</p>

Date	Question/Comment	Response (if applicable)
		<p>here, in hopes of connecting this focus directly to our activities on the aviation/aerospace campus at Don Scott.</p> <p>About 24 months ago, NASA selected Ohio State to lead a group of Universities to perform essential research into the development of 'all electric' aircraft. This link - https://engineering.osu.edu/news/2017/04/nasa-chooses-ohio-state-lead-electric-aircraft-engine-rd - offers some details. The bottom line is that research being done at Ohio State, and as a part of our aerospace/aviation portfolio, is directly focused on building next-generation aircraft that are powered by electricity, and not by fossil fuels. These aircraft - much like the electric vehicles you see on the street today - drastically reduce both the fossil fuel consumption and the noise generation. This is not an immediate-benefit feedback loop, for sure, as research is only the very first link in a value-chain of prosperity. However, we believe that these early research, development, and engineering investments- which include enhancing these very capabilities at Don Scott - are exactly what Ohio State should be doing, and part of our mission as one of the leading land-grant universities in the United States, and an equal leader globally.</p>
February 13, 2019	The airport and its expansion plans threaten our safety the environment and our peaceful existence.	Understood, and I appreciate your candor. Maybe the most important thing I can say is "Thank You" for having been a good neighbor to KOSU for 40 years, and for continuing this engagement through constructive and thoughtful dialogue. A commitment I can make to you, and believe I can keep, is that we are going to do all that is in our power to make sure that OSU's contemporaneous investments into aerospace and aviation at Don Scott as a result of major changes and challenges in the aviation industry, will proceed in a manner to a.) improve safety, b.) be better stewards of the environment, and c.) do not impinge needlessly or excessively on local and very legitimate concerns.
July 1, 2019	<p>I wasn't aware that you were planning to eliminate 5/23. I don't see how that helps the airport, as it is a teaching airport and is frequented by many light aircraft, for whom big crosswinds are an issue. Of course, I felt the same way about 14/32.</p> <p>In short, I think it's fair to say that eliminating runways is not an "improvement".</p>	<p>We appreciate your review of the draft chapters and sharing your concern about closing the crosswind runway.</p> <p>Safety is always our highest priority. As we shared at the public meeting in March, the Master Planning team recommended closing the crosswind runway to eliminate dangerous hot spots – where there are increased risks of collisions - designated by FAA. Also, the crosswind runway is used only about 4% of the time each year, and it is the State of Ohio who typically uses it because its hangar facilities are located close to this runway. OSU policy prevents students from training in high wind conditions so students rarely use the crosswind runway.</p> <p>We will include your comments about the potential crosswind runway closure in the comments section of the Master Plan report submitted to the Federal Aviation Administration (FAA).</p>
July 8, 2019	In Chapter 3, Section 3.3.7 Future Role the opening sentence is "The	The role of KOSU is a General Aviation Reliever Airport within the FAA National Plan of Integrated Airport System (NPIAS) with a

Date	Question/Comment	Response (if applicable)
	<p>future role of KOSU is not expected to change.” I may be missing the context of the overall message, but to me, this seems contrary to everything that is happening to grow the Airport and Aerospace ecosystem. (Yes, I used ecosystem!) I’m not sure if there’s a reason it’s supposed to be written that way, maybe the FAA dictates what language is used, or something. But, it just surprised me when I saw that sentence.</p> <p>I also did a quick key word search for “UAS” in most of the chapters. I only found it mentioned once, in connection with research done at the ARC. It feels like this is a missed opportunity to become an intermodal hub for the Smart City.</p>	<p>primary mission of serving the university’s learning, discovery, and engagement initiatives and that is not expected to change. The facility is not planning for commercial air service or cargo service or any other change in its general role, but to continue as a premier general aviation facility.</p> <p>Regarding UAS, you will be happy to know that a location has been identified for this as associated with “smart mobility” but it is referred to as VTOL for Vertical Takeoff and Landing on the Airport Layout Plan, as this was closer to the terminology used in the ODOT RFI for Urban Air Mobility Initiative which was vertiport.</p>
July 8, 2019	<p>WOOSE is opposed to the runway expansion and believes the university should concentrate on educational and research activities at its airport. OSU Airport in 2018 Federal Fiscal Year was the 4th busiest airport in Ohio as documented in the attached Federal Aviation Administration report. WOOSE believes OSU needs to step back from operating a commercial airport.</p>	<p>We appreciate your review of the draft Master Plan chapters and sharing your and WOOSE’s concerns.</p> <p>We will include these concerns in the comments section of the Master Plan report submitted to the Federal Aviation Administration (FAA). Additionally, we are preparing a Question and Answer document to address comments and questions that will be also be included in the Master Plan report. All documents will be posted online.</p>
July 8, 2019	<p>WOOSE is very concerned that the surrounding communities may have been harmed by the lead particles emitted from the propeller-driven aircraft stationed at the airport or itinerant aircraft going in and out of OSU Airport.</p> <p>As you may know, the aircraft that makes up the bulk of OSU Airport’s tenants are single and dual propeller engines. These engines use leaded aviation gasoline. The U.S. Clean Air Act in 1996 abolished leaded gasoline for motor vehicles, but did not abolish leaded aviation gasoline, which is sold by OSU.</p>	<p>We appreciate your review of the draft Master Plan chapters and sharing your and WOOSE’s concerns.</p> <p>We will include these concerns in the comments section of the Master Plan report submitted to the Federal Aviation Administration (FAA). Additionally, we are preparing a Question and Answer document to address comments and questions that will be also be included in the Master Plan report. All documents will be posted online.</p>

Date	Question/Comment	Response (if applicable)
	<p>An environmental assessment of Sheep Farm property is currently under way. WOOSE hopes the surrounding communities and nearby elementary schools have not been affected by lead emitted from the propeller-driven aircraft.</p>	
<p>July 8, 2019</p>	<p>On December 30, 2016, WOOSE member John O’Keeffe filed an Ohio Department of Taxation Form DTE 23B entitled “Complaint Against the Continued Exemption of Real Property from Taxation” with the Franklin County Board of Revision against the OSU Airport. It is the complainant’s opinion that OSU Airport should be paying real estate property taxes just like Port Columbus, Bolton Field, and Delaware Municipal for land, hangars and buildings leased to third-parties.</p> <p>The complaint process has moved from the Franklin County Auditor to the Tax Commissioner to the Ohio Board of Tax Appeals² where a hearing was held on January 29, 2019. Final brief submission is due in the near future and a Board of Tax Appeals opinion expected in six months.</p>	<p>We appreciate your review of the draft Master Plan chapters and sharing your and WOOSE’s concerns.</p> <p>We will include these concerns in the comments section of the Master Plan report submitted to the Federal Aviation Administration (FAA). Additionally, we are preparing a Question and Answer document to address comments and questions that will be also be included in the Master Plan report. All documents will be posted online.</p>
<p>July 8, 2019</p>	<p>WOOSE requests State Representative Beth Liston alert WOOSE if there is future legislation where The Ohio State University requests a change to the ownership of land that makes up the OSU Airport, also known as Don Scott Field.</p>	<p>We appreciate your review of the draft Master Plan chapters and sharing your and WOOSE’s concerns.</p> <p>We will include these concerns in the comments section of the Master Plan report submitted to the Federal Aviation Administration (FAA). Additionally, we are preparing a Question and Answer document to address comments and questions that will be also be included in the Master Plan report. All documents will be posted online.</p>

Appendix G – PCN Report

**PAVEMENT CLASSIFICATION NUMBER
THE OHIO STATE UNIVERSITY AIRPORT MASTER PLAN
PROJECT NO. 16081**

BY: Kendra Dahl, Brandstetter Carroll Inc.



January 15, 2019

The 2018 Airport Master Plan Update at the Ohio State University Airport included the calculation of a Pavement Classification Number (PCN) for the primary runway, Runway 9R-27L. This task involved the input of existing pavement sections, subgrade conditions, and aircraft operation information, into COMFAA software to determine the PCN in accordance with FAA Advisory Circular (AC) 150/5335-5C.

Existing Conditions

Record drawings from the 2008 Runway 9R-27L Pavement Rehabilitation indicated that the existing runway consists of two primary pavement sections. These sections are divided at approximately 600 ft beyond the threshold of Runway 9R. The first 600 ft of Runway 9R is hereby referred to as "Runway 9R" and the remaining portion from about the 600 ft mark to the threshold of Runway 27L is hereby referred to as "Runway 27L".

Both pavement sections, Runway 9R and Runway 27L, contain a 1.5" bituminous surface course and a 3.0" bituminous intermediate course. There is a reclaimed pavement base layer below the intermediate course that is 10" thick for Runway 9R and 14" thick for Runway 27L. The pavement reclamation in both runway sections left a remaining 4.0" of existing aggregate base course below the reclaimed pavement layer. The *Mix Design OSU Airport Phase III* report by EDP Consultants, Inc. recommended the use of cement treatment and emulsion for the reclaimed pavement base course. An independent review of the mix design report was conducted by Resource International, Inc. which supported the recommendation made for the pavement reclamation process. Therefore, for the purposes of PCN calculation, the reclaimed pavement layer was modeled using P-304 Cement Treated Base Course and the 4.0" of aggregate base course was modeled using P-209 Crushed Aggregate Base Course.

The existing pavement layers were used to develop an evaluation thickness that was input into COMFAA for the PCN calculation. An evaluation thickness of 26.4" was computed for Runway 9R and 33.1" was computed for Runway 27L. In addition to the evaluation thickness, the CBR value of the soil was also input into COMFAA. The 2018 *Subsurface Exploration and Geotechnical Engineering Report* by Geotechnical Consultants, Inc. provided an existing CBR of 5.0 at a location approximately 1,000' from the runway. Additional site observations by R.D. Zande and Associates indicated soil characteristics similar to that of a soil with a CBR value around 5.0 near Taxiways A and D, which are closer to the runway. Thus, a CBR of 5.0 was used to calculate the PCN values.

Aircraft Fleet Mix

The aircraft fleet mix listed in Chapter 4, *Facility Requirements*, of the 2018 Master Plan Update was used to assess the aircrafts' impact on pavement strength. If the entire fleet listed in this chapter is analyzed, the most demanding aircraft on the runway pavement is the Lockheed C-130 Hercules. However, the C-130 Hercules has two annual operations at the airport. The use of this aircraft to determine a PCN value is, therefore, not advisable because it could generate a significant over-estimation of pavement strength. To avoid inaccurately reporting pavement strength, the FAA recommends using "regular use" aircraft which are defined as aircraft operating at 1,000 coverages or higher in a 20-year timespan. A single coverage is equivalent to either a single takeoff or landing on the runway. In terms of annual operations, 1,000 coverages in 20 years was approximated as 50 coverages in one year. Therefore, any aircraft with 50 or more operations per year was considered regular use and included in the PCN analysis.

Results

The evaluation thickness, existing CBR value, and regular use fleet mix were input to COMFAA software which calculated a PCN for each of the aircraft in the mix, as well as a Cumulative Damage Factor (CDF). The CDF is a ratio of the number of applied coverages to the number of coverages at pavement failure.

A CDF value is representative of pavement damage in relation to an average 20-year pavement lifespan. For example, a CDF = 1 indicates that the pavement will fail at exactly 20 years if the aircraft continue using the pavement at the frequency and weight specified upon input of the fleet mix. A CDF < 1 indicates less deterioration on the pavement and an expected pavement life greater than the average 20 years. Conversely, a CDF > 1 suggests an expected pavement life less than 20 years. The CDF is also used to help determine accurate PCN values.

For Runway 9R, the CDF = 0.0223 using the regular use fleet mix. When the CDF is less than 0.15, the FAA recommends adjusting the traffic data to reach a minimum CDF of 0.15. To obtain the minimum CDF, AC 150/5335/-5C suggests either increasing the annual departures by a factor of 10, increasing the pass to coverage (P/TC) ratio, or both. In this case, the P/TC ratio was increased from 1.0 to 6.74 in order to reach a CDF of 0.1571. Since the CDF is less than 1.0, the PCN may be reported as the highest PCN of the aircraft in the fleet mix. The highest PCN for a CDF of 0.1571 is generated by the Gulfstream IV/G400 and resulted in a PCN of 33/F/D/X/T.

For Runway 27L, the regular use fleet mix and a normal P/TC ratio results in a CDF = 0.0000. This means that the fleet mix has little to no effect on the existing pavement section. The PCN in this case is 72/F/D/X/T which is generated by the Gulfstream IV/G400. If the annual departures are increased by a factor of 10 and the maximum P/TC ratio of 10 is used, the resulting CDF is still lower than 0.15. The annual departures would have to be increased by a factor of 1,000 and a P/TC ratio of 5.51 must be used in order to reach a CDF = 0.1497, which would result in a PCN of 28/F/D/X/T. However, a PCN of 28/F/D/X/T is unrealistic for this pavement section. The Runway 27L pavement section is thicker than Runway 9R, and therefore, should have a higher PCN value provided the fleet mix and CBR remain constant. Therefore, a PCN of 72/F/D/X/T is a more accurate representation of the actual conditions for the Runway 27L pavement section.

Enclosed:

Exhibit 1: Runway Rehabilitation Pavement Section Record Drawing

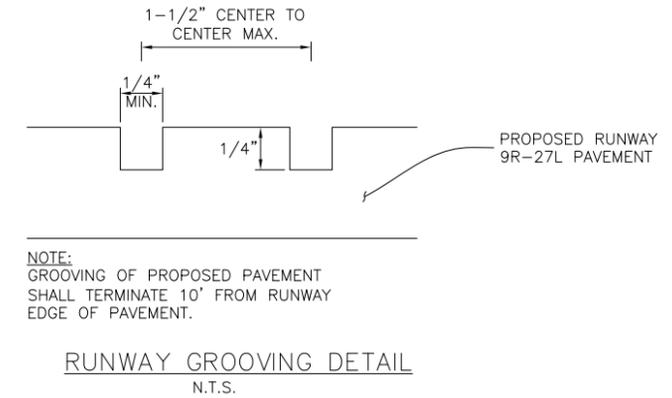
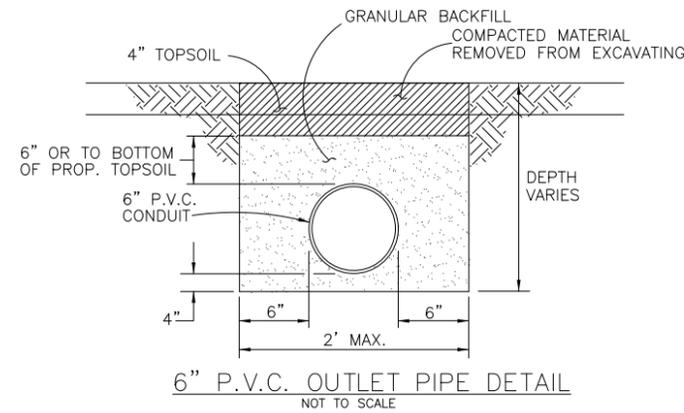
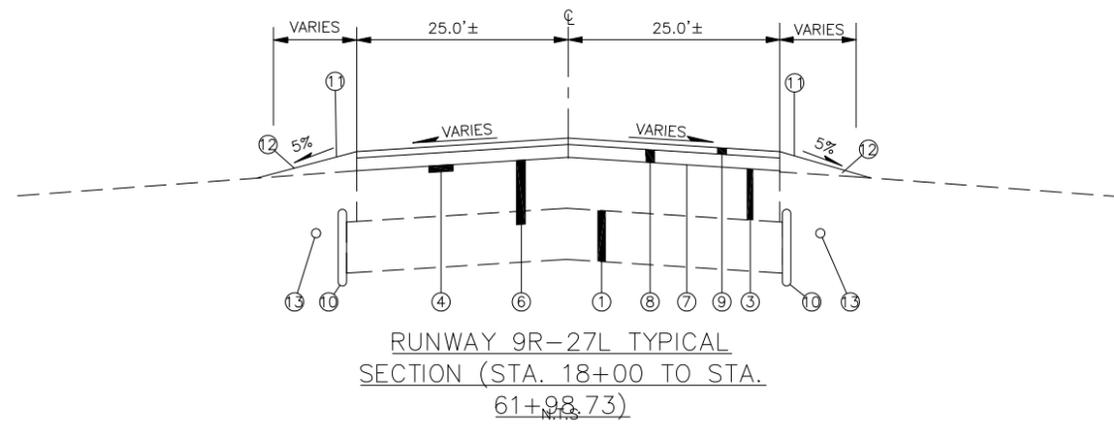
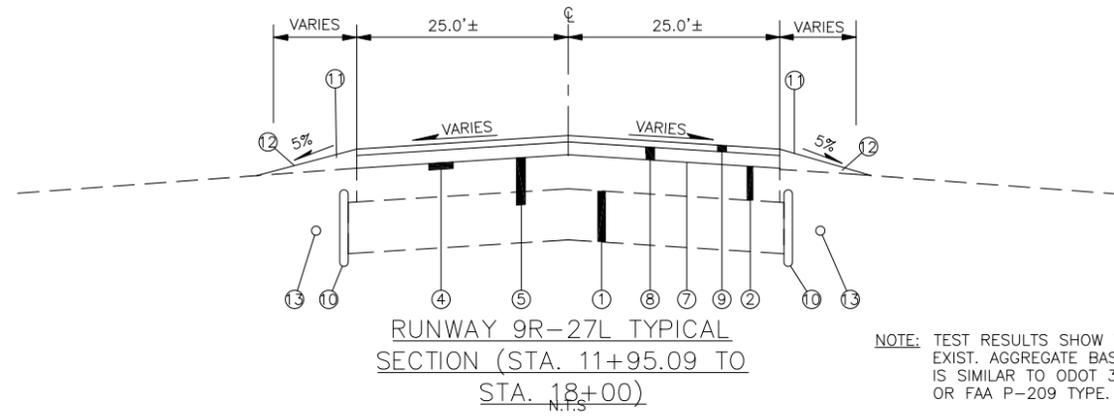
Exhibit 2: *Mix Design OSU Airport Phase III* by EDP Consultants, Inc.

Exhibit 3: *Review of Document: "Mix Design OSU Airport Phase III"* by Resource International, Inc.

Exhibit 4: *Subsurface Exploration and Geotechnical Report* by Geotechnical Consultants, Inc.

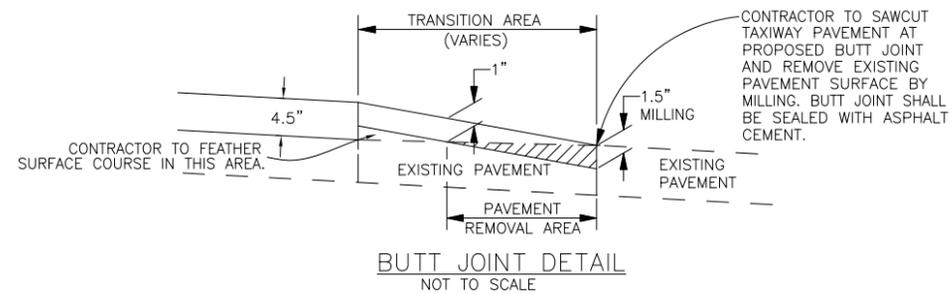
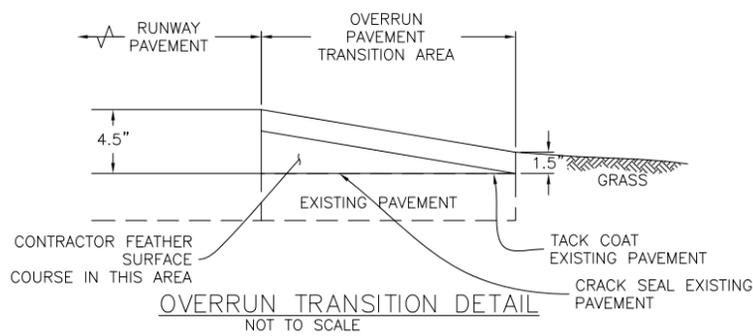
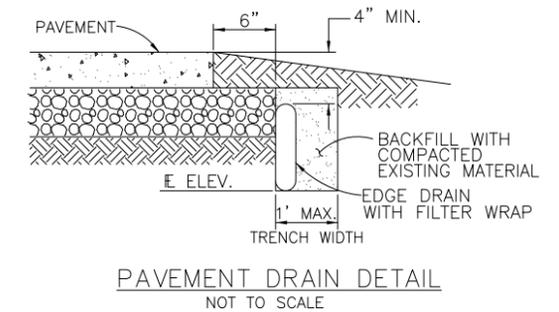
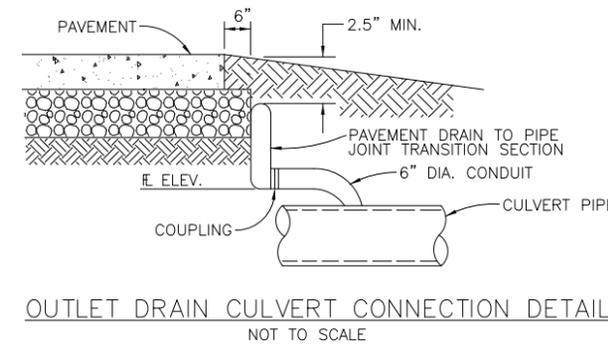
Exhibit 5: *Failing Soil Subgrade Taxiway D and Taxiway A* by R.D. Zande and Associates

EXHIBIT 1



NOTE: AFTER INITIAL PULVERIZING, CONTRACTOR MUST GRADE PULVERIZED AREA PRIOR TO STABILIZATION.

- ① EXISTING AGGREGATE BASE (6"±)
- ② EXISTING ASPHALT CONCRETE 8"±.
- ③ EXISTING ASPHALT CONCRETE 12"±
- ④ P-151 PAVEMENT MILLING (VARIES 0" TO 4")
- ⑤ ITEM Z-155 PAVEMENT RECLAMATION (APPROX DEPTH=10". EXACT DEPTH PER APPROVED JMF)
- ⑥ ITEM Z-155 PAVEMENT RECLAMATION (APPROX DEPTH=14". EXACT DEPTH PER APPROVED JMF)
- ⑦ P-602 BITUMINOUS PRIME COAT
- ⑧ P-401-1 3" BITUMINOUS INTERMEDIATE COURSE
- ⑨ P-401-2 1.5" BITUMINOUS SURFACE COURSE
- ⑩ ITEM D-705 18" PAVEMENT DRAIN
- ⑪ BERMING
- ⑫ HYDRO SEEDING
- ⑬ EXIST. 4" PERFORATED PVC (6" TO 18" FROM E.P.)



RECORD DRAWINGS

NO.	DATE	DESCRIPTION
REVISIONS		
O.S.U. PROJECT NUMBER 315-2002-931-1 AIRPORT PAVEMENT REHABILITATION AIRPORT REHABILITATION - SOUTH RUNWAY AND RAMP		
PREPARED FOR THE OHIO STATE UNIVERSITY COLUMBUS, OHIO		
PREPARED BY STANTEC CONSULTING SERVICES, INC. 1500 LAKESHORE DRIVE, SUITE 100 COLUMBUS, OHIO 43204		
PAVEMENT DETAILS		SHEET 28
O.S.U. PROJ. NO. 315-2002-931-1	COMM. NO. 7485PDT	DRAWN BY BKC
		DATE 12/19/08
		OF 70



FILE JAMES FACILITIES MANAGEMENT\PROJECTS\315-2002-931-1\DRAWINGS\LAST SAVED BY: BANCAL, THE LAST SAVED 12/22/2010 3:14 PM, PLOTTED 7/25/2018 10:20 AM

EXHIBIT 2



Stantec

Stantec Consulting Services Inc.
1500 Lake Shore Drive Suite 100
Columbus OH 43204
Tel: (614) 486-4383
Fax: (614) 486-4387

June 25, 2009
Shelly & Sands, Inc.
P.O. Box 2469
Columbus, Ohio 43216

Attention: Mr. Dustin Wilson
Project Manager

Dear Dustin:

Reference: 315-2002-931-1

Enclosed for your review and use please find a copy of the following material submittals which were delivered to our office:

NO EXCEPTION TAKEN (AS NOTED):

1. EDP Consultants, Inc. EDP #09060G Full Depth Reclamation Job Mix Formula for the Runway 9R-27L Pavement. This is solely for monitoring quality control, your company is not released from the responsibility to provide a stabilized material that meets or exceeds the design aircraft load on the pavement.

Please forward any additional material submittals for this project (Temporary Closure Markings, Borrow Material, Berm material, etc.).

Call me if you have any questions.

Sincerely,

STANTEC CONSULTING SERVICES INC.

A handwritten signature in blue ink, appearing to read "Steven A. Slusher", is written over the printed name.

Steven A. Slusher, P. E.
Project Engineer - Airports Division
Tel: (800) 340-2743
Fax: (614) 481-5886
Steve.Slusher@stantec.com

Attachment: Material Submittals

c. Mr. Glenn Gerhart, Mr. Rick Van Deusen
Mr. Dale Gelter

MIX DESIGN

**OSU AIRPORT PHASE III
COLUMBUS, OHIO
EDP # 09060G
JUNE 16, 2009**

Prepared at the request of:

**Mr. Dorrian Amling
Base Construction Technologies, Inc.
1595 Frank Road, Suite C
Columbus, Ohio 43223**

 **EDP Consultants, Inc.**
**9375 Chillicothe Road
Kirtland, Ohio 44094-8501
Phone: 440-256-6500
Fax: 440-256-6507
www.edpconsultants.com**

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you—*should apply the report for any purpose or project except the one originally contemplated.

Read the full report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when

it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the

report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road Suite G106 Silver Spring, MD 20910

Telephone: 301-565-2733 Facsimile: 301-589-2017

email: info@asfe.org www.asfe.org

Copyright 2000 by ASFE, Inc. Unless ASFE grants written permission to do so, duplication of this document by any means whatsoever is expressly prohibited. Re-use of the wording in this document, in whole or in part, also is expressly prohibited, and may be done only with the express permission of ASFE or for purposes of review or scholarly research.

**MIX DESIGN FOR THE
FULL-DEPTH RECLAMATION OF
THE SOUTH RUNWAY AT
THE OHIO STATE UNIVERSITY AIRPORT
COLUMBUS, OHIO
JUNE 16, 2009**

INTRODUCTION

This report presents the results of a mix design for the planned Full-Depth Reclamation (FDR) of the south runway at The Ohio State University Airport in Columbus, Ohio. Samples of the pavement materials to be reclaimed were obtained by coring the existing asphalt and sampling the underlying base at 28 locations. Two mixes were prepared and tested in our laboratory to evaluate the use of emulsion combined with Portland cement to complete the FDR work. The results of the field and laboratory testing are presented in this report along with our recommendations for the appropriate amount of admixtures to be used during the reclamation process.

PLANNED REHABILITATION WORK

From our conversations with Mr. Dorrian Amling with Base Technologies Construction and from information gathered during our site visit, we understand that the planned rehabilitation is separated into three sections based on preliminary cores that were obtained by others. For reporting purposes, the portion of the south runway that is to be rehabilitated from stations 12+00 to 18+00 will be referred to as Section 1; the portion of the runway from stations 18+00 to 62+00 will be referred to as Section 2; and the portion of Taxiway D that is to be rehabilitated will be referred to as Section 3.

EXISTING CONDITIONS

Alligator cracking, block cracks, longitudinal cracks, transverse cracks, edge cracks, and joint cracks were present in numerous areas throughout the runway. Some of the cracks were almost 1 inch in width. The width of the runway was measured at each test location and found to vary from 97 to 100 ft. A description of the pavement condition at each test location is presented on the enclosed *Core Locations and Existing Conditions* data sheet. Photographs of the pavement at each test location are enclosed.

FIELD EXPLORATION

Pavement conditions were studied by a field exploration program consisting of 28 pavement cores. The test locations were selected by an EDP representative to provide general coverage to the project limits and also to identify specific distressed areas.

At each test location, the existing pavement was cored using a 10 inch diameter diamond-tipped core barrel, and the underlying aggregate base was sampled, when possible, in its entirety. The thickness of the asphalt and base was measured as the work progressed. The pavement was patched using ready-mix concrete and cold-mix asphalt.

The measured asphalt and base thicknesses are presented in the table titled *Existing Pavement Thickness Measurements* enclosed with this report. The approximate test locations are depicted on the attached *Core Location Plan*.

PAVEMENT PROFILE

The asphalt cores and base samples were examined and classified by a senior pavement technician.

The pavement materials encountered in Section 1 consisted of hot-mix asphalt underlain by crushed limestone base. The thickness of the hot-mix asphalt in Section 1 ranged from 6¼ to 10½ inches. The depth to the bottom of the base course exceeded the anticipated treatment depth throughout the section, and the sampling process was stopped at a depth of 16 inches. Representative locations were selected and sampled down to subgrade to identify the thickness of the base, and in those areas approximately 15¼ inches of stone was encountered. The encountered base resembled ODOT #304 gradation.

The pavement materials encountered in Section 2 also consisted of hot-mix asphalt underlain by granular base, however, the asphalt thicknesses in this section were greater than in Section 1. The thickness of the hot-mix asphalt ranged from 10¼ to 14½ inches. The depth to the bottom of the base course in Section 2 also exceeded the anticipated treatment depth, and in several areas the sampling process was stopped at a depth of 16 inches. At various test locations, the base was sampled in its entirety, with measured thicknesses ranging from 7 to 15 inches.

The pavement materials encountered in Section 3 also consisted of hot-mix asphalt underlain by granular base. The thickness of the hot-mix asphalt ranged from 8¾ to 9 inches, and the base thickness ranged from 10 to 13¼ inches.

MIX DESIGN

Pre-Pulverization Depth

Based on the pavement thicknesses in Sections 1, 2, and 3, and considering the planned initial milling and removal of 2 inches of asphalt, a pre-pulverization depth of 12 inches is appropriate for Sections 1 and 3, and a pre-pulverization depth of 14 inches is appropriate for Section 2.

Sample Preparation

The cores from each section were pulverized to a size judged similar to that produced in the field using a reclaimer/stabilizer. The pulverized asphalt from the three sections was combined into a single composite sample. The base material was also combined to create a single composite sample.

Extraction with Gradation Testing

A representative portion of the composite sample of pulverized asphalt was tested for extracted bitumen content and gradation in general accordance with ASTM D2172. The test results are presented on the enclosed data sheet.

Mix Preparation and Ratio Blending

Based on the pre-pulverization depth of 12 inches in Section 1, the average condition expected to be encountered will consist of approximately 53% asphalt and 47% aggregate base, by volume. Based on a 12 inch pre-pulverization depth in Section 3, the pulverized materials will consist of a similar mix of 57% asphalt and 43% aggregate base, by volume. Because of the similarity of these two mixes, we elected to complete a mix design for Sections 1 and 3, with 53% asphalt and 47% aggregate base. In Section 2 with a 14 inch pre-pulverization depth, the average condition mix will consist of 73% asphalt and 27% aggregate base material, by volume, and a separate mix was prepared to represent this condition.

Modified Proctor and Gradation Testing

Representative samples from both mixes were tested for their Modified Proctor moisture-density relationship in general accordance with ASTM D1557. Samples of the blended mixes were also tested for particle size distribution in general accordance with ASTM C136. The test results are presented on the attached data sheets.

Strength Testing for Sections 1 and 3

The water content of a representative portion of the mix was adjusted to approximately 90% of optimum, as determined by Modified Proctor testing. The percentage of optimum was selected based on our experience from previous reclamation projects.

A portion of the moisture-conditioned material was divided into five sets of nine, 1,200 gram samples. The sets were used to prepare Marshall briquettes for strength testing. The briquettes were prepared by treating the material with an HFRE emulsion at application rates varying from 1.2 to 2.0 gal/yd², in 0.2 gal/yd² increments. Portland cement was added at an application rate of 2% by weight to each sample at each emulsion application rate. Nine briquettes per emulsion application rate were prepared using heavy-duty Marshall methods utilizing 4 inch diameter molds.

After the briquettes were cured for seven days at ambient temperature, they were measured for height, weight, and diameter. Each set of briquettes was then tested in the following manner:

- Three of the nine briquettes from each set were tested for dry indirect tensile strength (ITS).
- Three briquettes were soaked in a vacuum bath for 1 hour and then tested for soaked ITS.
- The last three briquettes from each set were soaked in a circulating water bath at 140 degrees Fahrenheit for 30 minutes before being tested for stability and flow.

Strength Testing for Section 2

Testing for Section 2 was completed in the same manner as for Sections 1 and 3.

Additional Engineering Properties

Maximum theoretical density (MTD) was determined for a sample representing each emulsion application rate in general accordance with ASTM D2041. A sample representing each emulsion content was also tested for percent air voids in general accordance with ASTM D3203.

The test results for both mixes were tabulated and graphed, copies of which are enclosed.

ENGINEERING INTERPRETATION & RECOMMENDATIONS

Discussion

All of the mixes tested using a combination of 2% Portland cement and emulsion produced results meeting typically specified minimum strengths for FDR projects: 1,200 lbs stability, 250 kPa dry ITS, and 70% retained strength when soaked. For Sections 1 and 3, we recommend using an emulsion application rate of 1.2 gal/yd² in conjunction with 2% Portland cement. The average stability value using 1.2 gal/yd² was 5,454 lbs with a flow of 16.3 and an air void content of 12.4%. The average dry ITS was 692 kPa and the average soaked, 651 kPa. The mix retained approximately 94% of its dry strength when soaked.

For Section 2, we also recommend using an emulsion application rate of 1.2 gal/yd² in conjunction with 2% Portland cement. The average stability value using 1.2 gal/yd² was 2,610 lbs with a flow of 17.0 and an air void content of 12.5%. The average dry ITS was 533 kPa and the average soaked, 440 kPa. The mix retained approximately 83% of its dry strength when soaked. A summary of the test results is presented on the enclosed graphs. A brief summary of the test results is presented in the following tables. These values are the average of three briquettes for each test.

Table 1. Sections 1 and 3 - 53% Asphalt and 47% Base

Emulsion Rate (gal/yd ²)	Portland Cement (%)	Stability (lbs)	Flow (in/100 in)	Dry ITS (kPa)	Soaked ITS (kPa)	Retained Strength (%)
1.2	2	5,454	16.3	692	651	94
1.4	2	3,951	14.5	696	679	98
1.6	2	3,970	15.5	685	577	84
1.8	2	3,878	12.7	647	551	85
2.0	2	3,336	15.5	647	533	82

Table 2. Section 2 - 73% Asphalt and 27% Base

Emulsion Rate (gal/yd ²)	Portland Cement (%)	Stability (lbs)	Flow (in/100 in)	Dry ITS (kPa)	Soaked ITS (kPa)	Retained Strength (%)
1.2	2	2,610	17.0	533	440	83
1.4	2	2,555	16.5	571	506	89
1.6	2	2,105	12.0	548	512	93
1.8	2	2,047	13.7	599	485	81
2.0	2	2,320	13.7	560	409	73

Verification Testing

Verification testing was completed on mixes from Section 1 and from Section 2. The two mixes represent what we would consider the least favorable conditions of Sections 1 and 2. The first

verification mix represented test location C-8, where the asphalt thickness will be 4¾ inches after 2 inches are milled and removed. This would result in a mix consisting of approximately 40% asphalt and 60% base. The second verification mix represented test location C-12, where the asphalt thickness will be 12½ inches after 2 inches are milled and removed. This would result in a mix consisting of approximately 89% asphalt and 11% base.

The emulsion application rate for each verification mix was referenced to the maximum dry density determined during the testing of Sections 1 and 2. Both verification mixes used an application rate of 1.2 gal/yd² to match the application rate selected for each.

The first verification mix indicated an average stability value of 1,726 lbs with a flow of 13.5 and an air void content of 8.4%. The average dry ITS was 483 kPa and the average soaked, 455 kPa. The mix retained approximately 94% of its dry strength when soaked.

The second verification mix indicated an average stability value of 6,768 lbs with a flow of 16.5 and an air void content of 8.8%. The average dry ITS was 700 kPa and the average soaked, 667 kPa. The mix retained approximately 95% of its dry strength when soaked.

Both verification mixes indicated that the intended emulsion application rates would provide acceptable strengths for the least favorable conditions in both Sections 1 and 2.

Summary Tables

Reclamation Summary Mix 1 & Verification Mix 1	
Pre-Pulverization Depth	12 inches
Treatment Depth (specified by others)	12 inches
HFRE Emulsion Application Rate	1.2 gal/yd ²
Portland Cement Application Rate	2%
Material Density for Calculation of Portland Cement Application Rate	136.2 pcf

Reclamation Summary Mix 2 & Verification Mix 2	
Pre-Pulverization Depth	14 inches
Treatment Depth (specified by others)	12 inches
HFRE Emulsion Application Rate	1.2 gal/yd ²
Portland Cement Application Rate	2%
Material Density for Calculation of Portland Cement Application Rate	124.3 pcf

NOTE

The reclaimed pavement will need to be swept of all loose material and treated with a tack coat prior to surfacing with hot-mix asphalt. We recommend that the stabilized mat be allowed to cure for at least five days. Construction or other heavy traffic should not be allowed to travel the stabilized mat during the cure period. The project's construction schedule should assure that the recommended cure period can be achieved.

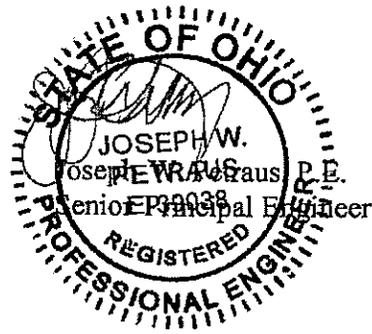
The stabilized base course (SBC) should be graded to drain toward the edges of the runway, and edge and finger drains should be provided.

Field Changes & Quality Control

Adjustments to the recommended stabilization details will likely need to be made due to varying field conditions. We recommend that a senior engineering technician or engineer from our firm be on-site during the stabilization process to help determine required adjustments, test the compaction of the treated materials, and prepare representative field specimens to be tested in the laboratory for verification purposes.

SIGNATURES

Steven S. Taylor
Steven S. Taylor, C.E.T.
Senior Pavement Technician



CORE LOCATIONS & EXISTING CONDITIONS

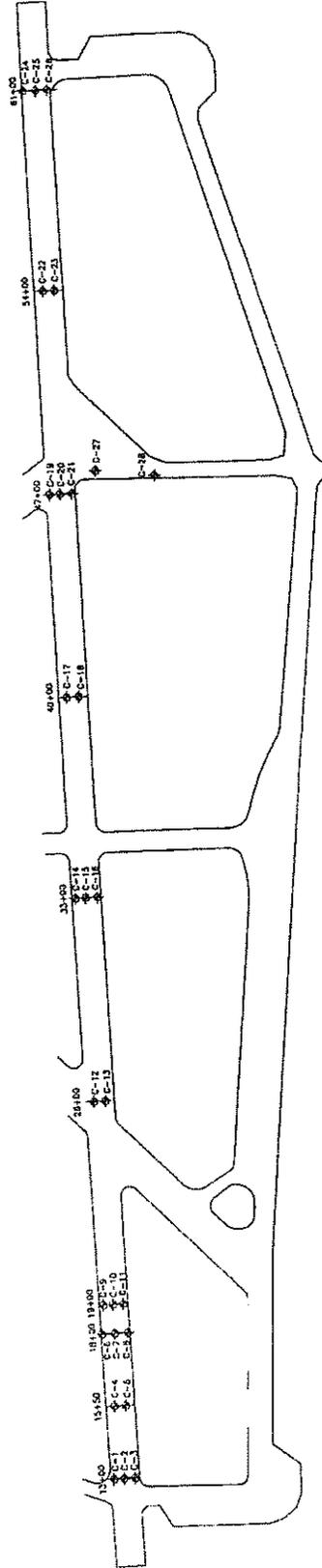
Ohio State University Airport Phase III
Columbus, Ohio
EDP #09060G

Core #	Station	Lane	Distance from Edge of Pavement (feet)	Width of Existing Pavement (feet)	Existing Pavement Conditions
C-1	13+00	N/A	11' south of north edge	97	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-2	13+00	N/A	45' south of north edge	97	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-3	13+00	N/A	82' south of north edge	97	Block cracks, longitudinal cracks, transverse cracks, joint cracks with some sealing, and 1 inch cracks
C-4	15+50	N/A	30' south of north edge	100	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-5	15+50	N/A	70' south of north edge	100	Block cracks, longitudinal cracks, transverse cracks, joint cracks with some sealing, and 1 inch cracks
C-6	18+00	N/A	4' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-7	18+00	N/A	50' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks with some sealing, and 1 inch cracks
C-8	18+00	N/A	92' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-9	19+00	N/A	15' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-10	19+00	N/A	46' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-11	19+00	N/A	83' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-12	26+00	N/A	30' south of north edge	100	Block cracks, alligator cracking, longitudinal cracks, transverse cracks, joint cracks, and cracks 1/2" to 1"
C-13	26+00	N/A	70' south of north edge	100	Block cracks, alligator cracking, longitudinal cracks, transverse cracks, joint cracks, and cracks 1/2" to 1"
C-14	33+00	N/A	12' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing

CORE LOCATIONS & EXISTING CONDITIONS

Ohio State University Airport Phase III
Columbus, Ohio
EDP #09060G

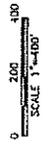
Core #	Station	Lane	Distance from Edge of Pavement (feet)	Width of Existing Pavement (feet)	Existing Pavement Conditions
C-15	33+00	N/A	50' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-16	33+00	N/A	87' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-17	40+00	N/A	28' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-18	40+00	N/A	68' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks and some crack sealing
C-19	47+00	N/A	12' south of north edge	98	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-20	47+00	N/A	on center	98	Block cracks, transverse cracks, longitudinal cracks, and joint cracks
C-21	47+00	N/A	87' south of north edge	98	Block cracks, transverse cracks, longitudinal cracks, joint cracks, and cracks 1/4" to 1"
C-22	54+00	N/A	30' south of north edge	100	Block cracks, longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-23	54+00	N/A	70' south of north edge	100	Block cracks, alligator cracks, transverse cracks, longitudinal cracks, joint cracks, and cracks 1/2" to 1"
C-24	61+00	N/A	4' south of north edge	100	Block cracks, alligator cracks, transverse cracks, longitudinal cracks, joint cracks, and crack sealing
C-25	61+00	N/A	52' south of north edge	100	Block cracks, alligator cracking longitudinal cracks, transverse cracks, joint cracks, and some crack sealing
C-26	61+00	N/A	89' south of north edge	100	Block cracks, alligator cracks, transverse cracks, longitudinal cracks, joint cracks, and sealing
C-27	75' South of Runway	N/A	30' east of west edge	47	Block cracks, transverse cracks, and longitudinal cracks
C-28	205' South of Runway	N/A	10' east of west edge	50	Block cracks, transverse cracks, and longitudinal cracks



EDP Consultants, Inc.
9375 CHILLECOTTE RD., KIRTLAND, OH, 44094
PHONE: 440.276.9552 FAX: 440.276.9531

CORE LOCATION PLAN
O.S.U. AIRPORT PHASE III
COLUMBUS, OHIO
PROJECT NO. D92565

DWG DATE: 8-2-05
DWS BY: HRP
APPROVED BY: JAL





Test Location C-1



Overview of Test Location C-1



Test Location C-2



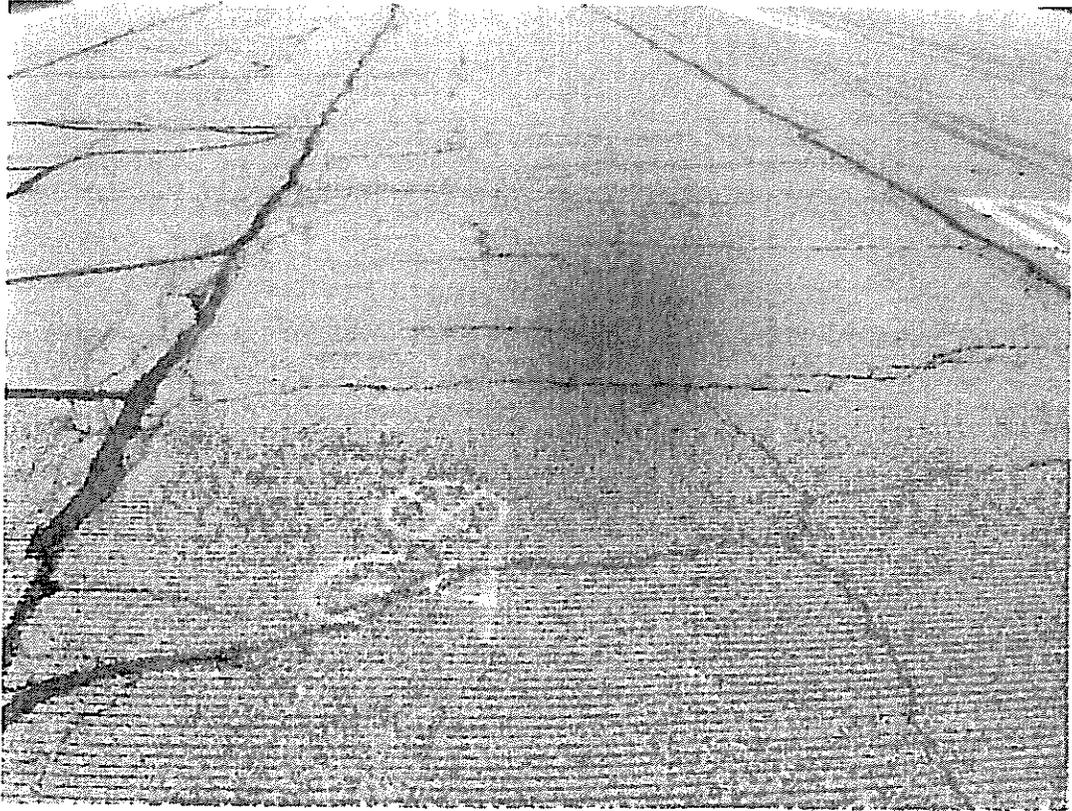
Overview of Test Location C-2



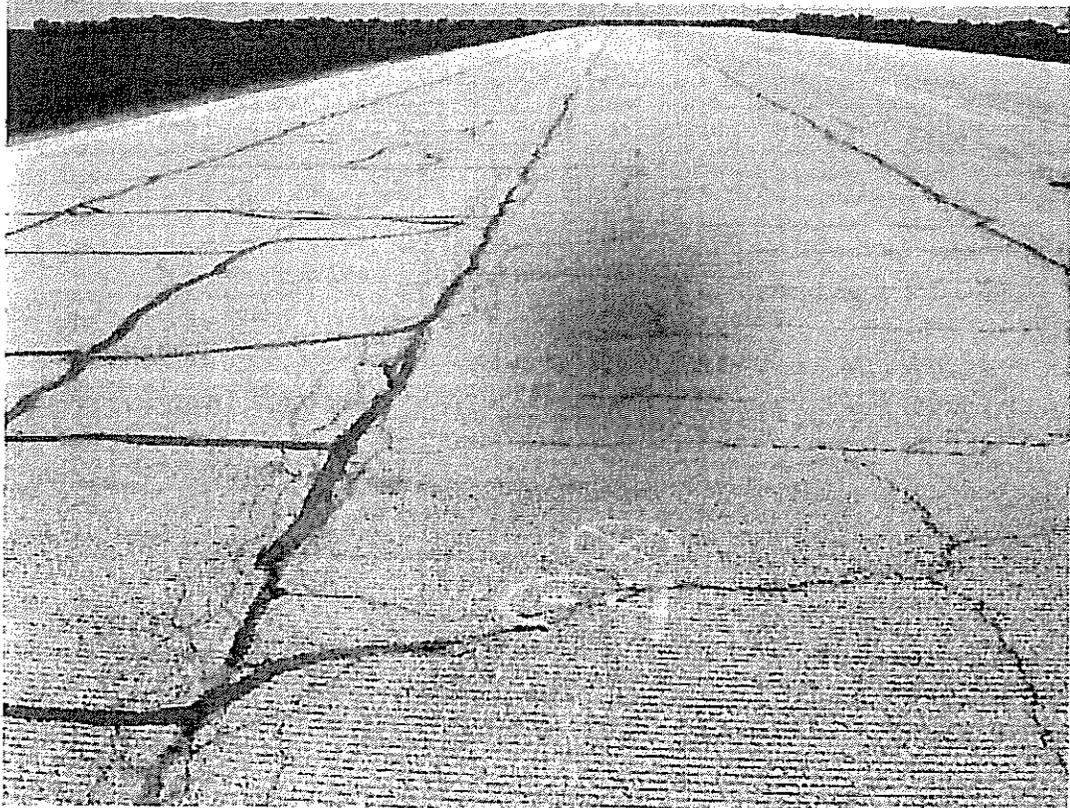
Test Location C-3



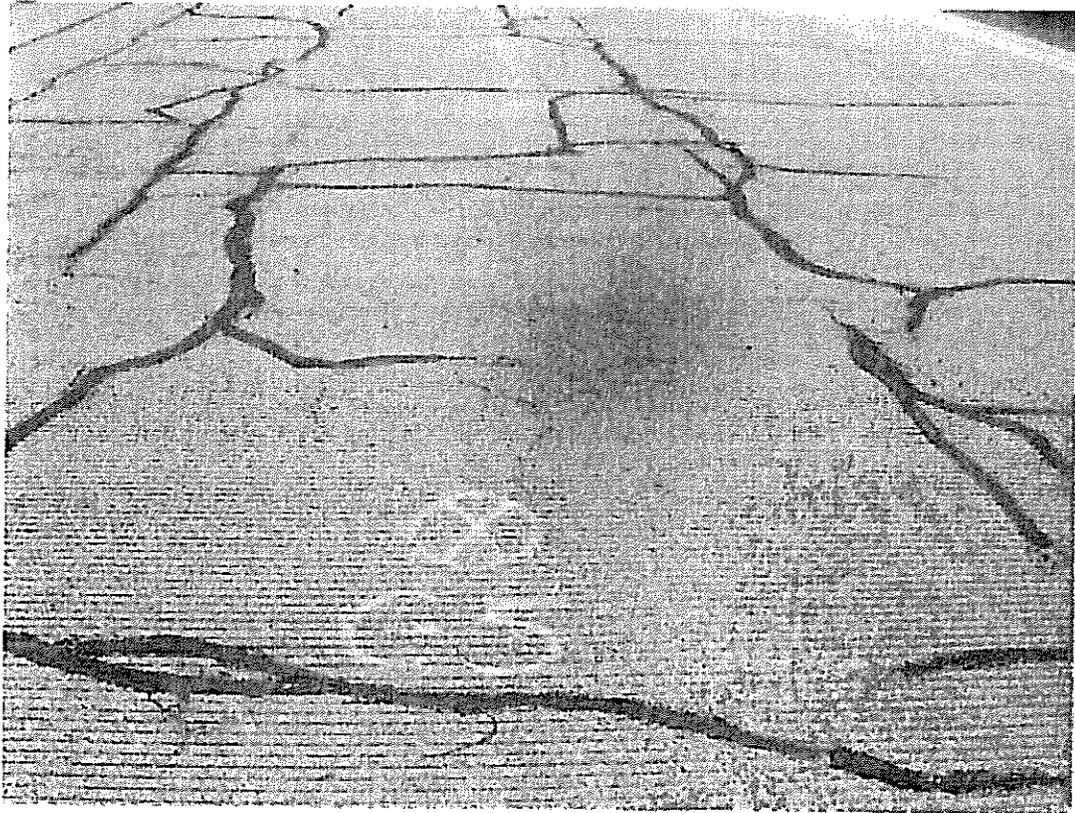
Overview of Test Location C-3



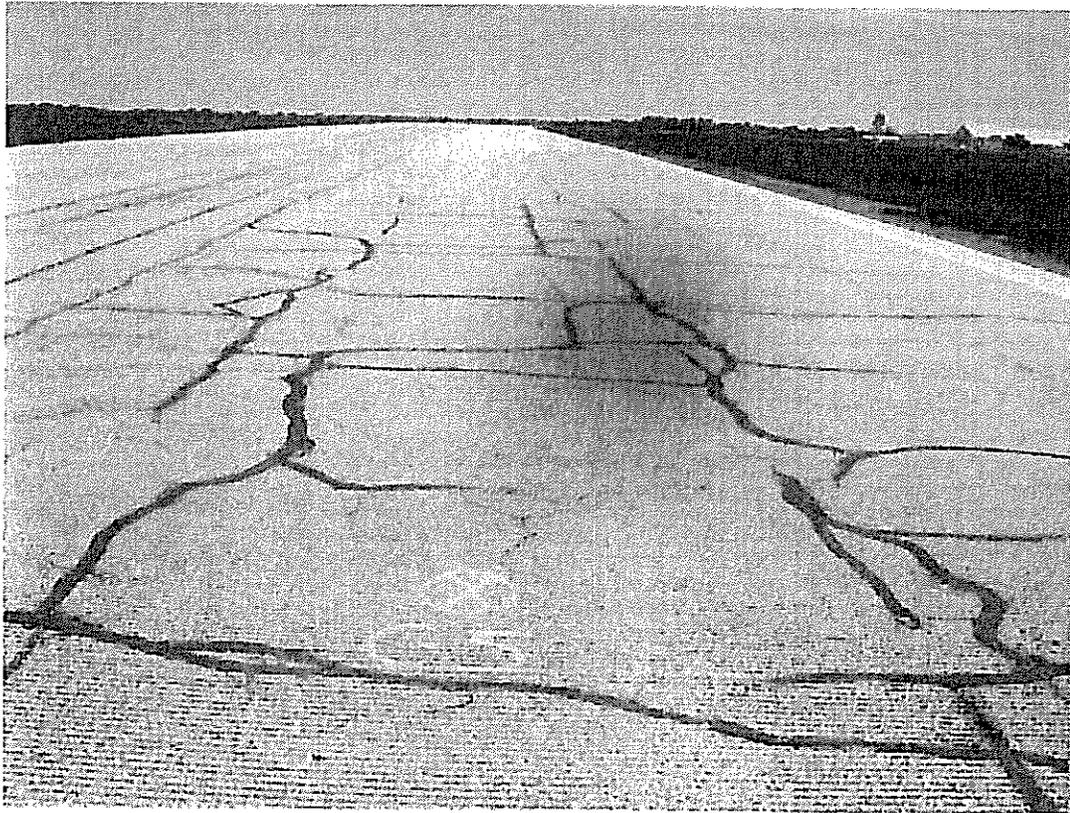
Test Location C-4



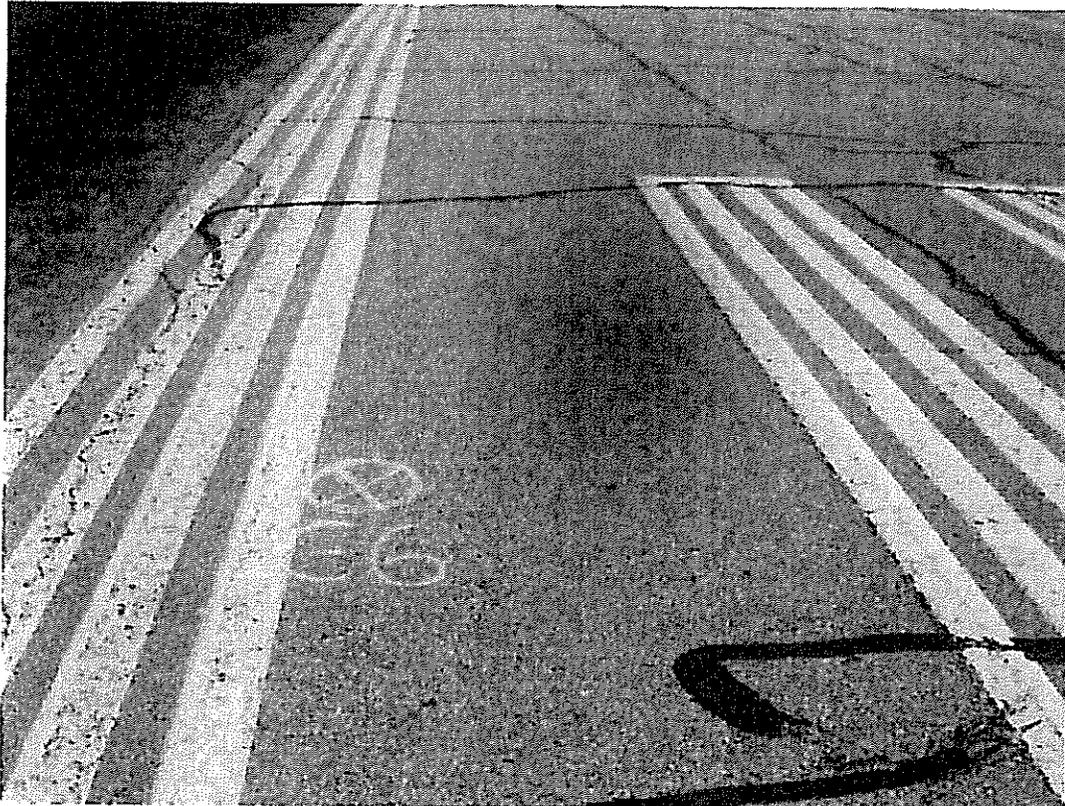
Overview of Test Location C-4



Test Location C-5



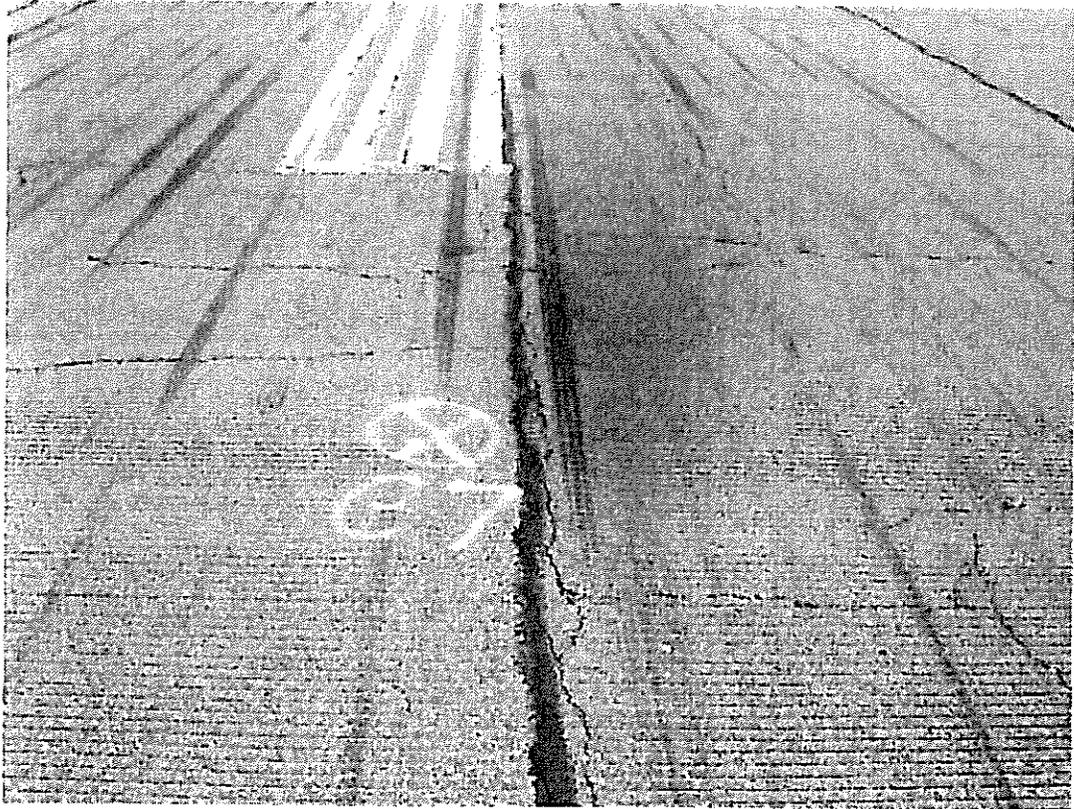
Overview of Test Location C-5



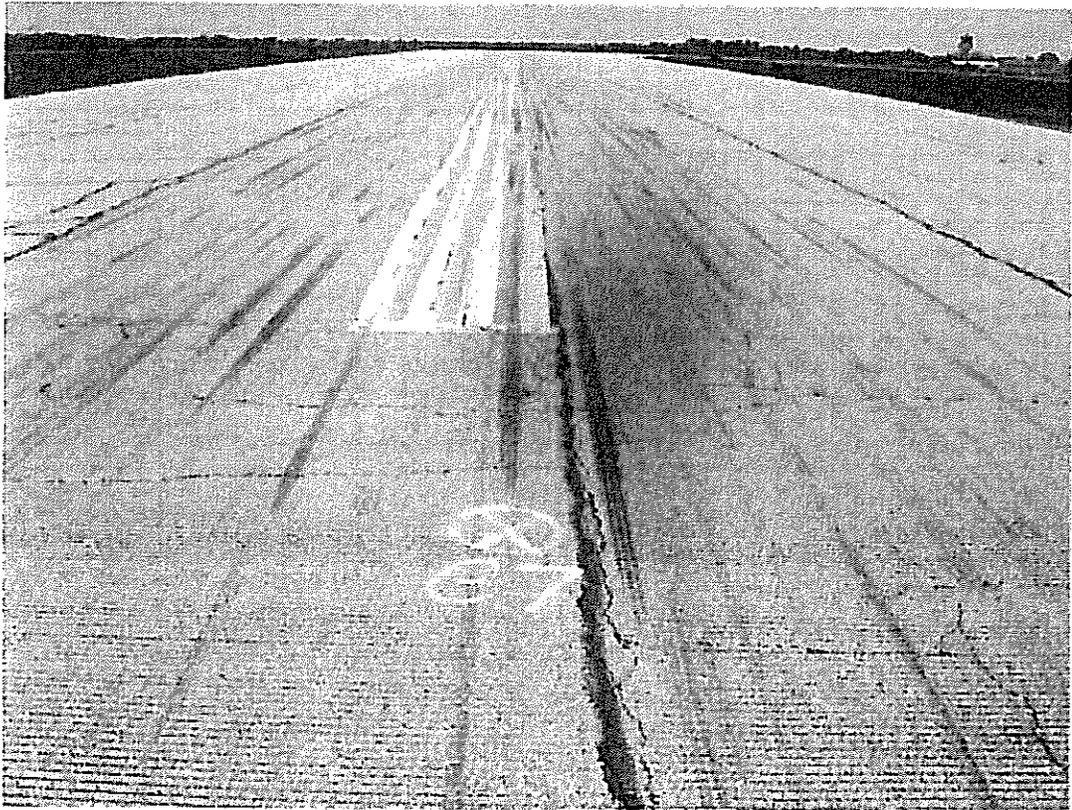
Test Location C-6



Overview of Test Location C-6



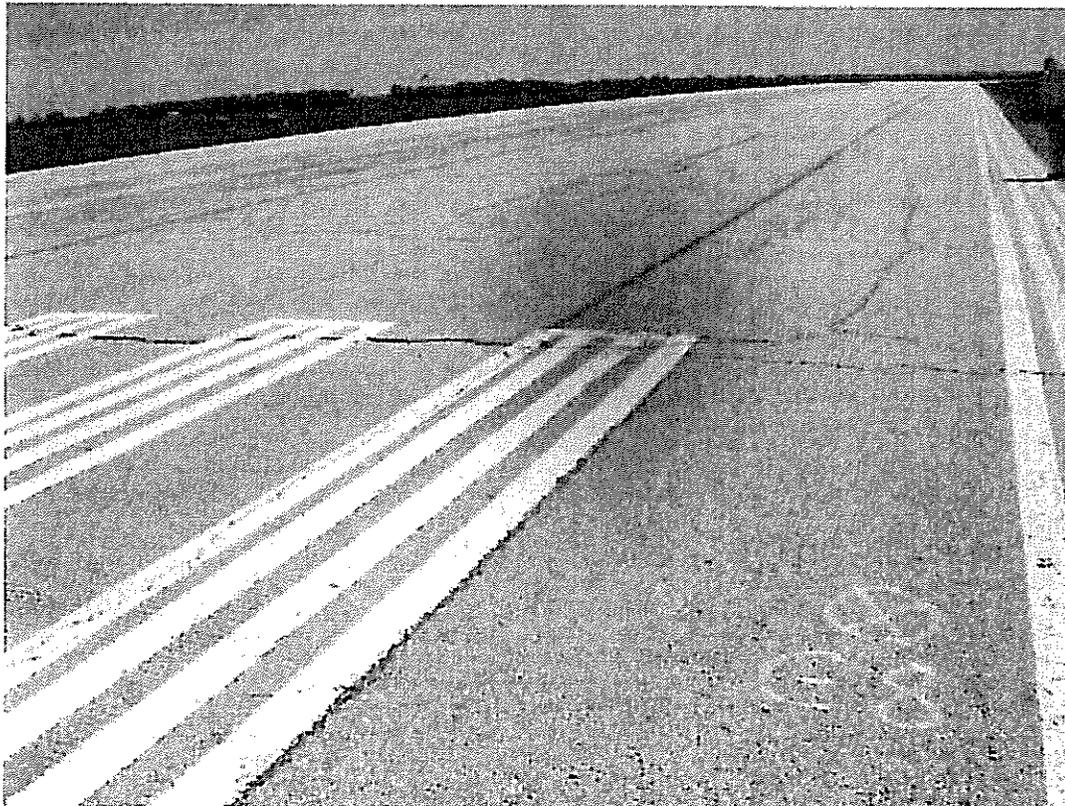
Test Location C-7



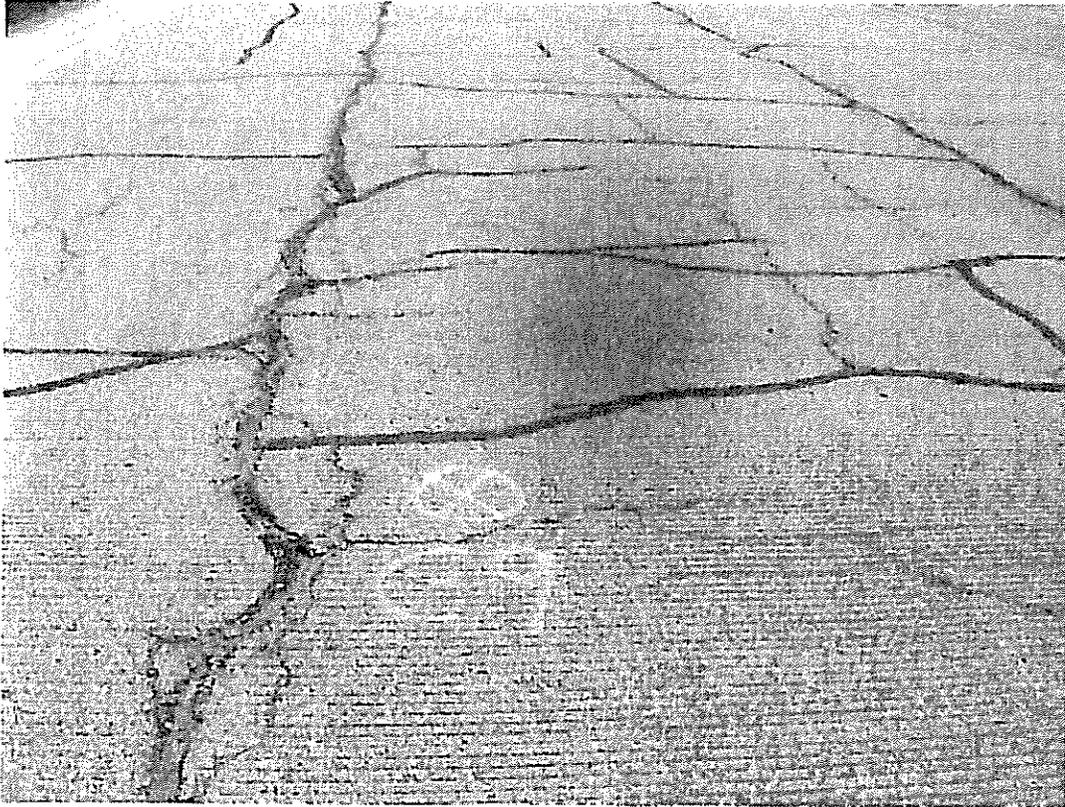
Overview of Test Location C-7



Test Location C-8



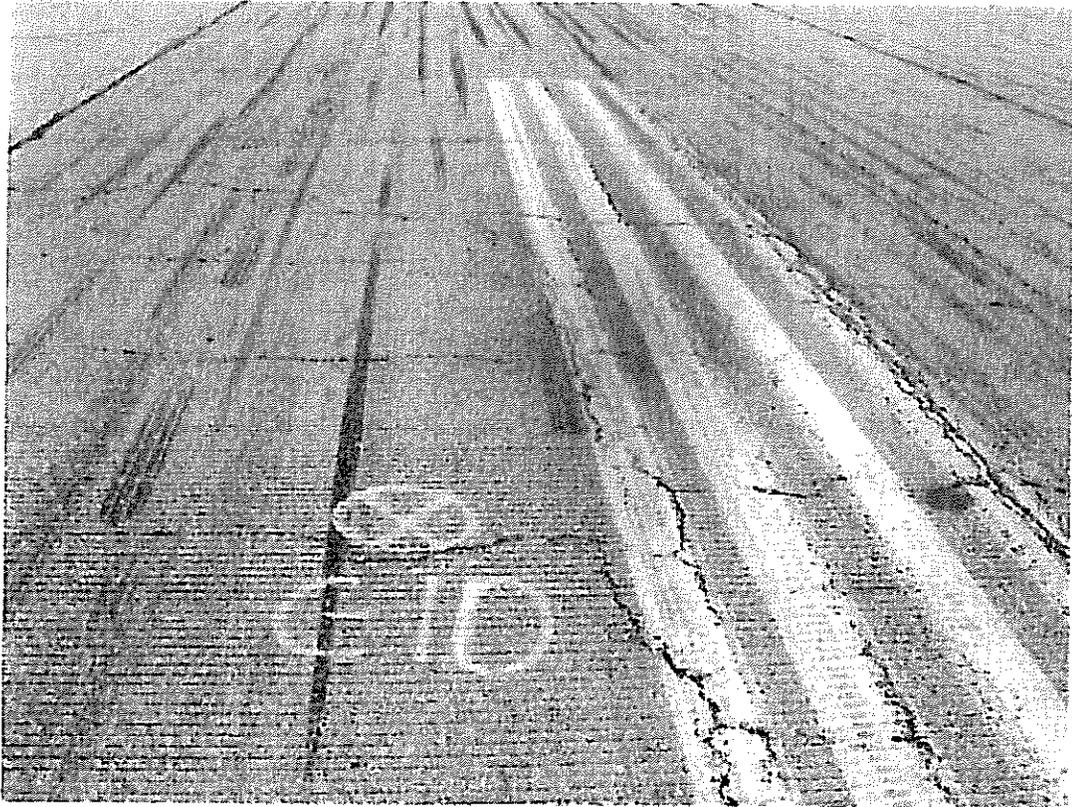
Overview of Test Location C-8



Test Location C-9



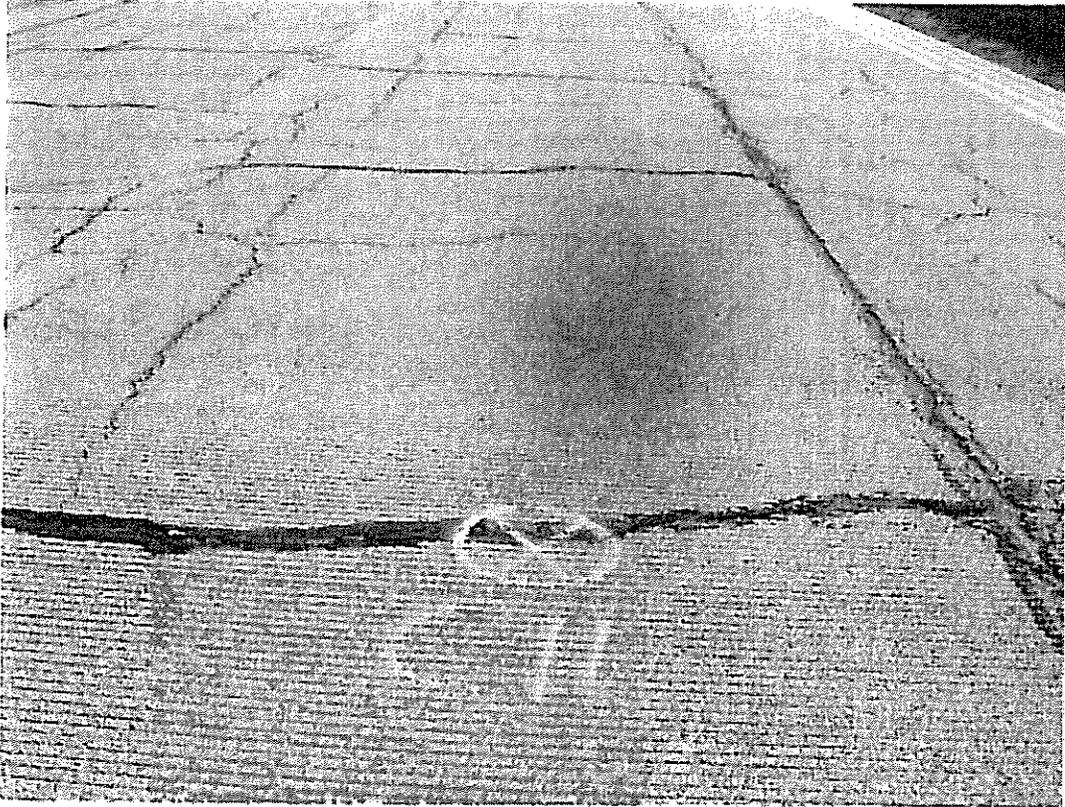
Overview of Test Location C-9



Test Location C-10



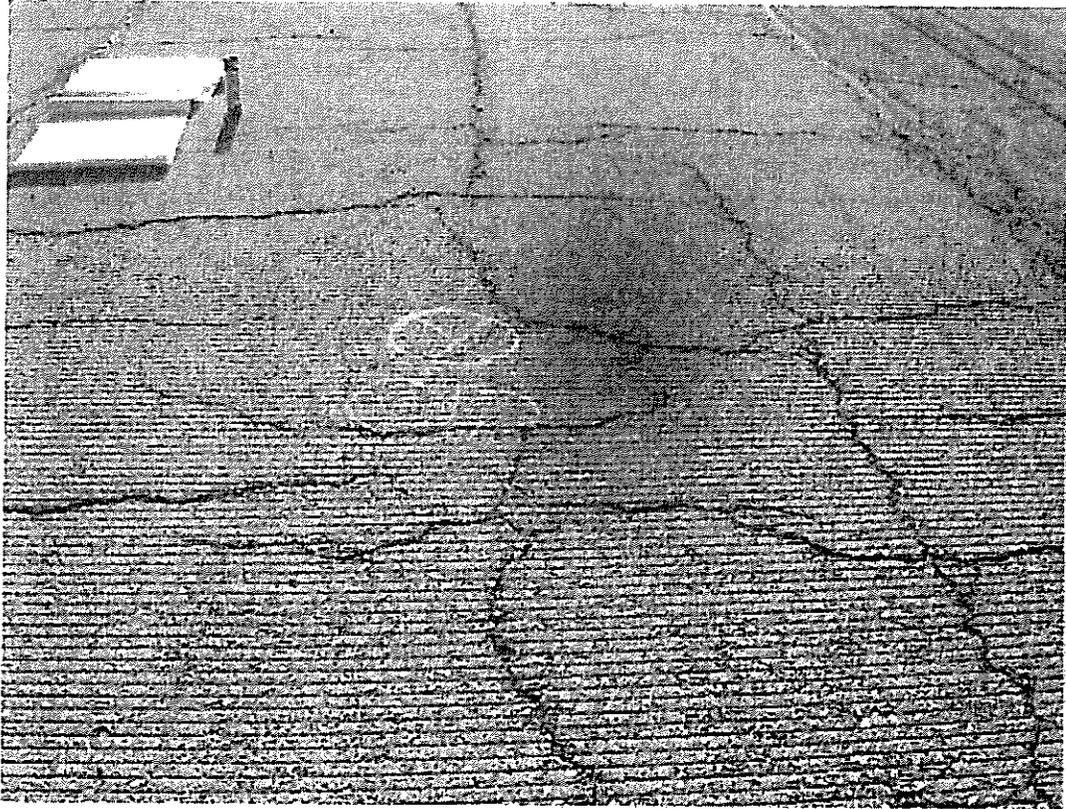
Overview of Test Location C-10



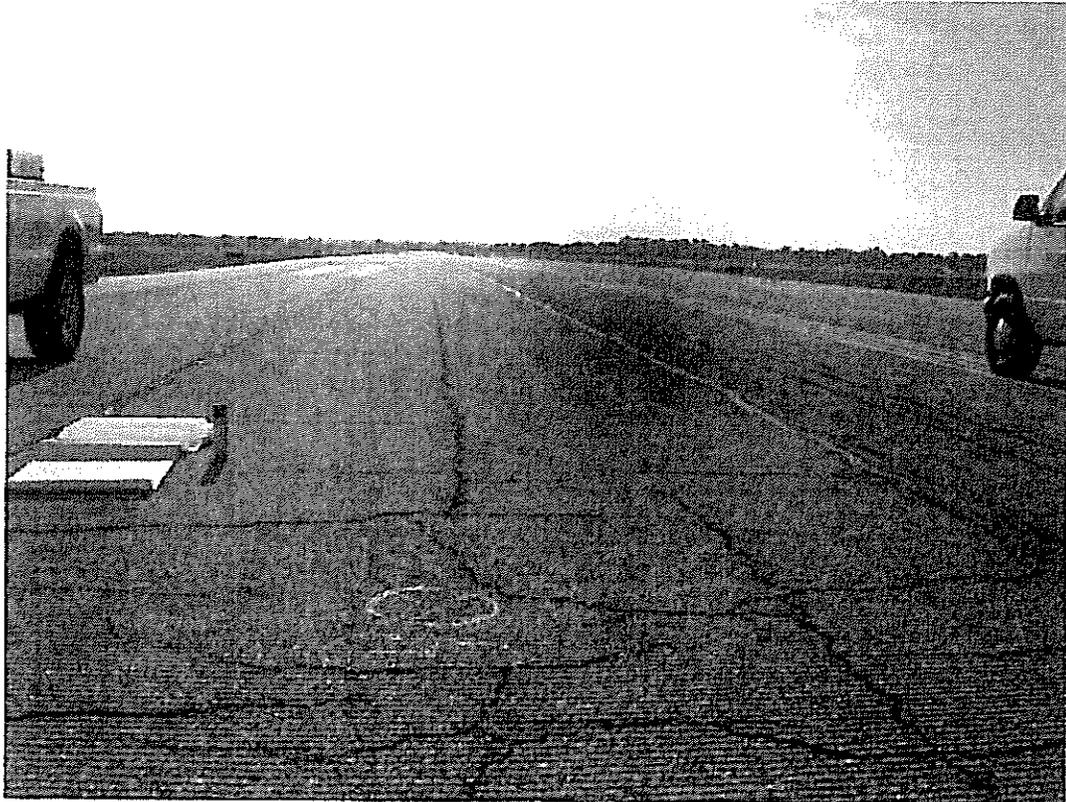
Test Location C-11



Overview of Test Location C-11



Test Location C-12



Overview of Test Location C-12



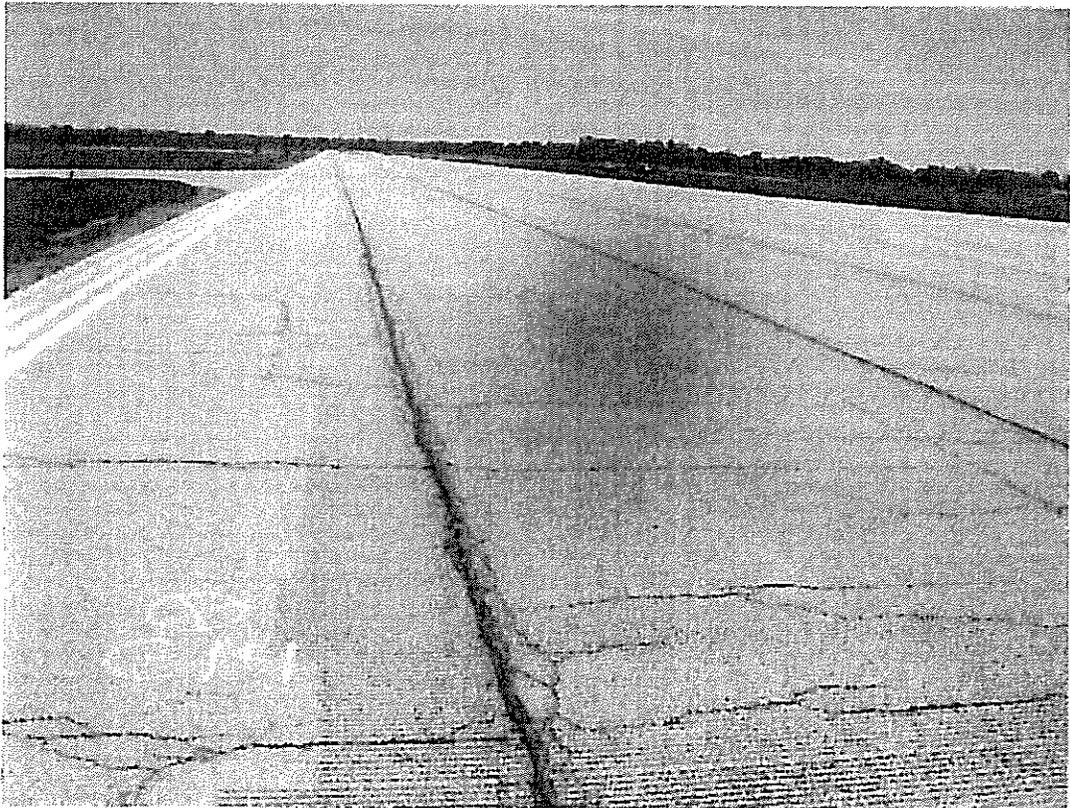
Test Location C-13



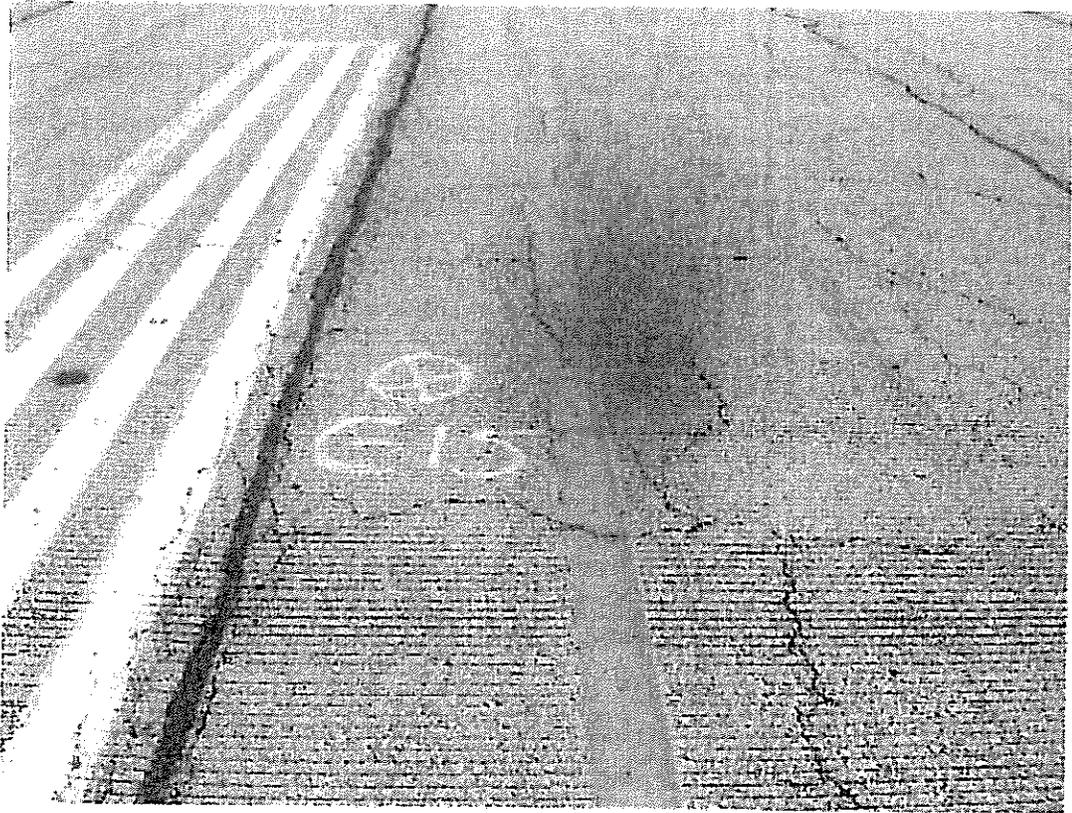
Overview of Test Location C-13



Test Location C-14



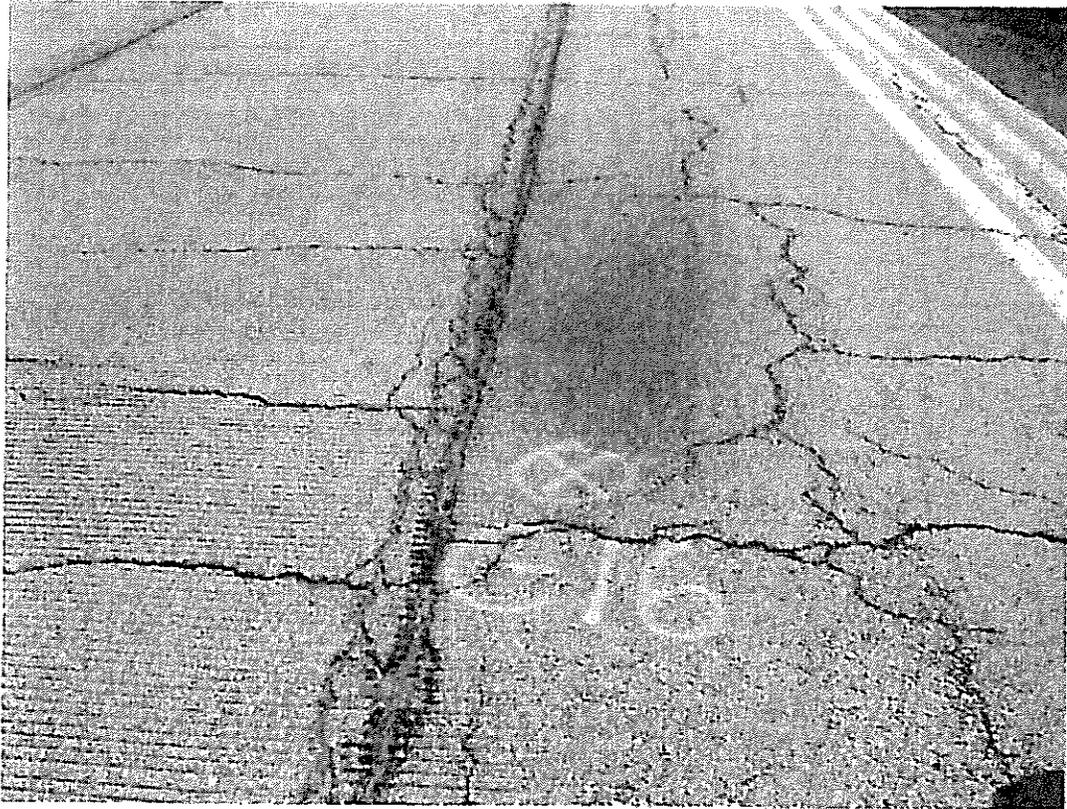
Overview of Test Location C-14



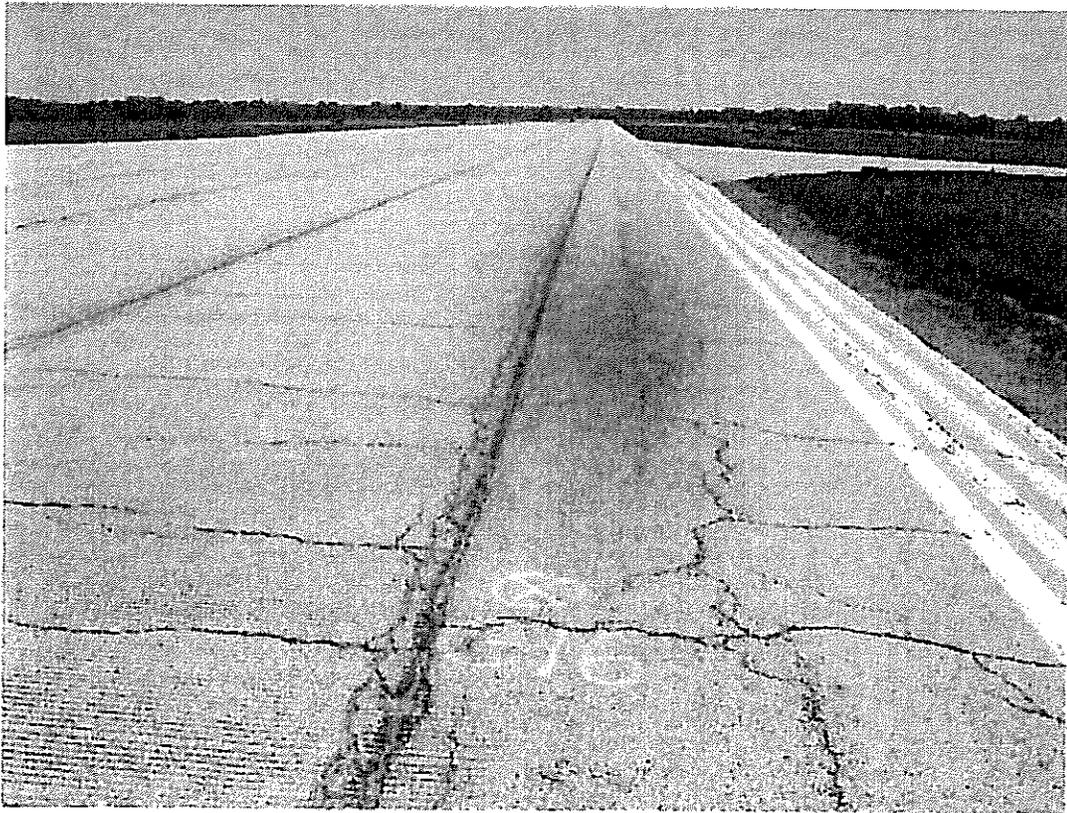
Test Location C-15



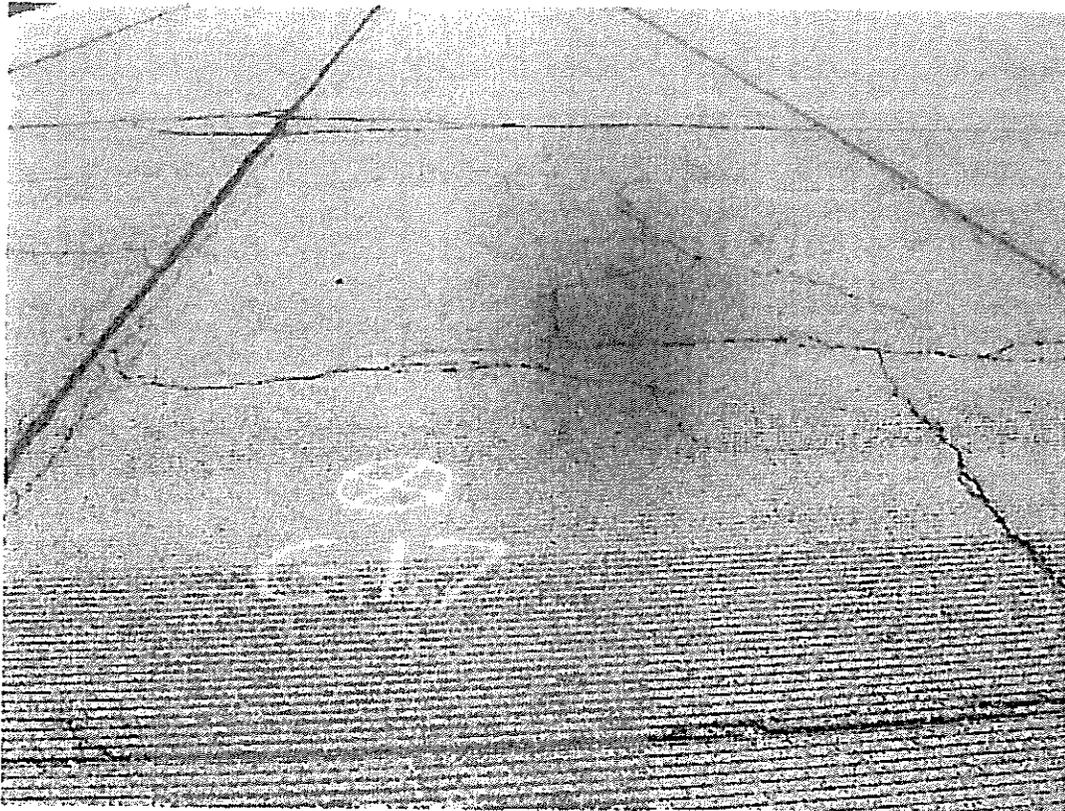
Overview of Test Location C-15



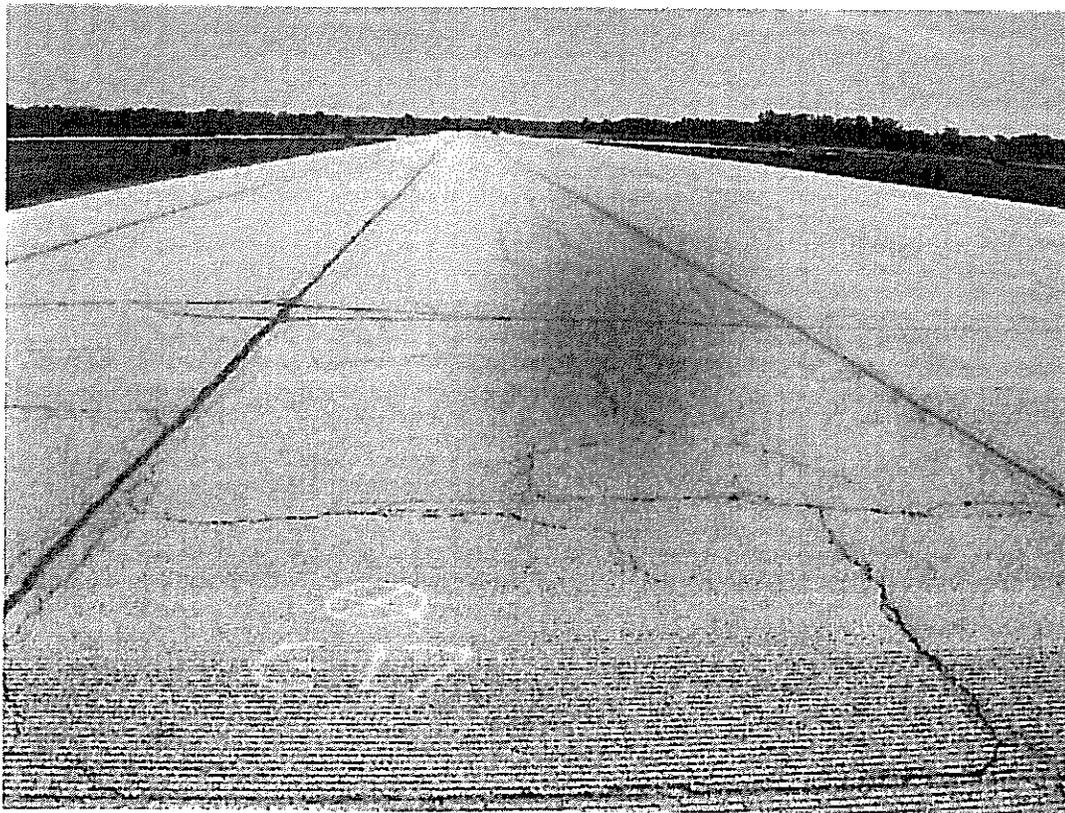
Test Location C-16



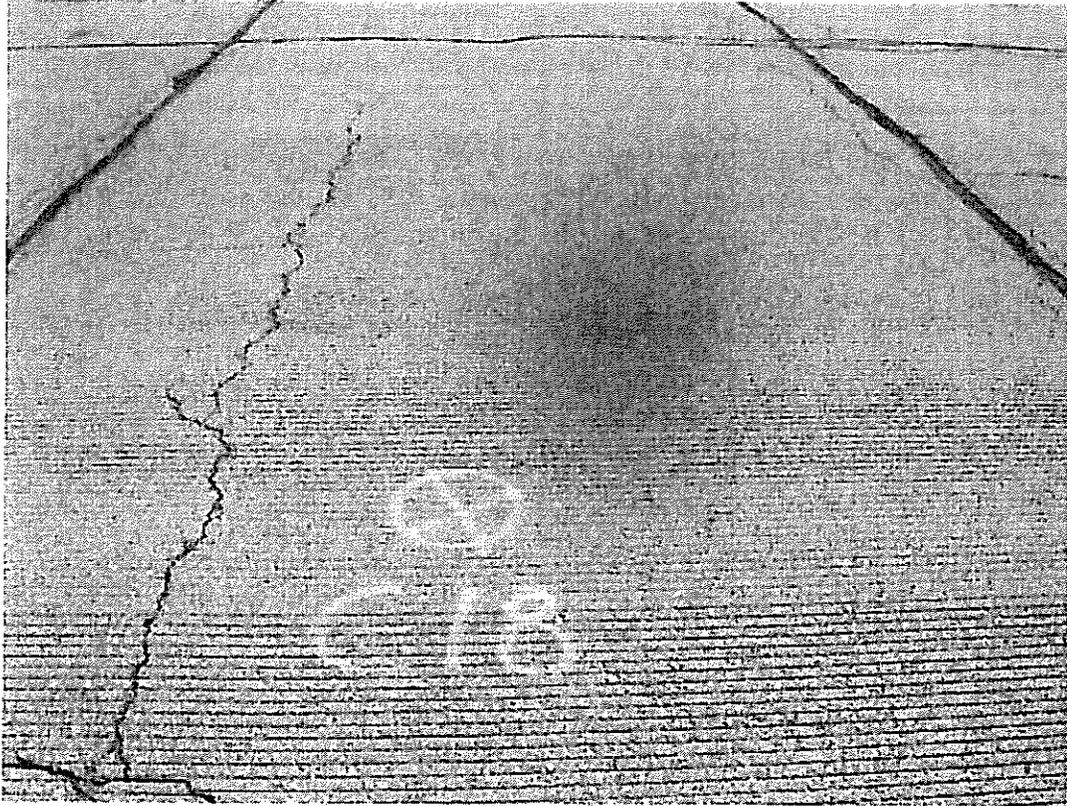
Overview of Test Location C-16



Test Location C-17



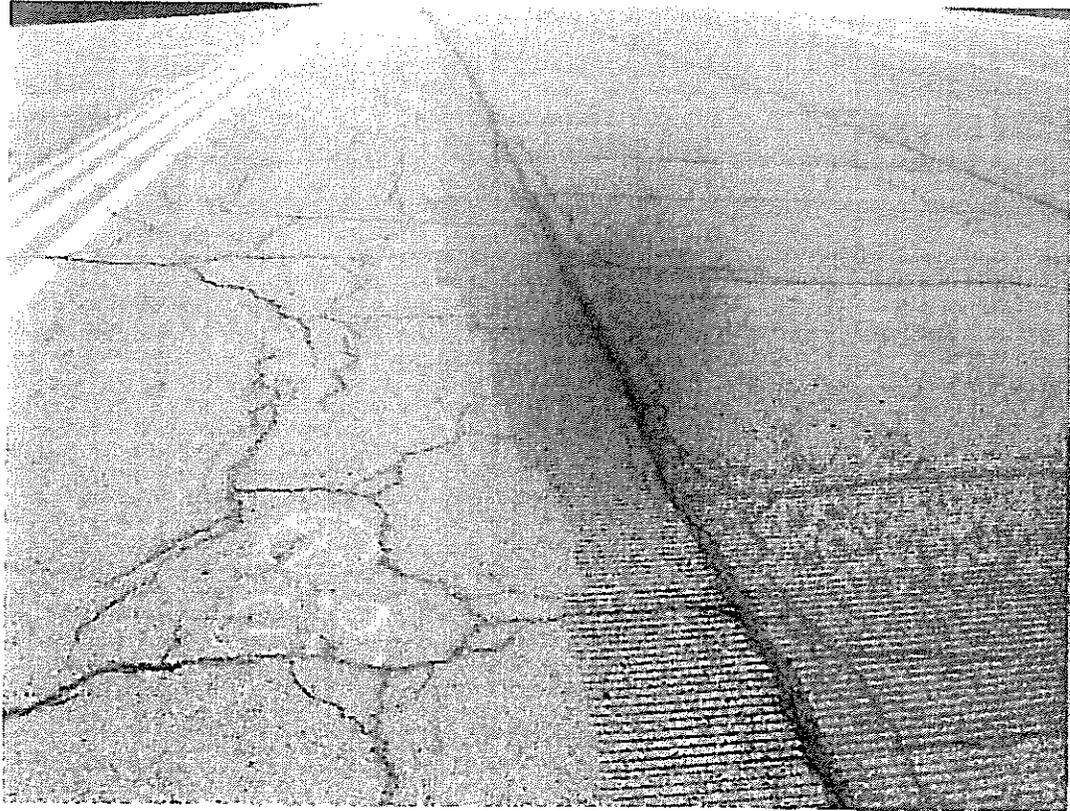
Overview of Test Location C-17



Test Location C-18



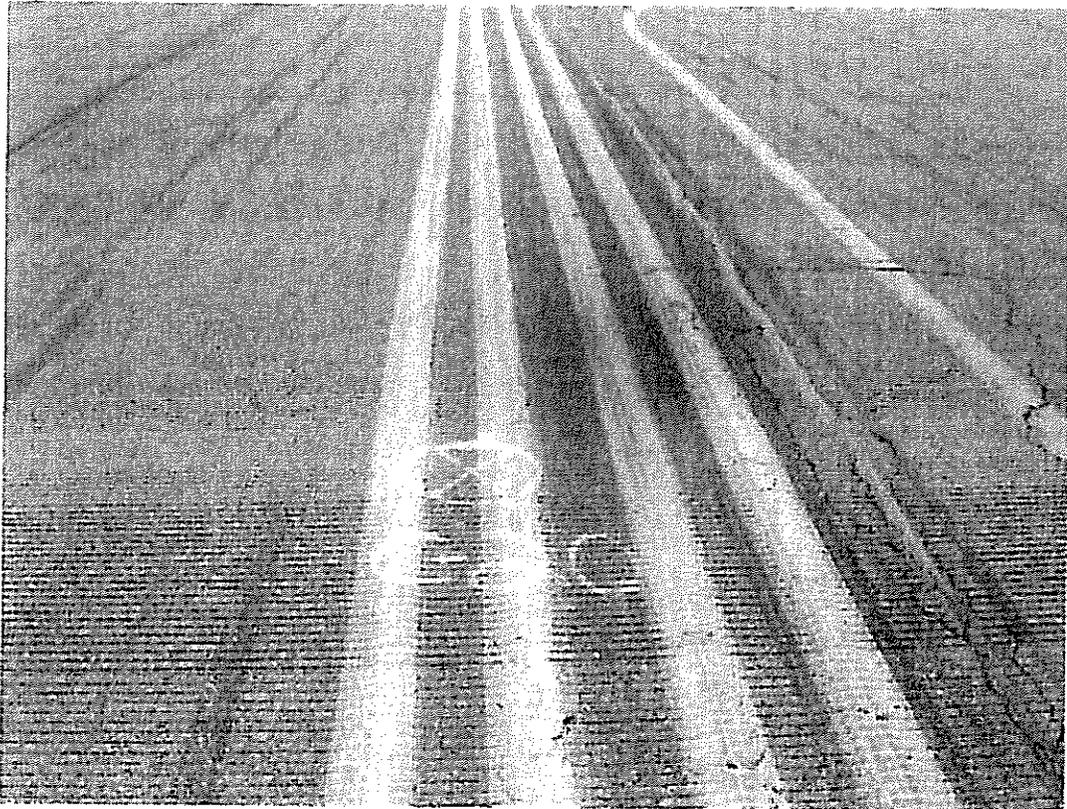
Overview of Test Location C-18



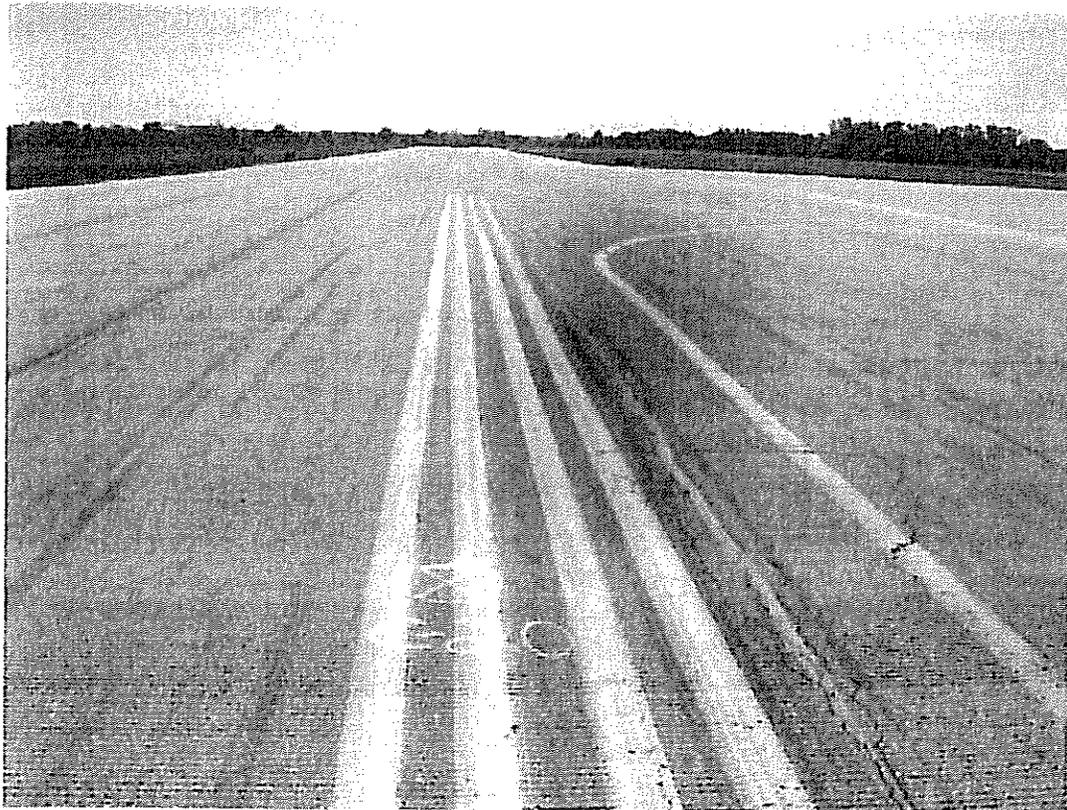
Test Location C-19



Overview of Test Location C-19



Test Location C-20



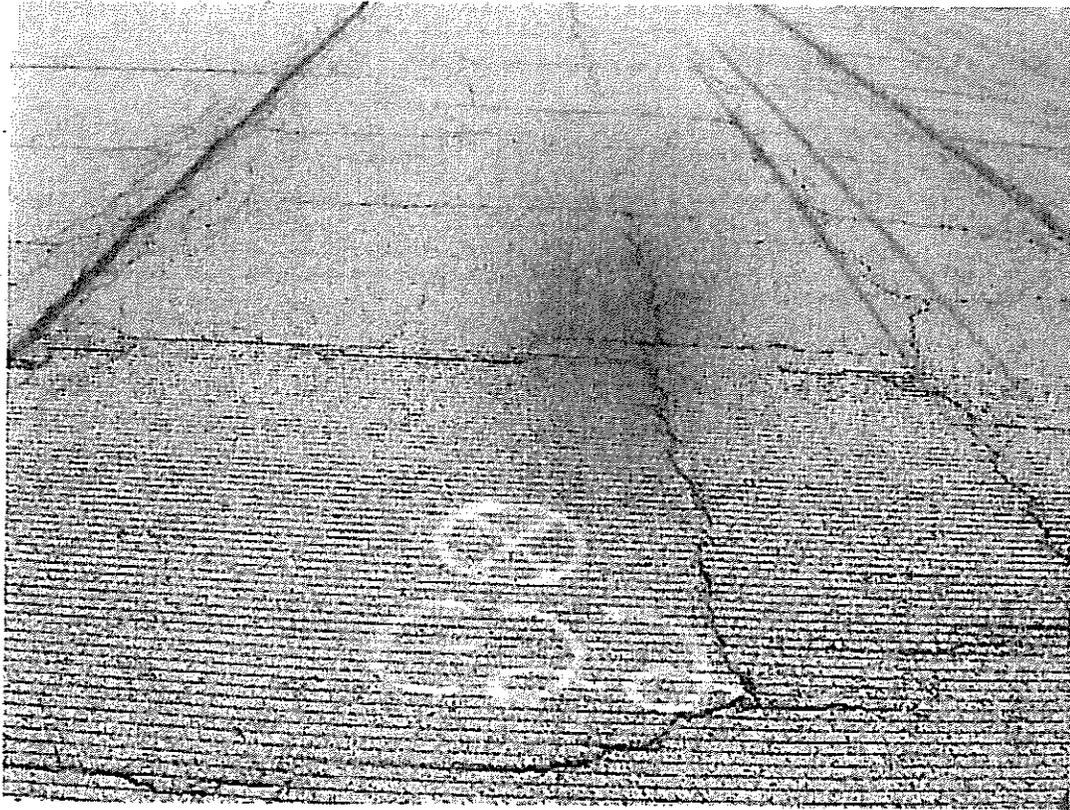
Overview of Test Location C-20



Test Location C-21



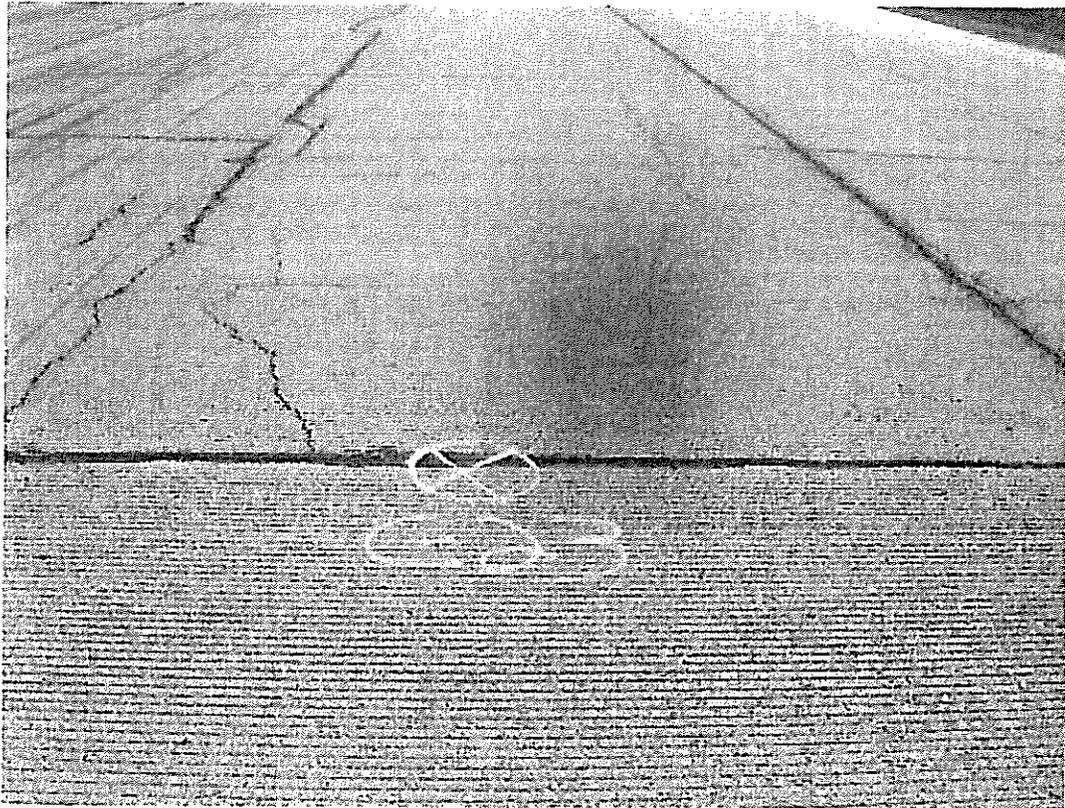
Overview of Test Location C-21



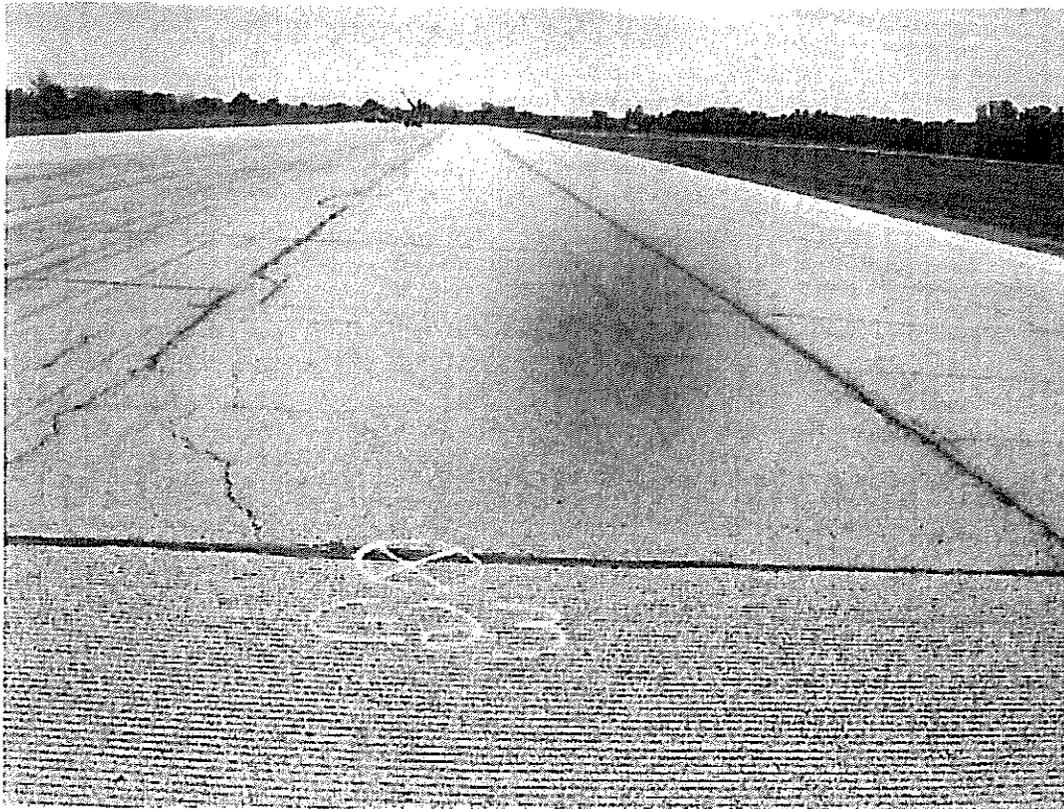
Test Location C-22



Overview of Test Location C-22



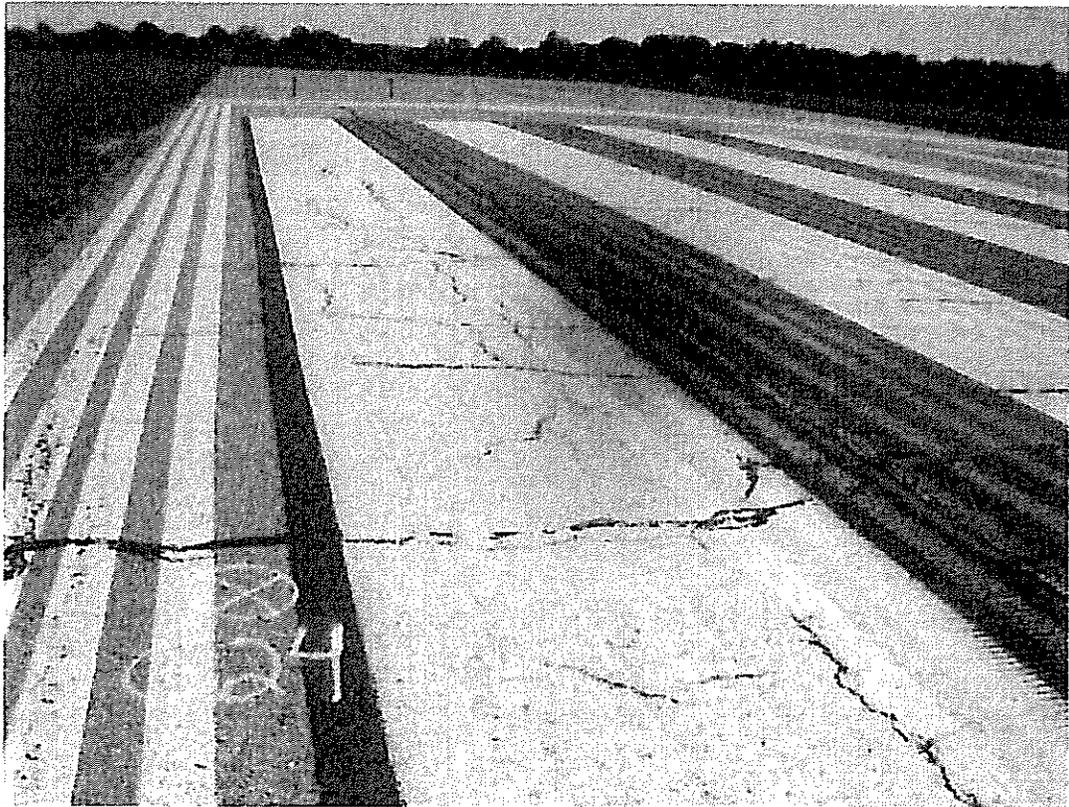
Test Location C-23



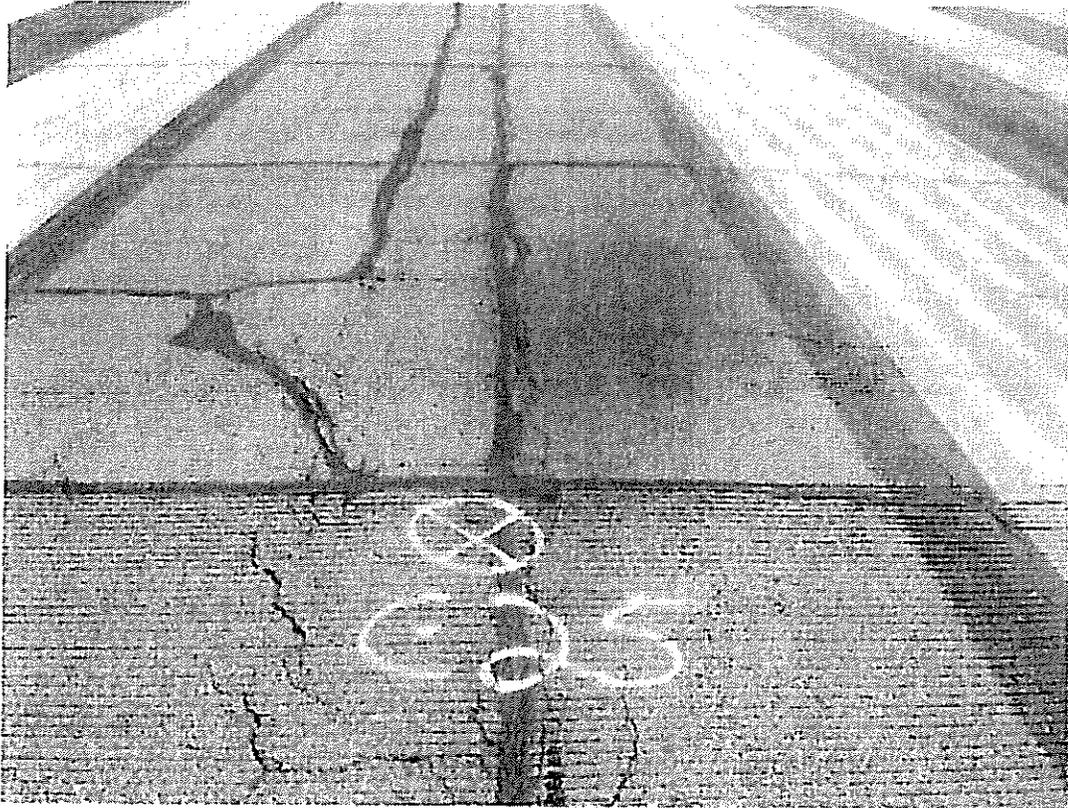
Overview of Test Location C-23



Test Location C-24



Overview of Test Location C-24



Test Location C-25



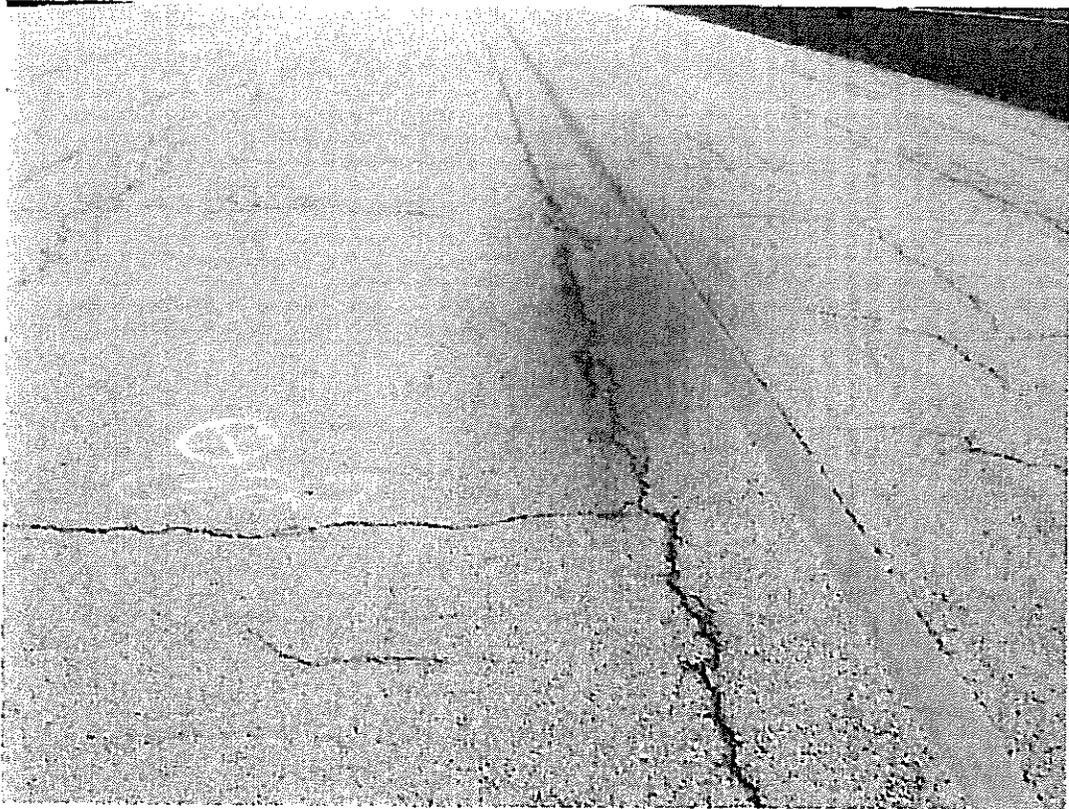
Overview of Test Location C-25



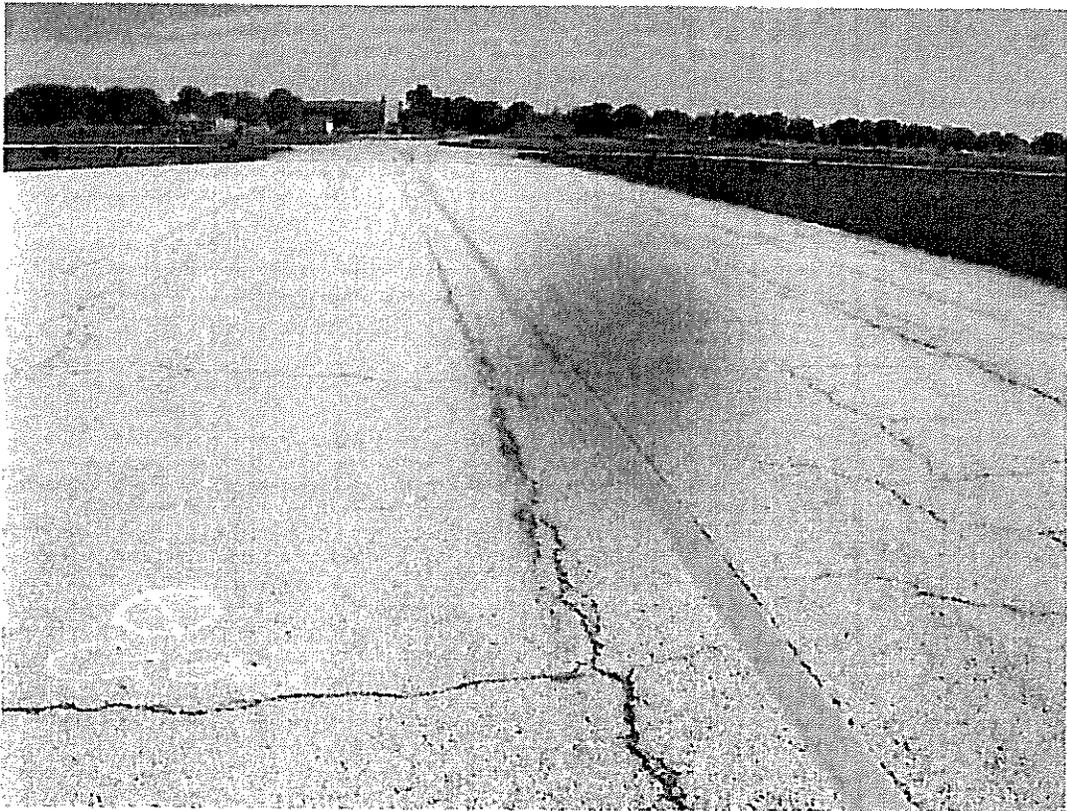
Test Location C-28



Overview of Test Location C-28



Test Location C-27



Overview of Test Location C-27

EXISTING PAVEMENT THICKNESS MEASUREMENTS

Ohio State Airport Phase III
Columbus, Ohio
EDP #09060G

Runway				
Core #	Asphalt Thickness (inches)	Base Thickness (inches)	Pavement Thickness (inches)	Water Encountered in Base
C-1	8 1/4	7 3/4	16	no
C-2	10 1/2	9 1/2	20	no
C-3	9	7	16	no
C-4	8	13 1/4	21 1/4	no
C-5	8 1/2	7 1/2	16	no
C-6	8 3/4	8 1/4	17	no
C-7	8	13	21	no
C-8	6 3/4	15 1/4	22	no
C-9	12	7	19	no
C-10	10 1/2	9 1/2	20	no
C-11	12	7 3/4	19 3/4	no
C-12	14 1/2	15	29 1/2	no
C-13	12 1/4	11 1/2	23 3/4	no
C-14	10 1/4	5 1/4	15 1/2	no
C-15	10 3/4	5 1/4	16	no
C-16	11 1/4	5	16 1/4	no
C-17	12	9	21	no
C-18	10 1/2	5 1/2	16	no
C-19	13	12	25	no
C-20	11 3/4	13 1/4	25	no
C-21	12 1/4	8 1/2	20 3/4	no
C-22	12 1/2	6	18 1/2	no
C-23	14	8	22	no
C-24	13 3/4	7	20 3/4	no
C-25	12	5	17	no
C-26	12 1/2	4	16 1/2	no
Average	10	9 1/2	19 1/2	-

Taxiway D				
Core #	Asphalt Thickness (inches)	Base Thickness (inches)	Pavement Thickness (inches)	Water Encountered in Base
C-27	9	10	19	no
C-28	8 3/4	13 1/4	22	no
Average	11 1/4	9 1/2	20 3/4	-



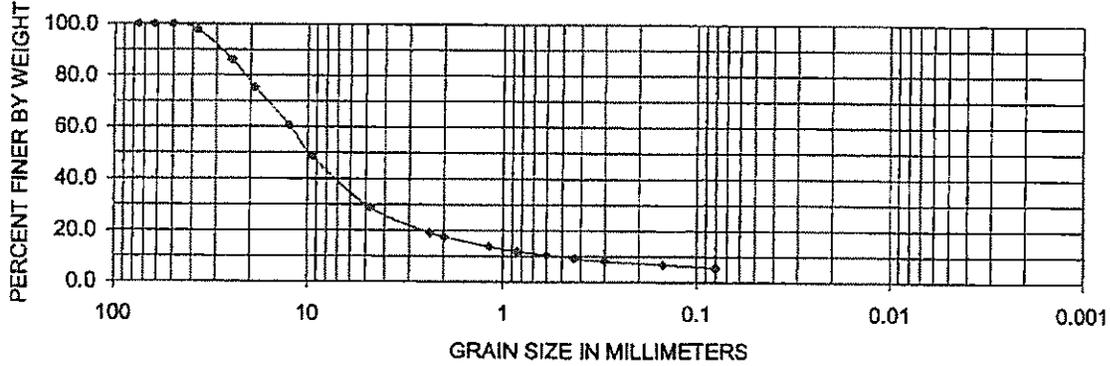
EDP Consultants, Inc.
 9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
 PHONE 440-256-6500 FAX 440-256-6507

**SIEVE ANALYSIS
 ASTM C136**

PROJECT: OSU Airport Phase III
LOCATION: Columbus, Ohio
DATE: June 8, 2009
EDP #: 09060G

Sample Description: 53% puverized asphalt, 47% base
Sample Location: C-1 to C-8
Sample #: 7446

SIEVE ANALYSIS ASTM C136



Sieve	Sieve size, mm	Total Percent Passing	Total Percent Retained	Individual Percent Retained
3	75	100.0	0.0	0.0
2-1/2"	62.5	100.0	0.0	0.0
2"	50	100.0	0.0	0.0
1-1/2"	37.5	97.8	2.2	2.2
1"	25	86.1	13.9	11.7
3/4"	19	75.4	24.6	10.7
1/2"	12.5	60.5	39.5	14.9
3/8"	9.5	48.5	51.5	12.0
#4	4.75	28.8	71.2	19.6
#8	2.36	19.1	80.9	9.8
#10	2	17.4	82.6	1.6
#16	1.18	13.6	86.4	3.8
#20	0.85	11.9	88.1	1.7
#30	0.6	10.5	89.5	1.5
#40	0.43	9.2	90.8	1.3
#50	0.3	8.2	91.8	1.0
#100	0.15	6.8	93.2	1.4
#200	0.08	5.6	94.4	1.2

$D_{60} = 12.50$
 $D_{30} = 5.00$
 $D_{10} = 0.59$

$C_u = D_{60}/D_{10} = 21.2$
 $C_c = (D_{30})^2 / (D_{10} * D_{60}) = 3.4$



EDP Consultants, Inc.
 9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
 PHONE 440-256-6500 FAX 440-256-6507

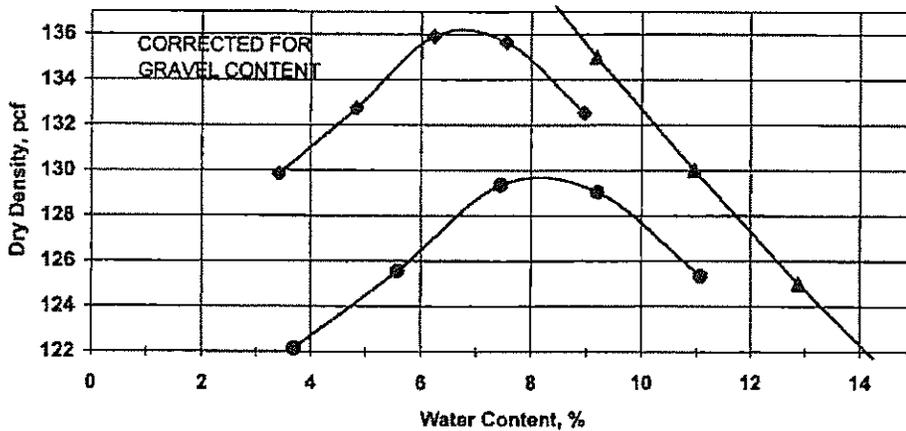
**MOISTURE DENSITY RELATIONSHIP
 ASTM D1557**

Project	OSU Airport Phase III
Project Location	Columbus, Ohio
Date	June 4, 2009
EDP #	09060G
Sample Number	7446
Sample Location	C-1 to C-8
Sample Description	53% pulverized asphalt, 47% base

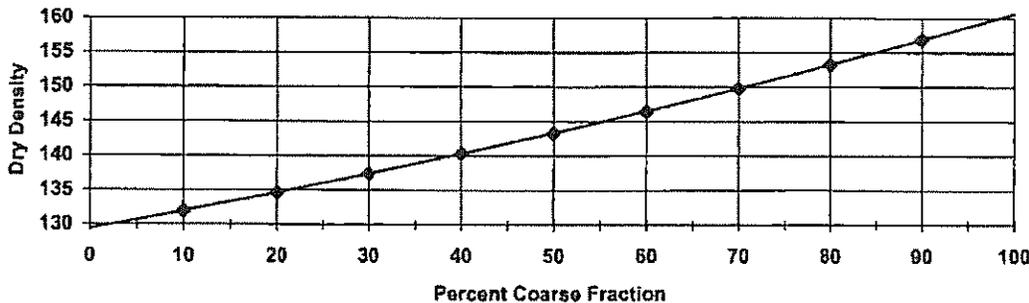
Proctor Method	ASTM 1557C
Maximum Dry Density, pcf	136.2
Optimum Moisture, %	6.7
As Rec'd w%	---
Grain Size	
Percent Ret'd on 3/4"	25
Percent Ret'd on 3/8"	52
Percent Ret'd on #4	71
Liquid Limit	---
Plastic Limit	---
Plasticity Index	---

This test was conducted in accordance with ASTM D1557. The maximum dry density and optimum moisture content have been corrected when appropriate to account for the oversize fraction of material excluded from the test sample.

MOISTURE-DENSITY RELATIONSHIP

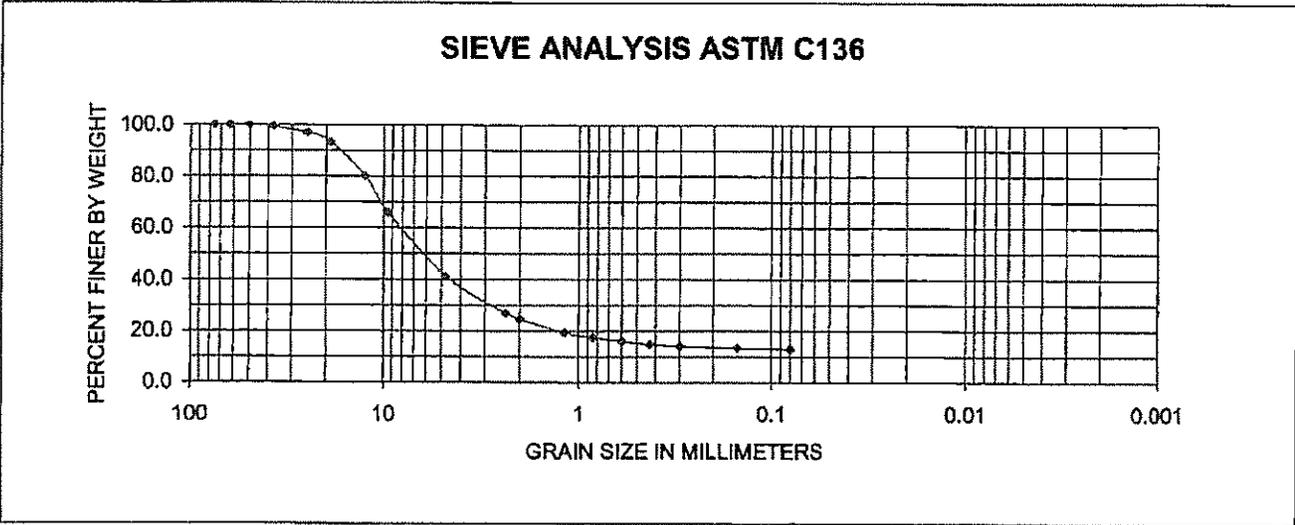


GRAVEL CORRECTION WITH MATERIAL RETAINED ON 3/4



PROJECT: OSU Airport Phase III
LOCATION: Columbus, Ohio
DATE: June 8, 2009
EDP #: 09060G

Sample Description: 73% Asphalt and 27% Base
Sample Location: C-9 to C-26
Sample #: 7447



Sieve	Sieve size, mm	Total Percent Passing	Total Percent Retained	Individual Percent Retained
3	75	100.0	0.0	0.0
2-1/2"	62.5	100.0	0.0	0.0
2"	50	100.0	0.0	0.0
1-1/2"	37.5	99.4	0.6	0.6
1"	25	97.0	3.0	2.4
3/4"	19	93.3	6.7	3.7
1/2"	12.5	80.3	19.7	13.1
3/8"	9.5	66.0	34.0	14.3
#4	4.75	41.2	58.8	24.8
#8	2.36	26.9	73.1	14.3
#10	2	24.6	75.4	2.3
#16	1.18	19.4	80.6	5.2
#20	0.85	17.3	82.7	2.0
#30	0.6	15.9	84.1	1.4
#40	0.43	14.9	85.1	1.0
#50	0.3	14.2	85.8	0.7
#100	0.15	13.4	86.6	0.8
#200	0.08	12.9	87.1	0.4

$D_{60} = 8.10$
 $D_{30} = 3.00$
 $D_{10} = \text{---}$

$C_u = D_{60}/D_{10} = \text{---}$
 $C_c = (D_{30})^2 / (D_{10} * D_{60}) = \text{---}$



EDP Consultants, Inc.

9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
PHONE 440-256-6500 FAX 440-256-6507

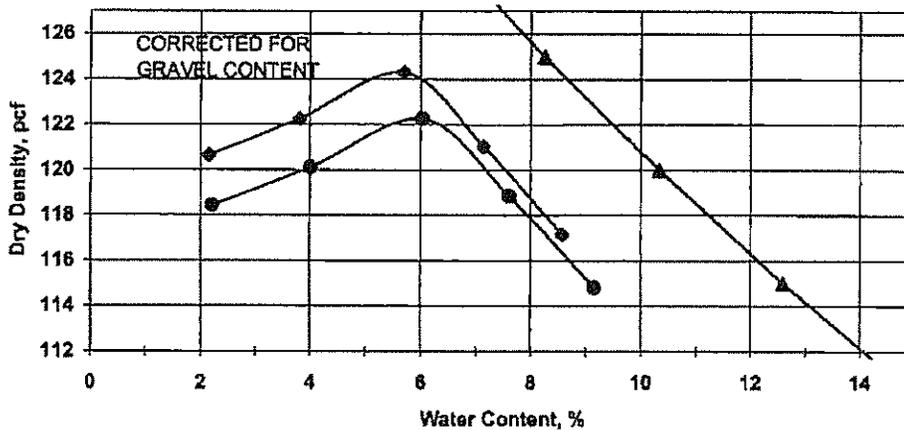
MOISTURE DENSITY RELATIONSHIP ASTM D1557

Project	OSU Airport Phase III
Project Location	Columbus, Ohio
Date	June 5, 2009
EDP #	09060G
Sample Number	7447
Sample Location	C-9 to C-26
Sample Description	73% Asphalt and 27% Base

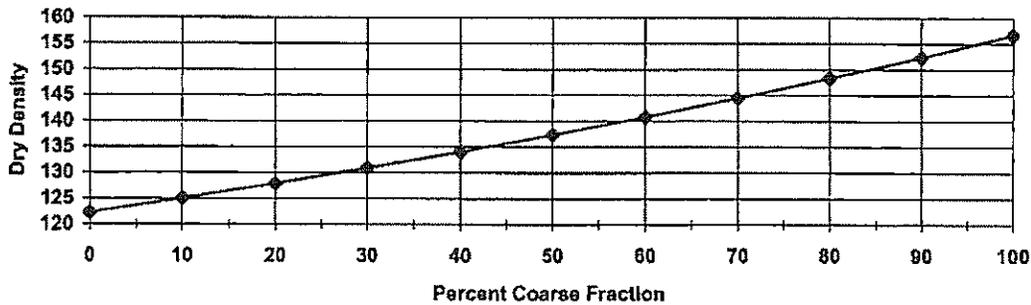
Proctor Method	ASTM 1557C
Maximum Dry Density, pcf	124.3
Optimum Moisture, %	5.6
As Rec'd w%	---
Grain Size	
Percent Ret'd on 3/4"	7
Percent Ret'd on 3/8"	34
Percent Ret'd on #4	58
Liquid Limit	---
Plastic Limit	---
Plasticity Index	---

This test was conducted in accordance with ASTM D1557. The maximum dry density and optimum moisture content have been corrected when appropriate to account for the oversize fraction of material excluded from the test sample.

MOISTURE-DENSITY RELATIONSHIP



GRAVEL CORRECTION WITH MATERIAL RETAINED ON 3/4



**OSU Airport Phase III
EDP #09060G
Dry ITS and Density
Section 1- 53% Asphalt and 47% Base**

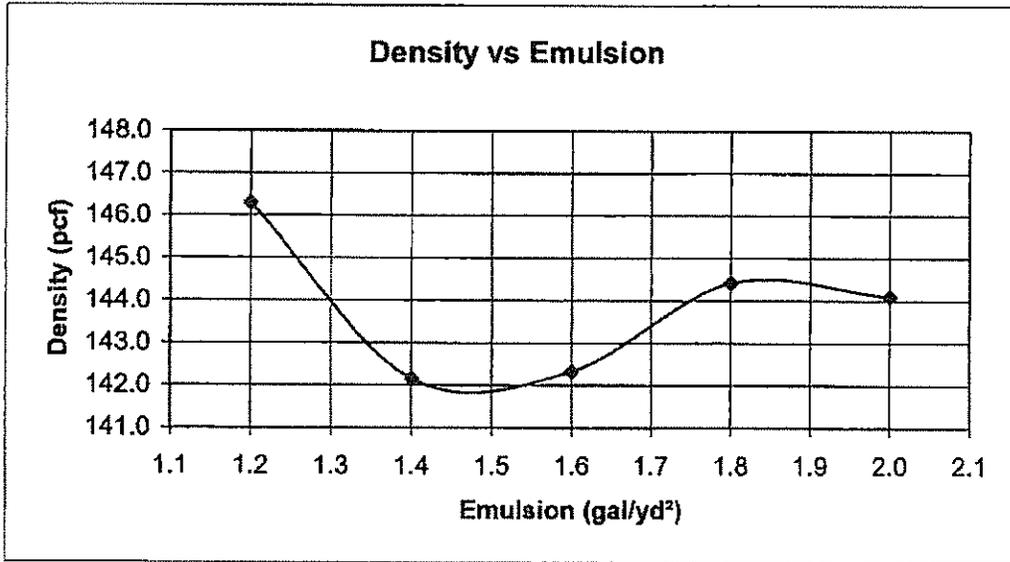
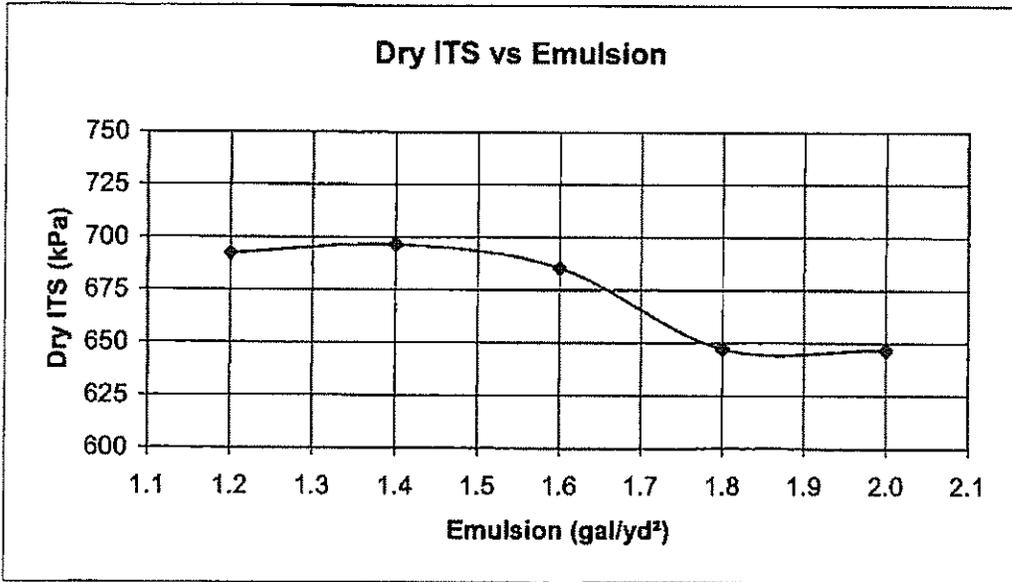


Table of Average Test Results

Emulsion Rate (gal/yd ²)	Wet Density (pcf)	Dry ITS (kPa)	Wet Density (kg/m ³)	Maximum Theoretical Density (pcf)	Compaction Based on MTD (%)
1.2	146.3	692	2,344	158.4	92
1.4	142.2	696	2,277	158.3	90
1.6	142.3	685	2,280	158.0	90
1.8	144.4	647	2,314	158.8	91
2.0	144.1	647	2,308	158.5	91

**OSU Airport Phase III
EDP #09060G
Soaked ITS and Density
Section 1- 53% Asphalt and 47% Base**

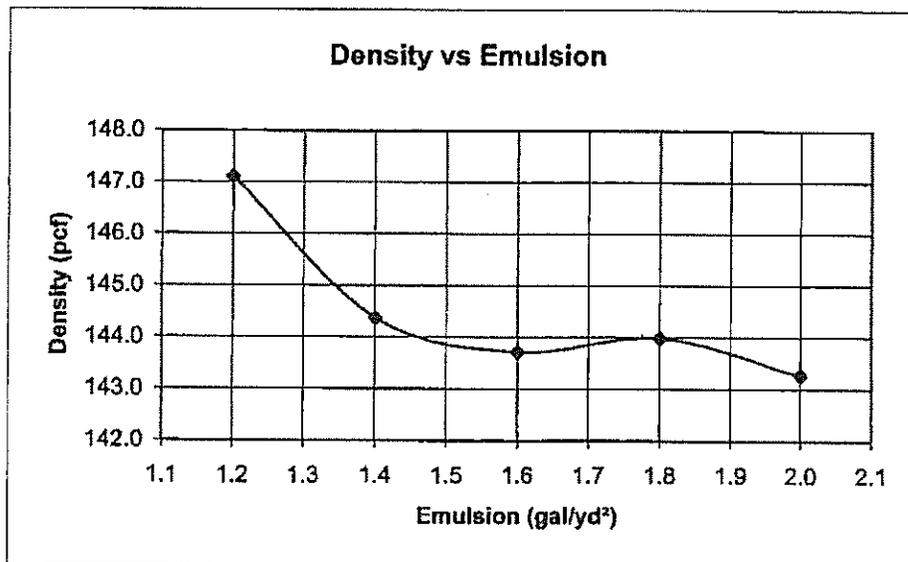
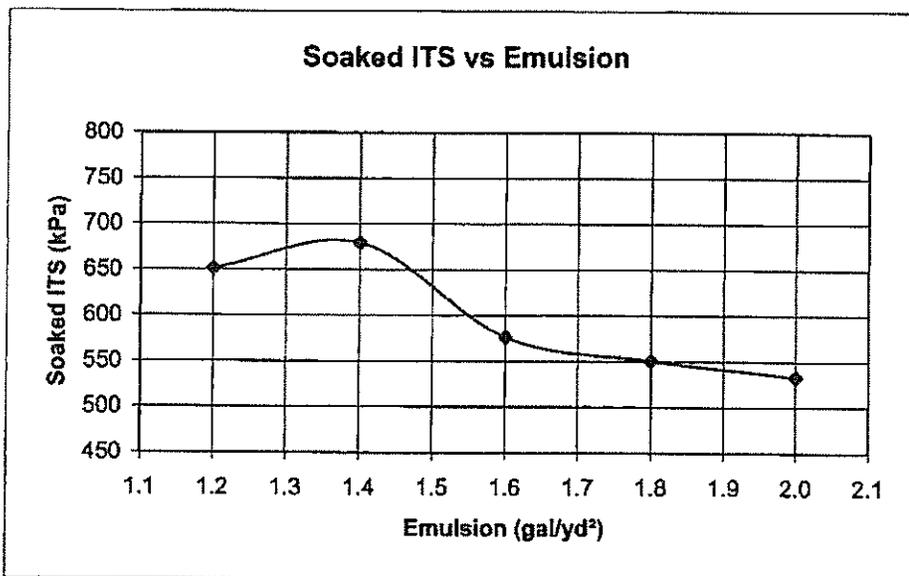


Table of Average Test Results

Emulsion Rate (gal/yd ³)	Wet Density (pcf)	Soaked ITS (kPa)	Wet Density (kg/m ³)	Maximum Theoretical Density (pcf)	Compaction Based on MTD (%)
1.2	147.1	651	2,357	158.4	93
1.4	144.4	679	2,313	158.3	91
1.6	143.7	577	2,302	158.0	91
1.8	144.0	551	2,307	158.8	91
2.0	143.3	533	2,295	158.5	90

**OSU Airport Phase III
EDP #09060G
Heated and Soaked Stability, Flow, and Density
Section 1- 53% Asphalt and 47% Base**

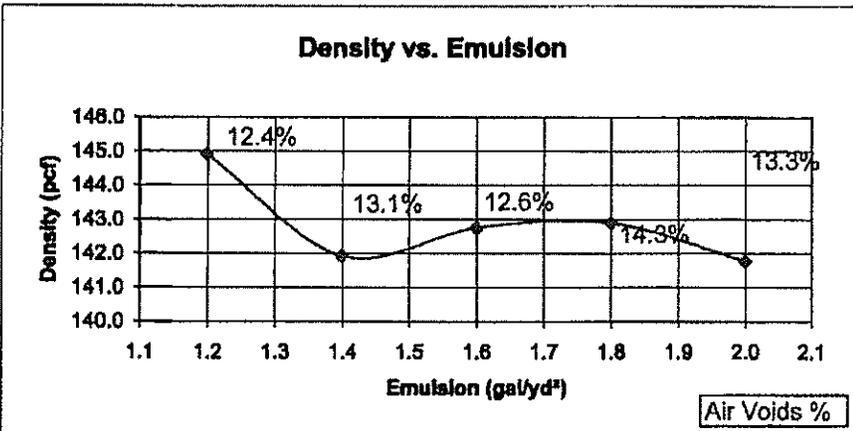
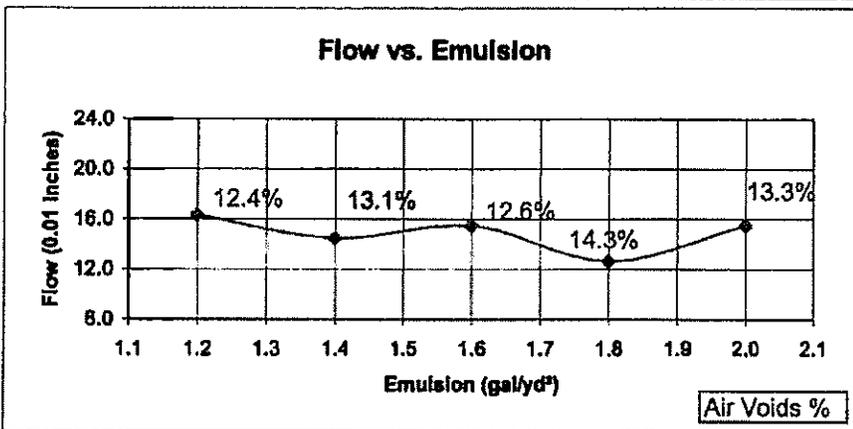
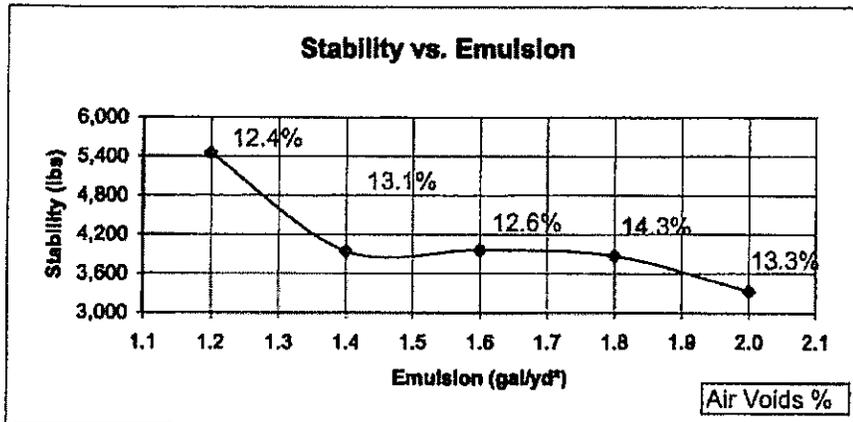


Table of Average Test Results

Emulsion Rate (gal/yd²)	Wet Density (pcf)	Stability (lbs)	Flow (0.01 in)	Wet Density (kg/m³)	Maximum Theoretical Density (pcf)	Compaction Based on MTD (%)
1.2	144.9	5,454	16.3	2,322	158.4	92
1.4	141.9	3,951	14.5	2,274	158.3	90
1.6	142.7	3,970	15.5	2,287	158.0	90
1.8	142.9	3,878	12.7	2,289	158.8	90
2.0	141.8	3,336	15.5	2,271	158.5	89

**OSU Airport Phase III
EDP #09060G
Dry ITS and Density
Section 2- 73% Asphalt and 27% Base**

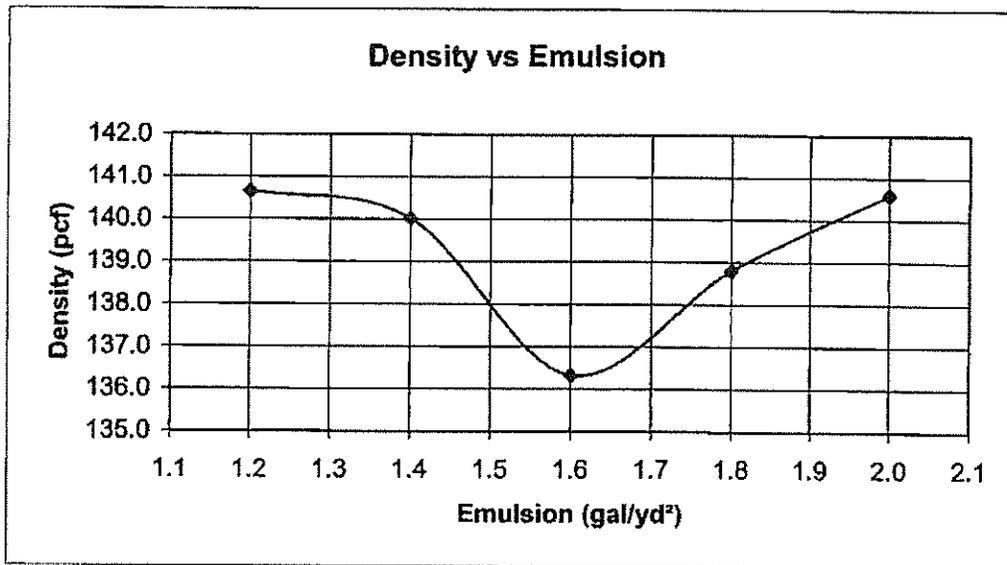
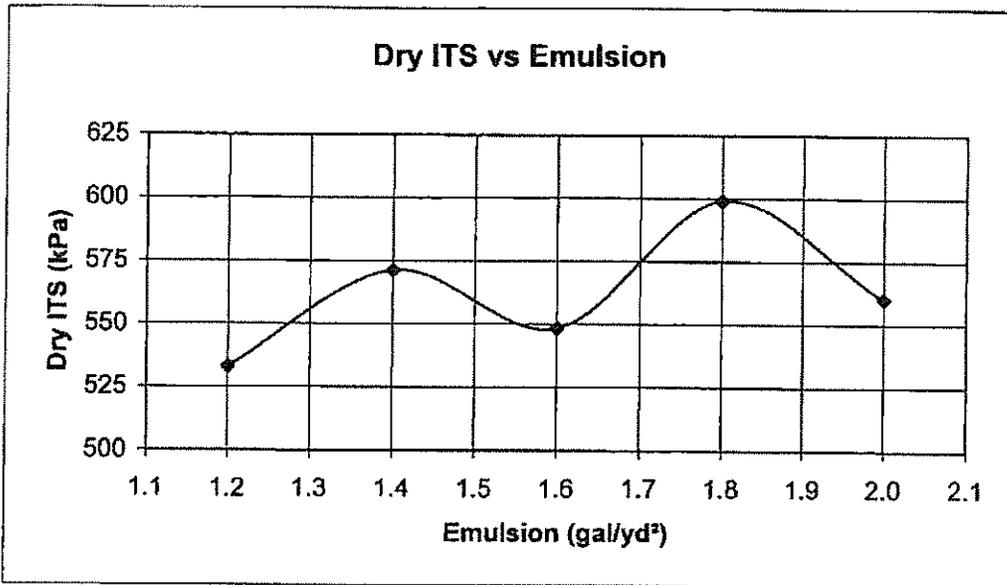


Table of Average Test Results

Emulsion Rate (gal/yd ²)	Wet Density (pcf)	Dry ITS (kPa)	Wet Density (kg/m ³)	Maximum Theoretical Density (pcf)	Compaction Based on MTD (%)
1.2	140.7	533	2,253	154.8	91
1.4	140.0	571	2,243	156.8	89
1.6	136.3	548	2,184	155.3	88
1.8	138.8	599	2,224	156.0	89
2.0	140.6	560	2,252	155.5	90

**OSU Airport Phase III
EDP #09060G
Soaked ITS and Density
Section 2- 73% Asphalt and 27% Base**

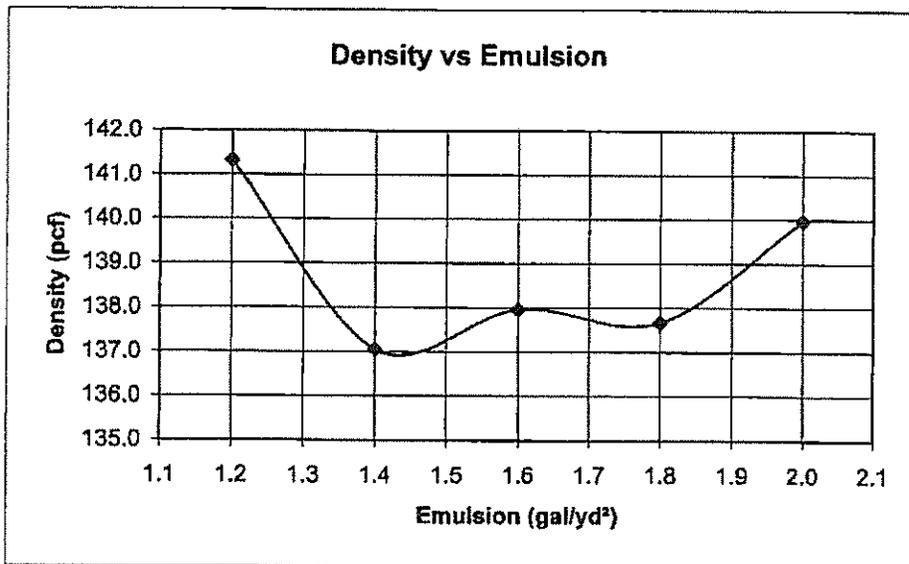
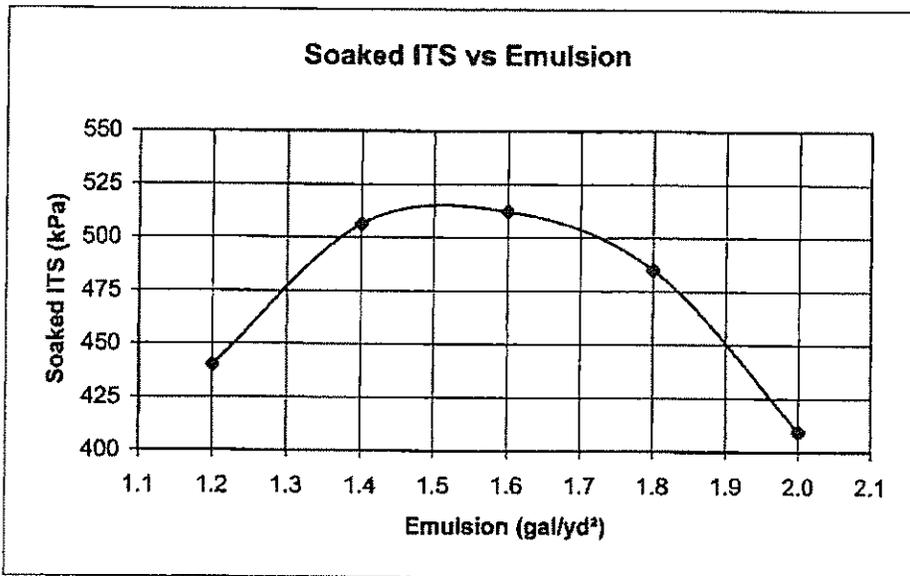


Table of Average Test Results

Emulsion Rate (gal/yd ²)	Wet Density (pcf)	Soaked ITS (kPa)	Wet Density (kg/m ³)	Maximum Theoretical Density (pcf)	Compaction Based on MTD (%)
1.2	141.3	440	2,264	154.8	91
1.4	137.1	506	2,196	156.8	87
1.6	138.0	512	2,210	155.3	89
1.8	137.7	485	2,205	156.0	88
2.0	140.0	409	2,242	155.5	90

**OSU Airport Phase III
EDP #09060G**

**Heated and Soaked Stability, Flow, and Density
Section 2- 73% Asphalt and 27% Base**

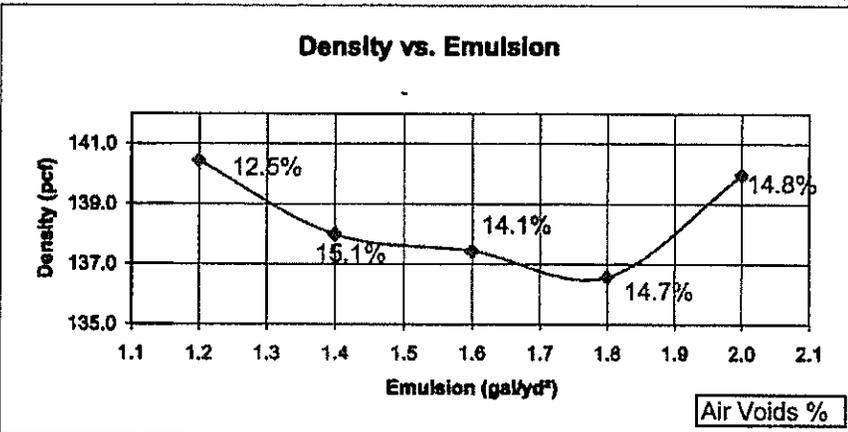
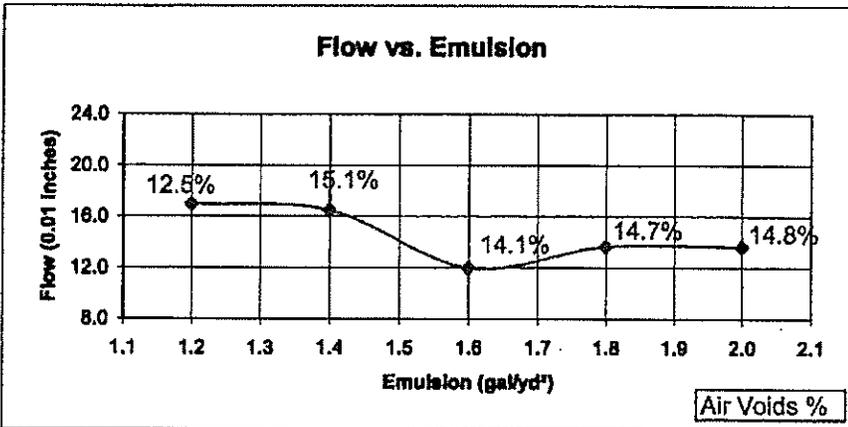
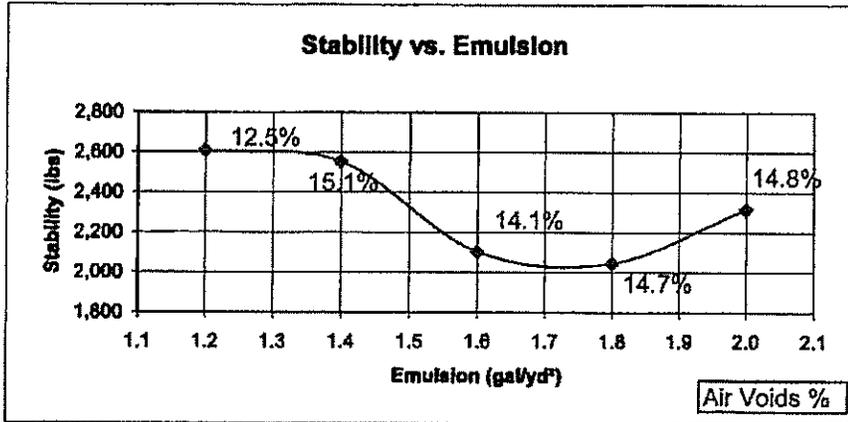


Table of Average Test Results

Emulsion Rate (gal/yd³)	Wet Density (pcf)	Stability (lbs)	Flow (0.01 In)	Wet Density (kg/m³)	Maximum Theoretical Density (pcf)	Compaction Based on MTD (%)
1.2	140.4	2,610	17.0	2,250	154.8	91
1.4	138.0	2,555	16.5	2,211	156.8	88
1.6	137.4	2,105	12.0	2,202	155.3	88
1.8	136.6	2,047	13.7	2,188	156.0	88
2.0	140.0	2,320	13.7	2,242	155.5	90



EDP Consultants, Inc.
 9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
 PHONE 440-256-6500 FAX 440-256-6507

**THEORETICAL MAXIMUM SPECIFIC GRAVITY AND DENSITY
 ASTM D2041**

PROJECT INFORMATION:

PROJECT NAME: OSU Airport Phase III	DATE OBTAINED: June 5, 2009
LOCATION: Columbus, Ohio	CORE LOCATION: C-1 to C-8
EDP #: 09060G	SAMPLE DESCRIPTION: Mix 1 - 53% Asphalt and 47% Base
DATE TESTED: June 10, 2009	
TEST METHOD: ASTM D2041	

TESTED BY:	SM	SM	SM	SM	SM			
HFRE (gal)	1.2	1.4	1.8	1.8	2.0			
PORTLAND CEMENT (%)	2.0	2.0	2.0	2.0	2.0			

FLASK DATA:								
FLASK CALIBRATED WT, g:	1487.7	1488.3	1755.5	1755.5	1488.3			
FLASK MEASURED WT, g:	1487.3	1488.2	1755.8	1755.8	1488.3			
MASS OF FLASK, SAMPLE, + WATER, $M_{pws,t}$, g:	7249.1	7262.8	7240.3	7486.2	7370.4			
MASS OF FLASK + WATER, $M_{pw,t}$, g AT TEST TEMP:	5945.5	5942.7	6046.9	6046.9	5942.7			
TEST TEMPERATURE, °C:	25.0	25.0	25.0	25.0	25.0			

SAMPLE DATA:								
DRY SAMPLE MASS, g:	2147.7	2175.9	1969.4	2366.8	2350.7			
WATER CONTENT, %:	5.6	4.7	4.9	4.7	4.8			

SPECIFIC GRAVITIES:								
G_s (AT TEST TEMP.):	2.544	2.542	2.538	2.552	2.547			
Maximum Theoretical Density (PCF)	158.38	158.26	157.97	158.83	158.52			

REMARKS:



EDP Consultants, Inc.
 9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
 PHONE 440-256-6500 FAX 440-256-6507

**THEORETICAL MAXIMUM SPECIFIC GRAVITY AND DENSITY
 ASTM D2041**

PROJECT INFORMATION:

PROJECT NAME: OSU Airport Phase III	DATE OBTAINED: June 5, 2009
LOCATION: Columbus, Ohio	CORE LOCATION: C-9 to C-26
EDP #: 09060G	SAMPLE DESCRIPTION: Mix 2 - 73% Asphalt and 27% Base
DATE TESTED: June 10, 2009	
TEST METHOD: ASTM D2041	

TESTED BY:	SM	SM	SM	SM	SM			
HFRE (gal)	1.2	1.4	1.6	1.8	2.0			
PORTLAND CEMENT (%)	2.0	2.0	2.0	2.0	2.0			

FLASK DATA:								
FLASK CALIBRATED WT, g:	1831.5	1755.5	1488.3	1755.2	1863.0			
FLASK MEASURED WT, g:	1832.5	1755.8	1488.2	1760.1	1487.3			
MASS OF FLASK, SAMPLE, + WATER, $M_{pws,t}$ g:	7517.6	7559.7	7261.0	7481.0	7394.0			
MASS OF FLASK + WATER, $M_{pw,t}$ g AT TEST TEMP:	6142.0	6046.9	5942.7	6079.4	5945.5			
TEST TEMPERATURE, °C:	25.0	25.0	25.0	25.0	25.0			

SAMPLE DATA:								
DRY SAMPLE MASS, g:	2301.0	2508.8	2199.9	2332.4	2415.7			
WATER CONTENT, %:	6.1	5.0	4.6	4.5	5.0			

SPECIFIC GRAVITIES:								
G_s (AT TEST TEMP.):	2.486	2.519	2.495	2.506	2.498			
Maximum Theoretical Density (PCF)	154.77	156.78	155.32	155.97	155.47			

REMARKS:



EDP Consultants, Inc.

9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
PHONE 440-256-6500 FAX 440-256-6507

**THEORETICAL MAXIMUM SPECIFIC GRAVITY AND DENSITY
ASTM D2041**

PROJECT INFORMATION:

PROJECT NAME: OSU Airport Phase III	DATE OBTAINED: June 5, 2009
LOCATION: Columbus, Ohio	CORE LOCATION: C-2
EDP #: 09060G	SAMPLE DESCRIPTION: Verification Mix 1 - 89% Asphalt and 11% Base
DATE TESTED: June 10, 2009	
TEST METHOD: ASTM D2041	

TESTED BY:	SM							
HFRE (gal)	1.2							
PORTLAND CEMENT (%)	2.0							

FLASK DATA:								
FLASK CALIBRATED WT, g:	1831.5							
FLASK MEASURED WT, g:	1832.5							
MASS OF FLASK, SAMPLE, + WATER, $M_{pws,t}$, g:	7656.0							
MASS OF FLASK + WATER, $M_{pw,t}$, g AT TEST TEMP:	6142.0							
TEST TEMPERATURE, °C:	25.0							

SAMPLE DATA:								
DRY SAMPLE MASS, g:	2538.0							
WATER CONTENT, %:	4.3							

SPECIFIC GRAVITIES:								
G_i (AT TEST TEMP.):	2.478							
Maximum Theoretical Density (PCF)	154.27							

REMARKS:



EDP Consultants, Inc.

9375 CHILlicoTHE RD., KIRTLAND, OH, 44094
PHONE 440-256-6500 FAX 440-256-6507

THEORETICAL MAXIMUM SPECIFIC GRAVITY AND DENSITY
ASTM D2041

PROJECT INFORMATION:

PROJECT NAME: OSU Airport Phase III	DATE OBTAINED: June 5, 2009
LOCATION: Columbus, Ohio	CORE LOCATION: C-12
EDP #: 09060G	SAMPLE DESCRIPTION: Verification Mix 2 - 40% Asphalt and 60% Base
DATE TESTED: June 10, 2009	
TEST METHOD: ASTM D2041	

TESTED BY:	SM							
HFRE (gal)	1.2							
PORTLAND CEMENT (%)	2.0							

FLASK DATA:								
FLASK CALIBRATED WT, g:	1755.2							
FLASK MEASURED WT, g:	1759.9							
MASS OF FLASK, SAMPLE, + WATER, $M_{pw,t}$ g:	7556.7							
MASS OF FLASK + WATER, $M_{pw,t}$ g AT TEST TEMP:	6079.4							
TEST TEMPERATURE, °C:	25.0							

SAMPLE DATA:								
DRY SAMPLE MASS, g:	2413.5							
WATER CONTENT, %:	5.4							

SPECIFIC GRAVITIES:								
G_s (AT TEST TEMP.):	2.578							
Maximum Theoretical Density (PCF)	160.46							

REMARKS:



RESOURCE INTERNATIONAL, INC.

June 23, 2009

Mr. Steve Slusher
Stantec
Project Manager
1500 Lake Shore Drive
Suite 100
Columbus, Ohio 43204

RE: Review of Document
"Mix Design, OSU Airport Phase III
Columbus, Ohio, EDP # 09060G, June 16, 2009"
Rii # W-09-049

Dear Mr. Slusher,

Per your request, we have reviewed the following document:

"Mix Design, OSU Airport Phase III, Columbus, Ohio, EDP # 09060G,
dated June 16, 2009," prepared by EDP Consultants, Inc.

The above report on mix design describes the details of field sampling, laboratory testing of field samples, mix design of recycled materials, testing of the mixes in the laboratory and recommendations for rebuilding by Full Depth Reclaiming the material.

Based on our review of the report, we find it consistent with the current practice of Full Depth Reclamation of Asphalt Pavements and the relevant sections of Item P-200 titled "Reclaimed, Pulverized and Stabilized Base Course".

The report indicates that the results of mix testing meet the typical minimum strength specifications for FDR projects which are: 1,200 lbs stability, 250 kPa dry ITS, and 70% retained strength when soaked. Since we are not aware of minimum specifications established by the Highway/Airport agencies, therefore, the statement on page 2, last paragraph of Item P-200, which states "Approval of the mix design by engineer is solely for monitoring quality control and in no way releases the Contractor from his responsibilities" may be considered important in this connection.

No comments on the structural design of pavement are offered here.

6350 Presidential Gateway
Columbus, Ohio 43231
Phone: (614) 823.4949
Fax: (614) 823.4990
ResourceInternational.com

Planning
Engineering
Construction Management
Technology

We thank you for the opportunity to review the document listed above. Please call us at (614) 823-4949, if you have any questions regarding the comments stated in this letter.

Sincerely,
Resource International, Inc.

A handwritten signature in black ink, appearing to read "Chhote L. Saraf". The signature is fluid and cursive, with a horizontal line underneath the name.

Chhote L. Saraf, Ph.D., P.E.
Senior Consultant

Copy to: Jim Norden, Rii

EXHIBIT 4

MAIN OFFICE
720 Greencrest Drive
Westerville, OH 43081
614.895.1400 **phone**
614.895.1171 **fax**

YOUNGSTOWN OFFICE
8433 South Avenue
Building 1, Suite 1
Boardman, OH 44514
330.965.1400 **phone**
330.965.1410 **fax**

DAYTON OFFICE
2380 Bellbrook Avenue
Xenia, OH 45385
937.736.2053 **phone**



**GEOTECHNICAL
CONSULTANTS INC.**

www.gci2000.com

“This electronic communication and its contents may contain confidential information which is the exclusive property of Geotechnical Consultants, Inc. The recipient(s) assumes all liability arising from any alteration, misuse or unauthorized distribution. If you have received this information in error, please notify the sender immediately.”



GEOTECHNICAL
CONSULTANTS INC.



GCI PROJECT No. 18-G-22020

Subsurface Exploration and Geotechnical Engineering Report

OSU Airport Hangar
West Case Road
Columbus, Ohio

Prepared for:
The Ohio State University

July 25, 2018



**GEOTECHNICAL
CONSULTANTS INC.**

MAIN OFFICE
720 Greencrest Drive
Westerville, OH 43081
614.895.1400 **phone**
614.895.1171 **fax**

YOUNGSTOWN OFFICE
8433 South Avenue
Building 1, Suite 1
Boardman, OH 44514
330.965.1400 **phone**
330.965.1410 **fax**

DAYTON OFFICE
2380 Bellbrook Avenue
Xenia, OH 45385
937.736.2053 **phone**

www.gci2000.com

July 25, 2018

Mr. Kenneth Garrett
The Ohio State University
400 Emerson Classroom Building
2009 Millikin Road
Columbus, Ohio 43210

**Reference: Subsurface Exploration and Geotechnical Engineering Report
OSU Airport Hangar Project
West Case Road - Columbus, Ohio
GCI Project No. 18-G-22020**

Dear Mr. Garrett:

As you requested and authorized, Geotechnical Consultants, Inc. (GCI) performed a subsurface exploration and prepared a geotechnical engineering report for the above referenced project. In summary, the borings encountered a topsoil cover (thickness ranging from 0.3 to 0.9 feet) over minor fill in two borings, all underlain by natural lean clay (including glacial till soils). The fill was encountered below the surface topsoil in borings B-1 and B-12 and extended to depths of 2 to 2.5 feet below grade. We did not encounter bedrock within the depths of the borings performed. We encountered groundwater seepage in six of the 22 borings at depths of 3 to 12 feet below existing grade.

Geotechnical considerations for the project include proper removal of topsoil and vegetation, removal of any existing construction that might interfere with the new construction, addressing the existing fill, stabilization of any soft subgrades, and proper placement of structural fill, as needed. Provided the geotechnical considerations are properly addressed, it is GCI's opinion that this site is suitable for support of the proposed hangar structure using conventional shallow foundations and concrete slab-on-grade construction. We discuss geotechnical considerations and provide foundation recommendations in the report.

After you have reviewed the report, feel free to contact us with any questions you may have. We appreciate the opportunity to provide our services for this project and hope to continue providing our services through construction.

Respectfully submitted,

Geotechnical Consultants, Inc.

Curtis L. Miller

Curtis L. Miller, P.E.
Principal



Melissa A. Bradley

Melissa A. Bradley, P.E.
In-House Reviewer

Distribution: Mr. Kenneth Garrett @ The Ohio State University – 5 bound, pdf email
GCI File No. 18-G-22020

TABLE OF CONTENTS

INTRODUCTION.....	1
SITE LOCATION AND PROJECT DESCRIPTION	2
SUBSURFACE CONDITIONS.....	3
LABORATORY TESTING.....	6
ANALYSES AND CONCLUSIONS	7
GEOTECHNICAL EVALUATION	
FOUNDATIONS	
FLOOR SLAB	
SEISMIC FACTOR	
BELOW-GRADE WALLS	
EXCAVATIONS	
GROUNDWATER	
PAVEMENTS	
SITE PREPARATION AND EARTHWORK	
CONSTRUCTION MATERIALS ENGINEERING AND TESTING	15
FINAL.....	15
APPENDIX FOLLOWING PAGE NUMBER.....	16
General Notes for Soil Sampling and Classifications	
General Site Location Map (DeLorme Street Atlas USA – 2014)	
Boring Location Plan	
Summary of Encountered Subsurface Conditions	
Test Boring Logs (B-1 to B-12, P-1 to P-3, and R-1 to R-7)	
Laboratory Test Results	

INTRODUCTION

As requested by Ms. Holly Wood of Brandstetter/Carroll Inc. and authorized by Mr. Kenneth Garrett representing The Ohio State University (OSU), Geotechnical Consultants, Inc. (GCI) performed a subsurface exploration and prepared this geotechnical engineering report for a new OSU Airport Hangar project (OSU Project No. 180409) in Columbus, Ohio. Brandstetter/Carroll Inc provided GCI with a Site Plan (dated June 1, 2018) showing the proposed hangar building, new parking areas, and new drive areas. After drilling was completed, we were also provided with a topographic survey of the site showing the existing site elevations (prepared by Stantec; dated April 2018).

Our study consisted of twelve (12) standard penetration borings (B-1 to B-12) drilled within the proposed building areas, three (3) borings (P-1 to P-3) in proposed parking areas, and seven (7) borings (R-1 to R-7) in the proposed roadway. GCI field located the borings using the site layout plan and existing site landmarks; locations should be considered approximate. GCI estimated the ground elevations at the boring locations using the provided topographic survey. We attach a sketch showing the approximate boring locations and copies of the boring logs in the appendix.

The intent of this study was to evaluate subsurface conditions and offer geotechnical recommendations relative to earthwork, foundations, slabs, and pavements for the proposed hangers on the east side of the site. We issue this report prior to the receipt of final site layout and grading plans. GCI should review these plans when available, and provide additional recommendations and borings, if necessary.

The proposed development consists of constructing new hangar buildings (totaling 81,500 square feet) on the east side of the existing construction. New paved parking and drive areas will be to the west and south of the structures. An access drive will be constructed south of the proposed construction, but east of the existing construction, and will connect to West Case Road to the south. Based on the existing grades and surrounding development, we do not anticipate grades will change more than 2 to 3 feet, except where the existing soil mound is located on the south and southwest portions of the site.

SUBSURFACE CONDITIONS

GCI mobilized a rotary drill rig (CME with automatic sampling hammer) to the site on July 10 and 11, 2018. We drilled twelve (12) standard penetration borings (B-1 to B-12) within the proposed building areas, three (3) borings P-1 to P-3 in the proposed parking area, and seven (7) borings (R-1 to R-7) within the proposed access roadway. We terminated the roadway and pavement borings at depths of 5.5 to 10 feet below grade, while the building borings extended to depths of 15 to 20 feet below existing grade.

We have attached boring logs, a copy of the Boring Location Plan, and a summary table of encountered subsurface conditions in the appendix. We summarize the subsurface findings below. Refer to the individual boring logs for more detailed subsurface information at specific boring locations.

Surface Cover

The borings encountered a topsoil cover ranging in thickness from 0.3 to 0.9 feet.

Below the topsoil at borings B-1 and B-12, we encountered possible fill material consisting of a mixture of lean clay, sand, and gravel. The fill was very similar to the consistency of the natural soils, and the exact transition from fill to natural soils was difficult to determine. The fill extended to approximate depths of 2.5 to 2 feet below grade. We noted the fill was medium stiff in cohesive consistency.

Natural Soils

Below the surface cover, the borings encountered moderately plastic brown mottled gray lean clay (classified as CL under the Unified Soil Classification System). We noted staining in the upper portions of these soils, which is typically associated with water filtering down through the overlying topsoil. The lean clay extended to depths ranging from 2 feet to 4.7 feet below existing grade. Standard penetration test borings indicated that the upper lean clay mantle was generally medium stiff to stiff in cohesive consistency.

We did note some softer soils from the 4' to 5.5 foot depth in boring B-8; we recorded weight of hammer (WH) only to advance the split spoon sampler at this location. Conversely, the pocket penetrometer readings taken in the lab on these samples were 3.5 and 4, which suggests the low field readings were probably associated with the wet sand and gravel layer at that depth.

Below the upper lean clay mantle and possible fill, the borings encountered moderately plastic brown glacial till (lean clay with sand – CL). We noted random silty sand and gravel layers in the till. The pavement borings (P-1 to P-3 and R-1 to R-7) terminated within the brown till at depths of 5.5 to 10 feet below grade.

The till changed color from brown to gray in the remaining borings (B-1 to B-12) at depths ranging from 9.5 to 12.5 feet below existing grade. The gray till was visually classified as sandy lean clay with gravel (CL), contained more embedded sand and gravel, and was noted as less plastic when compared to the upper level brown lean clay soils and brown till. We also noted random silty sand and gravel layers in the gray till. Standard penetration testing indicated the glacial till soils were medium stiff to very stiff in cohesive consistency, becoming very stiff to hard with depth. We terminated these borings in the gray till at depths of 15 to 20 feet below existing grade.

Bedrock

We did not encounter bedrock within the maximum drilled depth of the borings (20 feet).

Groundwater

We encountered groundwater seepage in borings B-2, B-3, and B-7 to B-10 at depths between 3 feet (B-8) and 12 feet (B-2) below existing grade. By completion of the drilling operations, the groundwater had dissipated in boring B-8, had not changed significantly in borings B-7 and B-9, and had risen 3 to 4.5 feet in borings B-2, B-3, and B-10. The remaining borings were dry during and by completion of the drilling process.

GCI's drillers generally described the retrieved soil samples as moist to very moist, with an occasional wet sample noted near water levels. Note that soil moisture conditions and groundwater observations fluctuate due to changes in precipitation, climate, stabilization time and other factors that may differ from the time the measurements were made.

LABORATORY TESTING

GCI performed a laboratory testing program consisting of Atterberg Limits, gradation analyses, and natural moisture contents on select slit spoon samples from borings B-3 and B-8. We also performed moisture content, Atterberg Limits, gradation analysis, Standard Proctor, and California Bearing Ratio (CBR) testing on a bulk soil sample from 1 to 4 feet below grade at roadway boring R-3 location. The purpose of the testing was to provide information to aid in sample classification, to evaluate the characteristics of the subsurface strata, and to provide a CBR value for pavement design.

Under the ASTM/Unified Classification System, we classified the natural clay-based soils as lean clay with sand and sandy lean clay (both are classified as CL in the Unified/ASTM Soils Classification System), which are generally consistent with our visual classifications. Natural moisture contents in the upper 4 feet of the soil profiles ranged from 16.7 percent to 24.1 percent. The moisture of the soils below about 4 feet range from 8.9 percent to 12.1 percent. Typically, clayey soils with moisture contents above 20% can be difficult to work with and may require moisture conditioning to use as structural fill.

The bulk sample testing resulted in a Standard Proctor Maximum Dry Density of 108.6 pounds per cubic foot (PCF), occurring at an optimum moisture content of 18.7%. The natural moisture content of the bulk sample was 22%, suggesting some moisture conditioning could be required to properly prepare the subgrade soils and achieve compaction. CBR testing resulted in a value of 5.0, with a low volume change potential of 1.3%.

Refer to the laboratory test results in the appendix for additional details.

ANALYSES AND CONCLUSIONS

GEOTECHNICAL EVALUATION

Based on our borings, it is GCI's opinion that the site geotechnical conditions are suitable for the proposed hangar buildings using conventional shallow foundations and slab-on-grade construction, provided the site is properly prepared as discussed in the following paragraphs.

Existing Construction

We do not know if any portion of the existing development interferes with the proposed construction. We recommend any existing elements that are within the construction limits should be completely removed to expose stable natural soils; this includes existing utilities and soft/organic trench backfill. Utilities that are abandoned outside the proposed construction limits should be plugged to prevent loss of soil. Any excavation voids should be properly backfilled with structural fill.

Site Stripping

Topsoil, vegetation, and other organic materials are not suitable for foundation, floor slab, or pavement support. The unsuitable material should be completely removed to expose stable natural soils prior to placing new fill, underslab aggregate, or pavement base aggregate. Stripping should extend to a minimum of 5 feet laterally beyond proposed building and pavement areas. Topsoil and organic matter can be stockpiled for reuse in landscaping mounds, redistributed in proposed green spaces areas, or disposed at an off-site location.

Existing Fill

We recommend the fill mounds be removed in proposed construction areas (and to 10 feet outside construction limits) to expose stable natural soils.

We encountered possible fill in two borings B-1 and B-12. The fill was very similar to the mottled natural lean clay soils, which made it difficult to discern the transition point. We recommend any foundations be extended through the fill to bear in the underlying natural soils.

Provided the fill is stable below a proof roll, we feel the fill is suitable to support slab and pavement construction. The client will need to accept the minor risk that the fill could consolidate below new loads, but provided a thorough proof roll is performed and any soft areas are stabilized, we feel the risk is minor.

Alternately, any existing fill could be completely removed and replaced with new structural fill to eliminate any risks associated with the possible existing fill.

Subgrade Stability

We recommend that the site earthwork contractor proof-roll the soil subgrades using a fully-loaded, tandem-axle dump truck (or equivalent) after performing site stripping and prior to fill placement or construction of slabs. The purpose of the proof-roll is to identify potential soft, yielding subgrade areas. Soft spots identified during the proof-roll should be undercut to firm, stable conditions or otherwise stabilized prior to placing controlled fill to finished subgrade elevation.

We found a soft zone at the 4' to 5.5' depth in boring B-8. We anticipate this soft zone resulted from a saturated sand and gravel layer; however, soft zones will need to be addressed during foundation construction. The severity of soft, very moist subgrade conditions will depend on the time of year earthwork is performed, and the amount of moisture within the subgrade soils. We expect fewer problems with soft subgrades if earthwork and mass grading operations are performed during traditionally drier times of the year (i.e. late spring, summer, and early fall).

Stabilization of soft subgrades by disking, aerating/drying, and re-compaction may be feasible during traditionally drier times of the year. During wet seasons, partial undercutting and replacing of wet soils with structural fill, drying with soil additives such as lime, or use of geosynthetics may be needed to create a stable subgrade before placing controlled fills. The use of soil additives such as lime and flyash or installation of geosynthetics should be reviewed by our office prior to use in the field.

Fill Placement and Compaction

Structural fill can be placed to design grade once the subgrades are brought to firm and stable conditions. Non-organic, clay-based site soils and non-organic existing fill soils are suitable for reuse in new, controlled fills provided proper moisture control is maintained. Depending on the time of year of earthwork, the site soils may require drying to achieve compaction. Fill materials within building pads and pavement areas should be placed in a controlled manner as described in the *Site Preparation and Earthwork* section of this report.

FOUNDATIONS

In our opinion, the one-story, slab-on-grade hangar structures can be constructed on conventional spread footings and continuous wall foundations. Provided the site is prepared as described herein, all footings should bear on stable, natural soils or new, controlled fill placed directly over stable natural soils. Footings bearing on acceptable soils can be designed using a maximum allowable bearing capacity not to exceed 3,000 pounds per square foot.

We recommend minimum sizes of 16 inches wide for wall footings and 30 inches square for column pads to prevent a “punch” effect. All exterior footings should extend to local frost bearing depth (32 inches) or to stable bearing (as stated above), whichever is deeper. Interior footings in heated areas may be placed as shallow as feasible, if bearing on acceptable soils.

Typical to local practice, if soft or unstable, natural soils are encountered at footing subgrade, undercut to stable soils. Undercut areas can be backfilled to design bottom-of-footing elevation using controlled density fill (CDF) to allow footing construction at design grade. Soft, unstable bearing soils should be reviewed by the soil engineer prior to undercuts. Alternatively, the foundations can be constructed on firm, stable site soils at the bottom-of-footing undercut.

FLOOR SLAB

Conventional concrete slab-on-grades are suitable for the proposed hangar buildings. The subgrade should be thoroughly proof-rolled and any soft, yielding areas brought to a stable condition prior to slab construction or placement of aggregate base.

GCI recommends placing a minimum of 6 inches of granular fill (such as ODOT Item 304 or crushed limestone) under the floor slabs to serve as a capillary cut-off and to provide a uniform, firm subbase. A subgrade modulus of 150 pci can be used for slab design with 6 inches of aggregate placed for heavy-duty slab design. Place a vapor barrier below the slab in areas where moisture could cause problems with floor finishes or where slabs extend below grade.

SEISMIC FACTOR

Our borings encountered stable lean clay and glacial till soils. In accordance with the Ohio Building Code, we estimate the site has a Site Class D – stiff soil profile.

BELOW-GRADE WALLS

Retaining walls allowed to move freely at the top of the wall should be designed using active lateral earth pressure. Walls restrained at both top and bottom should be designed to resist an at-rest lateral soil pressure. The design loading depends on the type of backfill material used and boundary support conditions. The following table provides recommended equivalent fluid pressures for two types of soils and loading conditions.

Soil Type	Equivalent Active Fluid Pressure (pcf)	Equivalent At-Rest Fluid Pressure (pcf)
Lean Clay (site soils)	55	70
Sand and Gravel (properly compacted)	35	55

We do not recommend using cohesive soils as wall backfill due to their poor drainage characteristics and potential for lateral wall loads resulting from surface frost. We recommend that granular material (less than 15% passing the No. 200 sieve) be used for all

wall backfill. The stone should be placed at a 35° angle from the vertical to allow use of the lower values above. We recommend that footing drains and underslab drains leading to a permanent sump pump be installed to minimize the build-up of hydrostatic forces behind the below-grade walls. GCI also suggests damp-proofing of below-grade walls.

EXCAVATIONS

The existing site soils can be excavated with conventional track hoe equipment. We did not encounter bedrock within the borings and we do not expect bedrock will impact shallow excavations or site development work. **All site excavations should comply with current OSHA regulations.**

GROUNDWATER

We encountered groundwater seepage in 6 of the 22 borings at depths of 3 to 12 feet below grade. By completion of drilling the water levels in these borings were measured at 5 to 9 feet below grade (the water had dissipated in one boring). It is GCI's opinion that groundwater will not have a significant impact on shallow foundation excavations and shallow utility trench excavations associated with the proposed building footprint. If water is encountered in shallow site excavations, the excavations should be dewatered to allow footing construction and utility trench backfilling in dry conditions. We expect groundwater seepage flows in shallow excavations can be handled with portable sump pumps and working mats of crushed stone, as needed. Contact GCI for additional recommendations if excessive groundwater conditions are encountered.

PAVEMENTS – Conventional Automobile/Truck Traffic

Provided the site is properly prepared, conventional aggregate base and flexible asphalt

wearing course pavements can be used. Prior to pavement construction, the subgrade should be carefully proof-rolled, and stabilized as necessary. Lab testing resulted in a California Bearing Ratio (CBR) value of 5.

We assume that traffic will consist of automobiles and occasional trucks. Based on our experience with similar projects and soils, and assuming properly prepared subgrades, we recommend a minimum light-duty pavement section consisting of 3 inches of asphalt over 8 inches of aggregate base. For heavy-duty traffic areas, including the main traffic aisles and areas subjected to occasional truck deliveries, we suggest a pavement section consisting of a minimum of 4 inches of asphalt over 10 inches of aggregate base. **These designs are not adequate for tarmac pavements, which would require specific analysis.**

Providing adequate subbase drainage is important to future pavement performance. Finger drains connecting to weep-holes in inlets, proper grading of pavement subgrades and surfaces to shed run-off, and underdrains in pavement swales are suggested subbase drainage methods and should be designed by the site civil engineer.

Pavement areas should be thoroughly proof-rolled and steel-wheel rolled to a smooth surface prior to placement of base aggregate. Subgrade preparation during wet seasons may require the use of engineering fabrics or geogrids.

SITE PREPARATION AND EARTHWORK

We provide general guidelines for site preparation and earthwork operations below.

1. Remove existing construction elements as needed, in accordance with the recommendations in the report.
2. Remove topsoil, vegetation, and root mat systems from below the proposed building footprint and pavement areas plus a minimum of 5 feet beyond. Stockpile topsoil for redistribution in proposed green space areas, reuse in landscaping mounds, or to backfill on-site borrow pits, otherwise haul the topsoil off-site.
3. Remove the fill mounds from below proposed construction areas, plus to 10 feet outside construction limits.

If the remove and replace option is chosen for the possible fill areas, remove the existing fill from below the proposed building, plus 10 feet laterally.

4. Proof-roll the exposed soil subgrades with a fully-loaded, tandem-axle dump truck (or equivalent) to identify potential soft subgrade areas. Undercut soft areas or otherwise stabilize soft spots identified during the proof-roll prior to placing controlled fill to design grade.
5. Place controlled fills to design grade within the proposed building footprint, as required. Non-organic existing fill and natural soils are suitable for reuse in controlled fills. **Off-site borrow materials should be reviewed by our office prior to use.**
6. Place controlled fills in maximum 8-inch thick loose lifts and compact each lift to a minimum of 98% of the maximum Standard Proctor dry density (ASTM D-698). The moisture in the fill soils should be controlled to within $\pm 3\%$ of the optimum Standard Proctor moisture content. **Depending on the time of year of earthwork, moisture adjustment of the site soils may be required to achieve proper compaction.** Cohesive soils will compact best with a sheepfoot roller. Granular soils compact best with a vibratory smooth-drum compactor.
7. Construct foundations and start building construction after the building pads are filled to grade. Refer to the *Foundations* section of this report.
8. The building pad and pavement areas should be steel-wheel rolled to a smooth surface prior to placement of the underslab aggregate course. Subgrade preparation during wet seasons may require the use of engineering fabric or geogrid.
9. It is recommended that GCI be retained to observe proof-rolling operations, cut and fill operations, and foundation excavations.
10. Precautions should be taken when performing earthwork operations during winter weather or when freezing temperatures may occur. Contact GCI for additional recommendations on cold-weather earthwork operations, if applicable.

CONSTRUCTION MATERIALS ENGINEERING AND TESTING

GCI provides construction materials engineering and testing services. For project continuity throughout construction, we recommend that GCI be retained to observe, test, and document:

- earthwork procedures (stripping, fill placement, compaction, utility trench backfill, etc.),
- slab preparation (proof-rolling, excavations, undercuts, etc.),
- concrete placement and compressive strength testing (footings, slabs, pavements, etc.), and
- structural steel (welds, bolts, etc.).

The purpose of this work is to assess that the intent of our recommendations is being followed and to make timely changes to our recommendations (as needed) in the event site conditions vary from those encountered in our borings. Please contact our field department to initiate these services.

FINAL

We recommend that GCI review final site layout and grading plans. Recommendations contained in this report may be changed based on review of final site plans. If any changes in the nature, design or locations of the construction are planned, conclusions and recommendations should not be considered valid unless verified in writing by GCI. The recommendations contained in this report are the opinion of GCI based on the subsurface conditions found in the borings and available development information.

It should be noted that the nature and extent of variations between borings might not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report. This report has been prepared for

design purposes only and should not be considered sufficient to prepare an accurate bid document.

If you have any questions or need for any additional information, please contact our office. It has been a pleasure to be of service to you on this project, and we hope to continue our services through construction.



GEOTECHNICAL
CONSULTANTS INC.



APPENDIX – OSU Airport Hangar Project

General Notes for Soil Sampling and Classifications
General Site Location Map (DeLorme Street Atlas USA – 2014)
Boring Location Plan
Summary of Encountered Subsurface Conditions
Test Boring Logs (B-1 to B-12, P-1 to P-3, and R-1 to R-7)
Laboratory Test Results



**GEOTECHNICAL
CONSULTANTS INC.**

MAIN OFFICE
720 Greencrest Drive
Westerville, OH 43081
614.895.1400 **phone**
614.895.1171 **fax**

YOUNGSTOWN OFFICE
8433 South Avenue
Building 1, Suite 1
Boardman, OH 44514
330.965.1400 **phone**
330.965.1410 **fax**

DAYTON OFFICE
2380 Bellbrook Avenue
Xenia, OH 45385
937.736.2053 **phone**

www.gci2000.com

GENERAL NOTES FOR SOIL SAMPLING AND CLASSIFICATIONS

BORINGS, SAMPLING AND GROUNDWATER OBSERVATIONS:

Drilling and sampling were conducted in accordance with procedures generally recognized and accepted as standard methods of exploration of subsurface conditions. The borings were drilled using a truck-mounted drill rig using auger boring methods with standard penetration testing performed in each boring at intervals ranging from 1.5 to 5.0 feet. The stratification lines on the logs represent the approximate boundary between soil types at that specific location and the transition may be gradual.

Water levels were measured at drill locations under conditions stated on the logs. This data has been reviewed and interpretations made in the text of the report. Fluctuations in the level of the groundwater may occur due to other factors than those present at the time the measurements were made.

The Standard Penetration Test (ASTM-D-1586) is performed by driving a 2.0 inch O.D. split barrel sampler a distance of 18 inches utilizing a 140 pound hammer free falling 30 inches. The number of blows required to drive the sampler each 6 inches of penetration are recorded. The summation of the blows required to drive the sampler for the final 12 inches of penetration is termed the Standard Penetration Resistance (N). Soil density/consistency in terms of the N-value is as follows:

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-10	Loose	0-4	Soft
10-30	Medium Dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	Very Stiff
		30 +	Hard

SOIL MOISTURE TERMS

Soil Samples obtained during the drilling process are visually characterized for moisture content as follows:

MOISTURE CONTENT	DESCRIPTION
Damp	Soil moisture is much drier than the Atterberg plastic limit (where soils are cohesive) and generally more than 3% below Standard Proctor "optimum" moisture conditions. Soils of this moisture generally require added moisture to achieve proper compaction.
Moist	Soil moisture is near the Atterberg plastic limit (cohesive soils) and generally within $\pm 3\%$ of the Standard Proctor "optimum" moisture content. Little to no moisture conditioning is anticipated to be required to achieve proper compaction and stable subgrades.
Very Moist	Soil moisture conditions are above the Atterberg plastic limit (cohesive soils) and generally greater than 3% above Standard Proctor "optimum" moisture conditions. Drying of the soils to near "optimum" conditions is anticipated to achieve proper compaction and stable subgrades.
Wet	Soils are saturated. Significant drying of soils is anticipated to achieve proper compaction and stable subgrades.

SOIL CLASSIFICATION PROCEDURE:

Soil samples obtained during the drilling process are preserved in plastic bags and visually classified in the laboratory. Select soil samples may be subjected to laboratory testing to determine natural moisture content, gradation, Atterberg limits and unit weight. Soil classifications on logs may be adjusted based on results of laboratory testing.

Soils are classified in accordance with the ASTM version of the Unified Soil Classification System. ASTM D-2487 "Classification of Soils for Engineering Purposes (Unified Soil Classification System) describes a system for classifying soils based on laboratory testing. ASTM D-2488 "Description and Identification of Soil (Visual-Manual Procedure) describes a system for classifying soils based on visual examination and manual tests.

Soil classifications are based on the following tables (see reverse side):

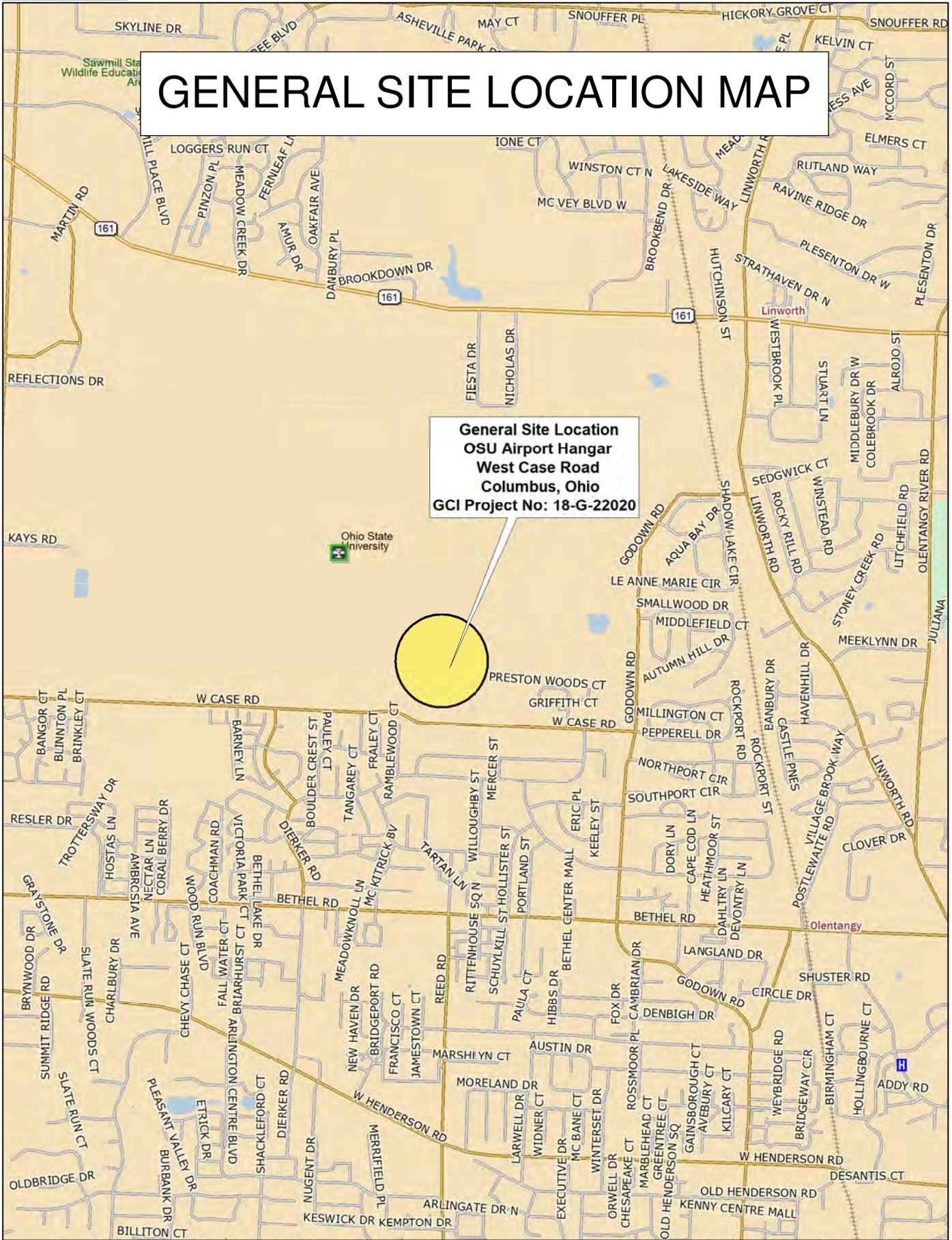
GENERAL NOTES FOR SOIL SAMPLING AND CLASSIFICATIONS

PARTICLE SIZE DEFINITION		CONSTITUENT MODIFIERS	
Boulders:	>12"		
Cobbles:	3" to 12"	Trace	Less than 5%
Gravel:	Coarse: 3/4" to 3"	Few	5-10%
	Fine: No. 4 (3/16") to 3/4"	Little	15-25%
Sand:	Coarse No. 10 (2.0mm) to No. 4 (4.75mm)	Some	30-45%
	Medium No. 40 (0.425mm) to No. 10 (2.0mm)	Mostly	50-100%
	Fine No. 200 (0.074mm) to No. 40 (0.425mm)		
Silt & Clay	<0.074mm; classification based on overall plasticity; in general clay particles <0.005mm.		

ASTM/UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of materials is larger than No. 200 sieve size)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	<i>Clean Gravel (less than 5% fines)</i>	
	GW	Well-graded gravel, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines
	<i>Gravels with fines (more than 12% fines)</i>	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS More than 50% of coarse fraction smaller than No. 4 sieve size	<i>Clean Sands (Less than 5% fines)</i>	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly-graded sands, gravelly sands, little or no fines
	<i>Sands with fines (More than 12% fines)</i>	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:		
Less than 5 percentGW, GP, SW, SP		
Greater than 12 percentGM, GC, SM, SC		
5 to 12 percentBorderline cases requiring dual symbols: SP-SM, GP-GM, etc.		
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size)		
SILTS AND CLAYS Liquid Limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays or low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	CL-ML	Inorganic silty clay of slight plasticity, P.I. between 4 and 7
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid Limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays or medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

GENERAL SITE LOCATION MAP

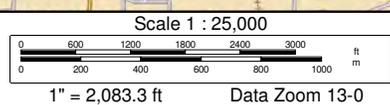
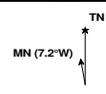
General Site Location
OSU Airport Hangar
West Case Road
Columbus, Ohio
GCI Project No: 18-G-22020

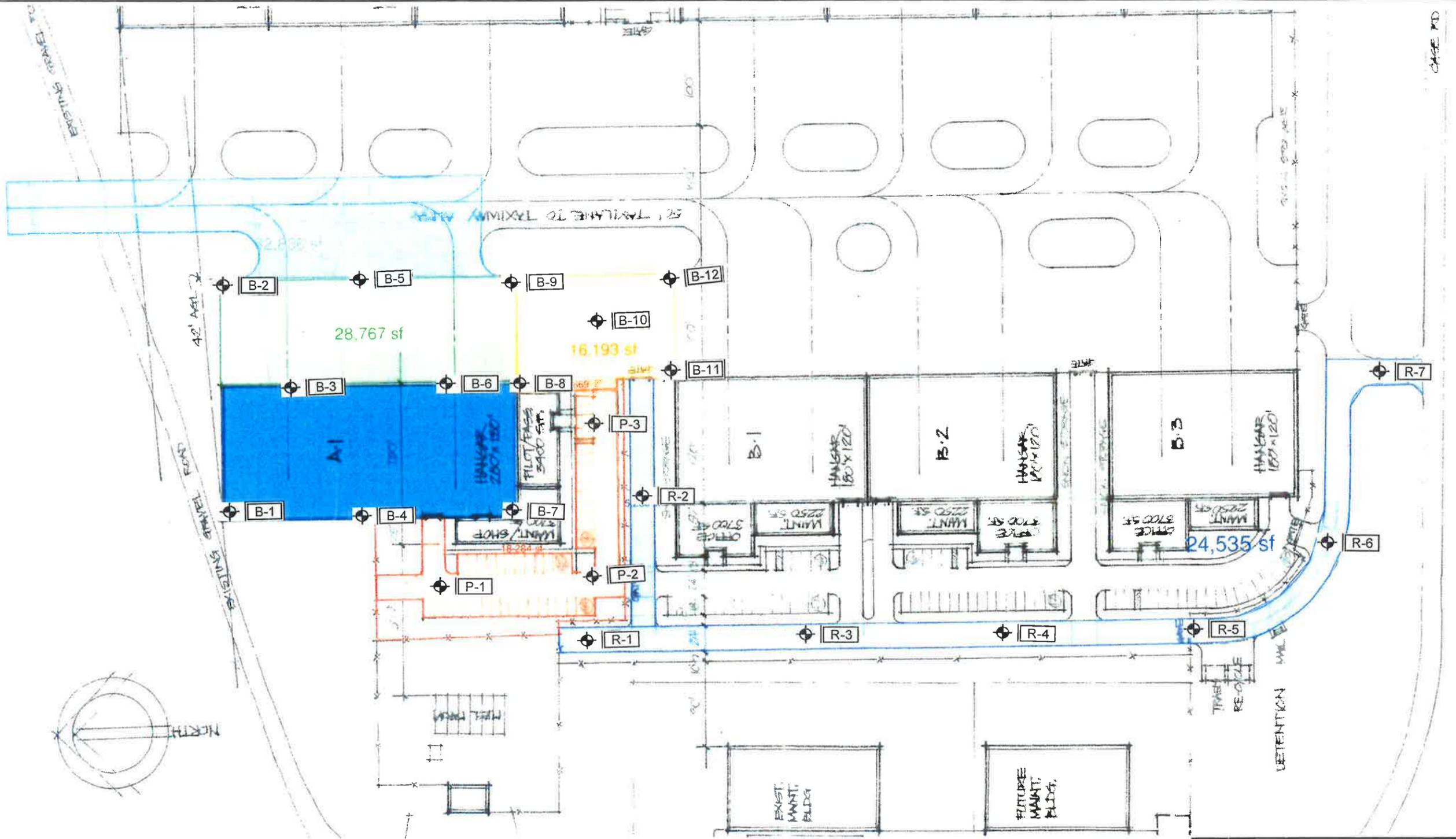


Data use subject to license.

© DeLorme. DeLorme Street Atlas USA® 2014.

www.delorme.com





⊕ Approximate Boring Location

BORING LOCATION PLAN	
OSU Airport Hangar Project	
West Case Road - Columbus, Ohio	
Base map by Brandstetter Carroll Inc	
Project No.: 18-G-22020	
Date: 7/12/18	Drawn By: CLM
Scale: 1"=100' (approximate)	



Summary of Encountered Subsurface Conditions

OSU Airport Hangar Project
West Case Road - Columbus, Ohio
GCI Job Number: 18-G-22020

Borehole	Surface Elevation (feet) *	Surface Layer	Topsoil Thickness (ft.)	Bottom of Fill Cover (feet)	Groundwater: Level Encountered (ft)		Groundwater: Level at Completion (ft)		Depth to Mottled Lean Clay (ft)	Depth to Brown Till (ft)	Depth to Gray Till (ft)	Bottom of Boring Depth (ft)
					Depth	Elevation*	Depth	Elevation*				
B-1	892.0	Topsoil	0.5	2.5	--	--	--	--	--	2.5	12.0	20.0
B-2	889.0	Topsoil	0.9	--	12	877.0	9	880.0	0.9	4.0	10.0	15.0
B-3	890.0	Topsoil	0.7	--	11.5	878.5	7	883.0	0.7	3.0	9.5	15.0
B-4	891.0	Topsoil	0.7	--	--	--	--	--	0.7	2.8	12.5	15.0
B-5	890.0	Topsoil	0.6	--	--	--	--	--	0.6	2.5	11.0	20.0
B-6	890.0	Topsoil	0.5	--	--	--	--	--	0.5	4.5	9.5	15.0
B-7	890.5	Topsoil	0.4	--	8	882.5	8	882.5	0.4	2.0	11.5	20.0
B-8	890.0	Topsoil	0.8	--	3	887.0	--	--	0.8	4.7	11.0	15.0
B-9	889.5	Topsoil	0.5	--	8	881.5	8	881.5	0.5	2.8	12.5	15.0
B-10	890.0	Topsoil	0.9	--	9	881.0	5	885.0	0.9	4.0	12.5	20.0
B-11	890.5	Topsoil	0.8	--	--	--	--	--	0.8	3.8	11.5	15.0
B-12	890.0	Topsoil	0.3	2.0	--	--	--	--	--	2.0	12.0	15.0
P-1	891.0	Topsoil	0.9	--	--	--	--	--	0.9	4.0	--	5.5
P-2	891.0	Topsoil	0.6	--	--	--	--	--	0.6	4.5	--	5.5
P-3	891.0	Topsoil	0.9	--	--	--	--	--	0.9	4.0	--	5.5
R-1	892.0	Topsoil	0.7	--	--	--	--	--	0.7	3.4	--	10.0
R-2	891.0	Topsoil	0.8	--	--	--	--	--	0.8	3.0	--	5.5
R-3	892.0	Topsoil	0.4	--	--	--	--	--	0.4	4.7	--	10.0
R-4	892.0	Topsoil	0.7	--	--	--	--	--	0.7	3.0	--	5.5
R-5	891.5	Topsoil	0.5	--	--	--	--	--	0.5	4.5	--	10.0
R-6	892.0	Topsoil	0.6	--	--	--	--	--	0.6	3.7	--	5.5
R-7	889.0	Topsoil	0.8	--	--	--	--	--	0.8	4.7	--	10.0

Average Topsoil Depth
at boring locations: 0.7'

*NOTE: Surface elevations were interpolated from topographic data on plans provided; GCI did not field verify the elevations.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-1
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 892.0 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18			
	3	0.0-1.5	SS	2	3	2	Moist	0.5	Topsoil
									Fill consisting of a mixture of lean clay, sand, and gravel; stained
	4	2.0-3.5	SS	2	4	11	Moist	2.5	
									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4	4.0-5.5	SS	4	5	9	Moist		
5									
	4.5	8.5-10.0	SS	12	14	17	Moist		
10									
								12.0	
									Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	17	20	25	Moist		
15									
	4.5	18.5-20.0	SS	21	29	35	Moist		
								20.0	

BOTTOM OF BORING: 20'

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-2
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 889.0 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
<u>9.0</u> FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18			
	2.5	0.0-1.5	SS	2	2	5	Moist	0.9	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3.0-3.5	2.0-3.5	SS	2	3	4	Moist	4.0	Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5	NR	4.0-5.5	SS	4	5	7	Moist		
	4	8.5-10.0	SS	14	15	17	Moist	10.0	Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									Water Seepage at 12'
	4	13.5-15.0	SS	9	12	13	Moist	15.0	
15									
									BOTTOM OF BORING: 15'

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-3
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 890.0 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
<u>7.0</u> FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING See Boring Location Plan

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION
				From	To	To				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18				
	2.5-3.0	0.0-1.5	SS	4	3	2	Moist	0.7	Topsoil	
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand	
	2.5	2.0-3.5	SS	3	4	4	Moist	3.0		
									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted	
	4	4.0-5.5	SS	4	5	6	Moist			
5										
	4.5	8.5-10.0	SS	12	18	22	Moist	9.5		
									Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted	
10									Water Seepage at 11.5'	
	4	13.5-15.0	SS	10	13	16	Moist	15.0		
15									BOTTOM OF BORING: 15'	

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME **OSU Airport Hangar Project - West Case Road - Columbus, Ohio**

BORING NO. **B-4**

PROJ.

SURF. ELEV. **891.0 ±**

CLIENT **The Ohio State University**

NO. **18-G-22020**

DATE DRILLED **7/11/2018**

GROUND WATER OBSERVATION				Proportions Used			140 lb Wt. x 30" fall on 2" O.D. Sampler				
None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS				Trace	Less than 5%		Cohesionless Density		Cohesive Consistency		
				Few	5 to 10%		0 - 10	Loose	0 - 4	Soft	
				Little	15 to 25%		10 - 30	Medium Dense	4 - 8	Medium Stiff	
				Some	30 to 45%		30 - 50	Dense	8 - 15	Stiff	
				Mostly	50 to 100%		50 +	Very Dense	15 - 30	Very Stiff	
									30 +	Hard	
LOCATION OF BORING See Boring Location Plan											
DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness		
				0-6	6-12	12-18					
	3	0.0-1.5	SS	4	7	8	Moist	0.7	Topsoil		
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand		
	4	2.0-3.5	SS	21	9	14	Moist	2.8			
									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted		
	3.5-4.0	4.0-5.5	SS	6	6	11	Moist				
5											
	4	8.5-10.0	SS	5	6	8	Moist				
10											
	4.5	13.5-15.0	SS	16	18	25	Moist				
15								12.5	Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted		
								15.0			
									BOTTOM OF BORING: 15'		

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-5
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 890.0 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION <u>None</u> FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Proportions Used Trace Less than 5% Few 5 to 10% Little 15 to 25% Some 30 to 45% Mostly 50 to 100%	140 lb Wt. x 30" fall on 2" O.D. Sampler <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cohesionless Density</td> <td style="width: 50%;">Cohesive Consistency</td> </tr> <tr> <td>0 - 10 Loose</td> <td>0 - 4 Soft</td> </tr> <tr> <td>10 - 30 Medium Dense</td> <td>4 - 8 Medium Stiff</td> </tr> <tr> <td>30 - 50 Dense</td> <td>8 - 15 Stiff</td> </tr> <tr> <td>50 + Very Dense</td> <td>15 - 30 Very Stiff</td> </tr> <tr> <td></td> <td>30 + Hard</td> </tr> </table>	Cohesionless Density	Cohesive Consistency	0 - 10 Loose	0 - 4 Soft	10 - 30 Medium Dense	4 - 8 Medium Stiff	30 - 50 Dense	8 - 15 Stiff	50 + Very Dense	15 - 30 Very Stiff		30 + Hard
Cohesionless Density	Cohesive Consistency													
0 - 10 Loose	0 - 4 Soft													
10 - 30 Medium Dense	4 - 8 Medium Stiff													
30 - 50 Dense	8 - 15 Stiff													
50 + Very Dense	15 - 30 Very Stiff													
	30 + Hard													

LOCATION OF BORING See Boring Location Plan

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				From	To	12-18"			
	3.5	0.0-1.5	SS	4	5	5	Moist	0.6	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	2.0-3.5	SS	3	4	7	Moist	2.5	Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	5	8	9	Moist		
5									
	4.5	8.5-10.0	SS	7	8	11	Moist		
10								11.0	Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	9	17	14	Moist		
15									
	4.5	18.5-20.0	SS	19	25	30	Moist		
								20.0	BOTTOM OF BORING: 20'

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-6
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 890.0 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING See Boring Location Plan

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				From	To	12-18			
	--	0.0-1.5	SS	3	3	5	Moist	0.5	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	2.0-2.5	2.0-3.5	SS	3	4	5	Moist		
	--	4.0-5.5	SS	6	6	7	Moist	4.5	
5									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	10	12	16	Moist	9.5	
10									Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	9	13	18	Moist	15.0	
15									
									BOTTOM OF BORING: 15'

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-7
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 890.5 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
<u>8.0</u> FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING See Boring Location Plan

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18			
	3	0.0-1.5	SS	2	2	3	Moist	0.4	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	1.5-2.0	2.0-3.5	SS	3	4	6	Moist	2.0	Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	3.5-4.0	4.0-5.5	SS	3	4	6	Moist		
5									
	3.5-4.0	8.5-10.0	SS	9	14	21	Moist		Water Seepage at 8'
10									
								11.5	Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	9	11	14	Moist		
15									
	4.5	18.5-20.0	SS	16	18	19	Moist		
								20.0	BOTTOM OF BORING: 20'

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B- 8
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 890.0 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING See Boring Location Plan

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				From	To	12-18			
	3	0.0-1.5	SS	3	3	2	Moist	0.8	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	2.5	2.0-3.5	SS	2	3	2	Moist		Water Seepage at 3'
	3.5-4.0	4.0-5.5	SS	WH	WH	3	Wet to Very Moist	4.7	Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5									
	4	8.5-10.0	SS	7	10	14	Moist		
10									
								11.0	Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4	13.5-15.0	SS	15	17	21	Moist	15.0	
15									
									BOTTOM OF BORING: 15'

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-9
 CLIENT The Ohio State University PROJ. NO. 18-G-22020 SURF. ELEV. 889.5 ±
 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
<u>8.0</u> FEET BELOW SURFACE AT COMPLETION	Trace Less than 5%	Cohesionless Density	Cohesive Consistency
_____ FEET BELOW SURFACE AT 24 HOURS	Few 5 to 10%	0 - 10 Loose	0 - 4 Soft
_____ FEET BELOW SURFACE AT _____ HOURS	Little 15 to 25%	10 - 30 Medium Dense	4 - 8 Medium Stiff
	Some 30 to 45%	30 - 50 Dense	8 - 15 Stiff
	Mostly 50 to 100%	50 + Very Dense	15 - 30 Very Stiff
			30 + Hard

LOCATION OF BORING See Boring Location Plan

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*		SOIL IDENTIFICATION						
				From	To	To				Remarks include color, type of soil, etc. Rock-color, type, condition, hardness						
				0-6	6-12	12-18										
	2.5	0.0-1.5	SS	4	2	2	Moist	0.5	Topsoil							
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand							
	2.5	2.0-3.5	SS	1	2	2	Moist to Very Moist	2.8	Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted							
	3.5	4.0-5.5	SS	3	3	3	Moist to Very Moist									
5																
	4	8.5-10.0	SS	8	8	10	Moist		Water Seepage at 8'							
10																
	--	13.5-15.0	SS	9	13	15	Moist	12.5	Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted							
								15.0								
15									BOTTOM OF BORING: 15'							

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-10
 CLIENT The Ohio State University PROJ. SURF. ELEV. 890.0 ±
 NO. 18-G-22020 DATE DRILLED 7/10/2018

GROUND WATER OBSERVATION				Proportions Used			140 lb Wt. x 30" fall on 2" O.D. Sampler					
<u>5.0</u> FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS				Trace Less than 5% Few 5 to 10% Little 15 to 25% Some 30 to 45% Mostly 50 to 100%			Cohesionless Density		Cohesive Consistency			
							0 - 10	Loose	0 - 4	Soft		
							10 - 30	Medium Dense	4 - 8	Medium Stiff		
							30 - 50	Dense	8 - 15	Stiff		
							50 +	Very Dense	15 - 30	Very Stiff		
									30 +	Hard		
LOCATION OF BORING See Boring Location Plan												
DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness			
				0-6	6-12	12-18						
	2.5	0.0-1.5	SS	3	3	3	Moist	0.9	Topsoil			
									Brown Mottled Gray Lean Clay (CL) - stained, moderate to higher plasticity, trace sand			
	2.5	2.0-3.5	SS	3	4	5	Very Moist					
								4.0	Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted			
	3.5	4.0-5.5	SS	3	5	5	Moist					
5									Water Seepage at 9'			
	4	8.5-10.0	SS	7	8	10	Moist					
10									Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted			
	3.5	13.5-15.0	SS	5	7	10	Moist	12.5				
15									BOTTOM OF BORING: 20'			
	4	18.5-20.0	SS	8	9	12	Moist	20.0				

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. B-11
 CLIENT The Ohio State University PROJ. SURF. ELEV. 890.5 ±
 NO. 18-G-22020 DATE DRILLED 7/11/2018

GROUND WATER OBSERVATION				Proportions Used			140 lb Wt. x 30" fall on 2" O.D. Sampler			
None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS				Trace	Less than 5%		Cohesionless Density		Cohesive Consistency	
				Few	5 to 10%		0 - 10	Loose	0 - 4	Soft
				Little	15 to 25%		10 - 30	Medium Dense	4 - 8	Medium Stiff
				Some	30 to 45%		30 - 50	Dense	8 - 15	Stiff
				Mostly	50 to 100%		50 +	Very Dense	15 - 30	Very Stiff
									30 +	Hard
LOCATION OF BORING				See Boring Location Plan						
DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness	
				0-6	6-12	12-18				
	--	0.0-1.5	SS	4	3	3	Moist	0.8	Topsoil	
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand	
	3.5	2.0-3.5	SS	2	2	3	Moist			
									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted	
	4.5	4.0-5.5	SS	5	6	7	Moist	3.8		
5										
	3.5-4.0	8.5-10.0	SS	7	8	10	Moist			
10										
									Gray Sandy Lean Clay with Gravel (CL) - low plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted	
	4.5	13.5-15.0	SS	15	19	21	Moist	11.5		
15										
									BOTTOM OF BORING: 15'	
								15.0		

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. P-1
 CLIENT The Ohio State University PROJ. SURF. ELEV. 891.0 ±
 NO. 18-G-22020 DATE DRILLED 7/11/2018

GROUND WATER OBSERVATION <u>None</u> FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Proportions Used Trace Less than 5% Few 5 to 10% Little 15 to 25% Some 30 to 45% Mostly 50 to 100%	140 lb Wt. x 30" fall on 2" O.D. Sampler <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Cohesionless Density</td> <td style="width: 50%;">Cohesive Consistency</td> </tr> <tr> <td>0 - 10 Loose</td> <td>0 - 4 Soft</td> </tr> <tr> <td>10 - 30 Medium Dense</td> <td>4 - 8 Medium Stiff</td> </tr> <tr> <td>30 - 50 Dense</td> <td>8 - 15 Stiff</td> </tr> <tr> <td>50 + Very Dense</td> <td>15 - 30 Very Stiff</td> </tr> <tr> <td></td> <td>30 + Hard</td> </tr> </table>	Cohesionless Density	Cohesive Consistency	0 - 10 Loose	0 - 4 Soft	10 - 30 Medium Dense	4 - 8 Medium Stiff	30 - 50 Dense	8 - 15 Stiff	50 + Very Dense	15 - 30 Very Stiff		30 + Hard
Cohesionless Density	Cohesive Consistency													
0 - 10 Loose	0 - 4 Soft													
10 - 30 Medium Dense	4 - 8 Medium Stiff													
30 - 50 Dense	8 - 15 Stiff													
50 + Very Dense	15 - 30 Very Stiff													
	30 + Hard													

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18			
	3	0.0-1.5	SS	2	3	2	Moist	0.9	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3	2.0-3.5	SS	3	3	5	Moist		
								4.0	
	2.5	4.0-5.5	SS	4	6	7	Moist		Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5								5.5	
									BOTTOM OF BORING: 5.5'
10									
15									

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. P-2
 CLIENT The Ohio State University PROJ. SURF. ELEV. 891.0 ±
 NO. 18-G-22020 DATE DRILLED 7/11/2018

GROUND WATER OBSERVATION				Proportions Used			140 lb Wt. x 30" fall on 2" O.D. Sampler			
None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS				Trace	Less than 5%		Cohesionless Density		Cohesive Consistency	
				Few	5 to 10%		0 - 10	Loose	0 - 4	Soft
				Little	15 to 25%		10 - 30	Medium Dense	4 - 8	Medium Stiff
				Some	30 to 45%		30 - 50	Dense	8 - 15	Stiff
				Mostly	50 to 100%		50 +	Very Dense	15 - 30	Very Stiff
									30 +	Hard
LOCATION OF BORING				See Boring Location Plan						
DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness	
				0-6	6-12	12-18				
	3.5	0.0-1.5	SS	6	3	3	Moist	0.6	Topsoil	
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand	
	2.5	2.0-3.5	SS	3	3	4	Moist			
									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted	
	4.5	4.0-5.5	SS	3	5	5	Very Moist to Moist	4.5		
								5.5	BOTTOM OF BORING: 5.5'	
5										
10										
15										

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. R-3
 CLIENT The Ohio State University PROJ. SURF. ELEV. 892.0 ±
 NO. 18-G-22020 DATE DRILLED 7/11/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler					
None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Trace	Less than 5%		Cohesionless Density	Cohesive Consistency		
	Few	5 to 10%		0 - 10	Loose	0 - 4	Soft
	Little	15 to 25%		10 - 30	Medium Dense	4 - 8	Medium Stiff
	Some	30 to 45%		30 - 50	Dense	8 - 15	Stiff
Mostly	50 to 100%		50 +	Very Dense	15 - 30	Very Stiff	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18			
	3	0.0-1.5	SS	3	3	4	Moist	0.4	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	2	3	3	Moist		
	3	4.0-5.5	SS	5	6	8	Moist	4.7	
5									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	13	17	22	Moist		
10								10.0	
									BOTTOM OF BORING: 10'
15									

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



TEST BORING LOG

PROJECT NAME OSU Airport Hangar Project - West Case Road - Columbus, Ohio BORING NO. R-5
 CLIENT The Ohio State University PROJ. SURF. ELEV. 891.5 ±
 NO. 18-G-22020 DATE DRILLED 7/11/2018

GROUND WATER OBSERVATION	Proportions Used	140 lb Wt. x 30" fall on 2" O.D. Sampler	
None FEET BELOW SURFACE AT COMPLETION _____ FEET BELOW SURFACE AT 24 HOURS _____ FEET BELOW SURFACE AT _____ HOURS	Trace	Less than 5%	
	Few	5 to 10%	
	Little	15 to 25%	
	Some	30 to 45%	
	Mostly	50 to 100%	
		Cohesionless Density	Cohesive Consistency
		0 - 10	Loose
		10 - 30	Medium Dense
		30 - 50	Dense
		50 +	Very Dense
		0 - 4	Soft
		4 - 8	Medium Stiff
		8 - 15	Stiff
		15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To			Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
				0-6	6-12	12-18			
	3	0.0-1.5	SS	2	3	5	Moist	0.5	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	3	3	4	Moist		
	4.5	4.0-5.5	SS	4	5	7	Moist	4.5	
5									Brown Lean Clay with Sand to Sandy Lean Clay (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	13	17	22	Moist		
10								10.0	
									BOTTOM OF BORING: 10'
15									

* The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



Summary of Laboratory Results

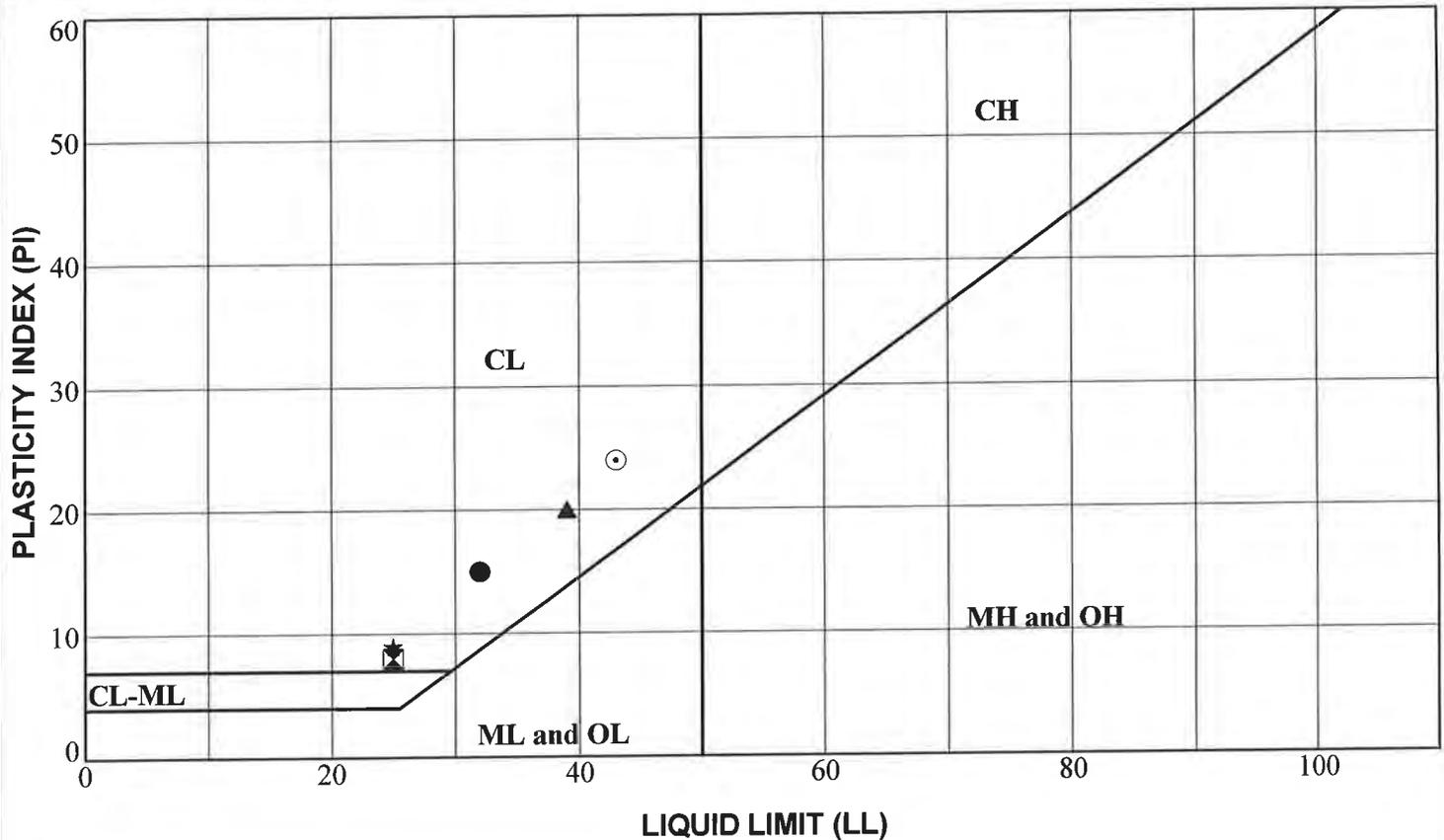
OSU Airport Hangar Project
 West Case Road - Columbus, Ohio
 GCI Job Number: 18-G-22020

Test Hole	Depth	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Fines (< #200 Sieve)	% Clay (< 0.005 mm)	Dry Density (pcf)	Optimum Moisture (%)	C.B.R.	Swell (%)	ASTM Classification	ASTM Description
B-3	0.0	17.2						-	-	-	-		
B-3	2.0	21.7	32	17	15	69.1	40	-	-	-	-	CL	Sandy Lean Clay
B-3	4.0	16.7	25	17	8	68.5	32	-	-	-	-	CL	Sandy Lean Clay
B-3	8.5	10.6						-	-	-	-		
B-3	13.5	12.1						-	-	-	-		
B-8	0.0	18.7						-	-	-	-		
B-8	2.0	24.1	39	19	20	79.6	49	-	-	-	-	CL	Lean Clay With Sand
B-8	4.0	19.1	25	16	9	51.4	20	-	-	-	-	CL	Sandy Lean Clay
B-8	8.5	11.9						-	-	-	-		
B-8	13.5	8.9						-	-	-	-		
R-3	1-4'	22.0	43	19	24	84.7	53	108.6	18.7	5.0	1.3	CL	Lean Clay With Sand



July 2018

Sheet 1 of 1



LEGEND:

TEST HOLE	DEPTH	w _n	LL	PL	PI	ASTM CLASSIFICATION
● B- 3	2.0	21.7	32	17	15	CL
⊠ B- 3	4.0	16.7	25	17	8	CL
▲ B- 8	2.0	24.1	39	19	20	CL
★ B- 8	4.0	19.1	25	16	9	CL
⊙ R- 3	1-4'	22.0	43	19	24	CL

Job No: 18-G-22020

Method: ASTM D4318

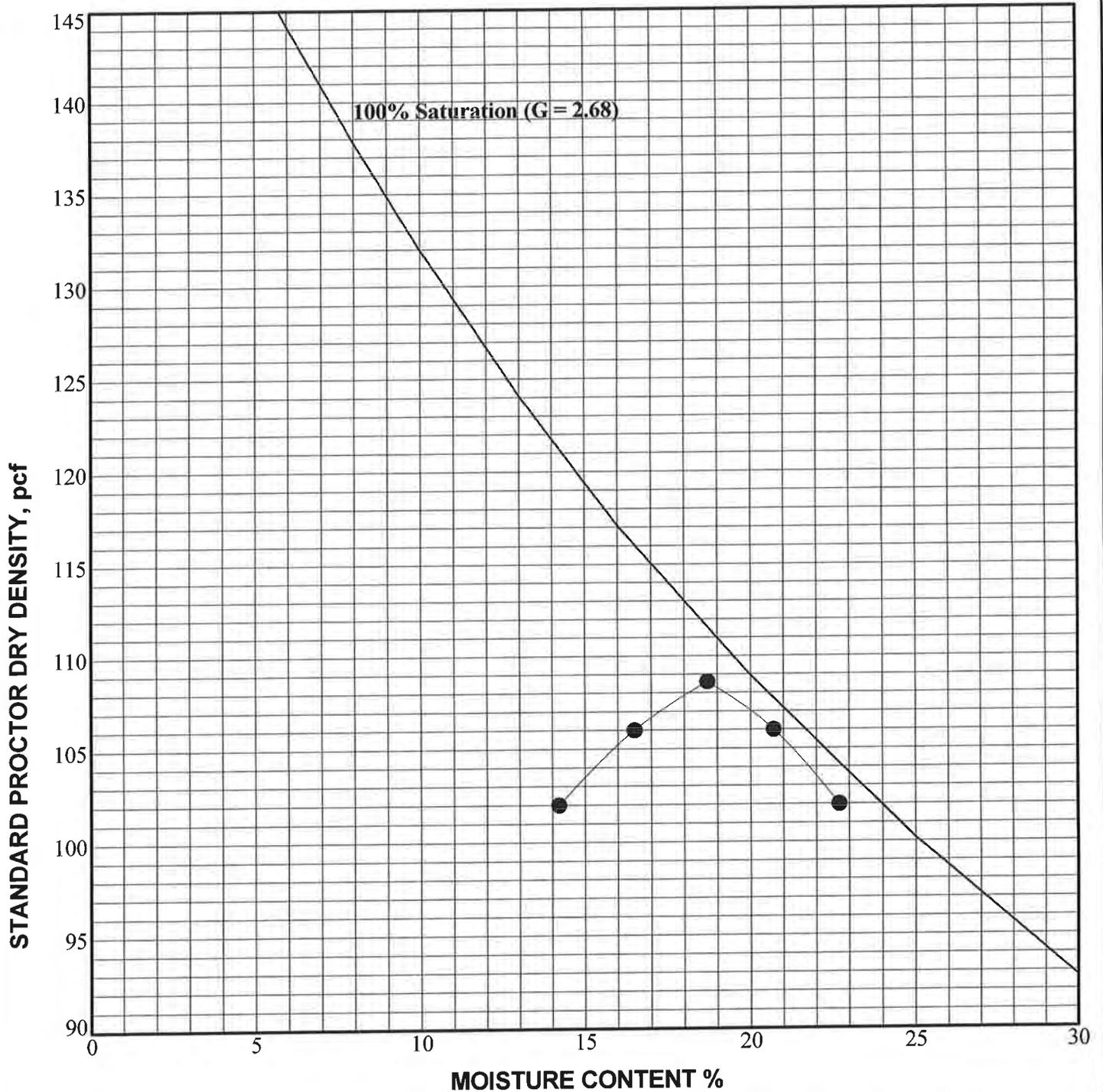
Date: July 2018

ATTERBERG LIMITS TEST RESULTS

OSU Airport Hangar Project
West Case Road - Columbus, Ohio

Geotechnical Consultants, Inc. - Westerville, OH 43081





LEGEND:

Test Hole	Depth	ASTM Classification	Maximum Dry Density, pcf	Optimum Moisture Content, %	Natural Moisture Content, %	CBR
● R-3	1-4'	CL	108.6	18.7	22.0	5.0

Job No: 18-G-22020

Method: ASTM D698A

Date: July 2018

LABORATORY COMPACTION TEST

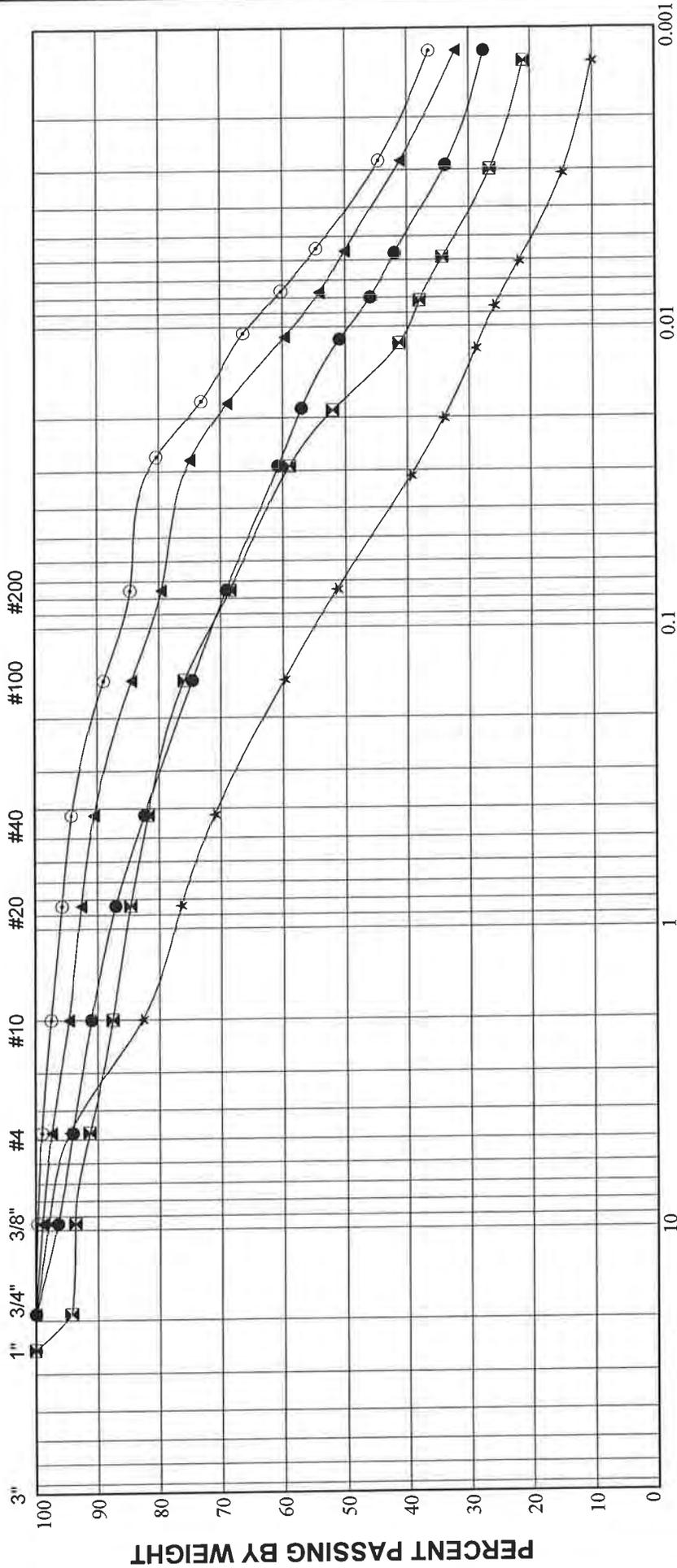
OSU Airport Hangar Project
West Case Road - Columbus, Ohio

Geotechnical Consultants, Inc. - Westerville, OH 43081



HYDROMETER

U.S. STANDARD SIEVES



PARTICLE SIZE IN MILLIMETERS

GRAVEL		SAND			SILT		CLAY
coarse	fine	coarse	medium	fine			

TEST HOLE	DEPTH	LL	W _n	PL	ASTM SOIL DESCRIPTION	C.B.R.
● B-3	2.0	32	21.7	17	Sandy Lean Clay	-
■ B-3	4.0	25	16.7	17	Sandy Lean Clay	-
▲ B-8	2.0	39	24.1	19	Lean Clay With Sand	-
★ B-8	4.0	25	19.1	16	Sandy Lean Clay	-
◎ R-3	1-4'	43	22.0	19	Lean Clay With Sand	5.0

Job No.: 18-G-22020
 Method: ASTM D421 D422
 Date: July 2018

COMBINED PARTICLE SIZE DISTRIBUTION
 OSU Airport Hangar Project - West Case Road - Columbus, Ohio
 Geotechnical Consultants, Inc. - Westerville, OH 43081



EXHIBIT 5

August 7, 2007

Mr. Steve Slusher, P.E.
R.D. Zande and Associates
1500 Lake Shore Drive Suite 100
Columbus, Ohio 43204

RE: Failing Soil Subgrade Taxiway D and Taxiway A
OSU Airport – Taxiway A East Rehabilitation Project
Rii # W-07-043

Dear Mr. Slusher:

Resource International made a site visit at the reference project to make observation and repair recommendations for the failing subgrade at the Taxiway D and Taxiway A intersection at Station 3+52 to 6+70. Rii staff engineer, Dane Redinger, met with R.D. Zande's Jeremy Cawley, project manager, and Bill Slater, resident project representative.

The contractor, George J. Igel & Co., Inc. excavated down to subgrade (approximately elevation 890) this morning. This exposed soil subgrade exhibited 4 to 6 inches of deflection under construction equipment. The subgrade surface soil is described as sandy, clayey silt. After a test pit was excavated, more stable cohesive clayey soil was encountered at 4 inches below the subgrade elevation but still exhibited undesirable (1 to 2 inches) deflection under construction equipment loading. At a depth of 16 inches, the clayey soil appeared stiff and did not show signs of movement.

Rii staff engineer consulted with R.D. Zande representatives and concluded with two possible repair solutions for the failing subgrade:

Option 1 - Lime Modification

- Remove the top 4 inches of the surface subgrade
- Apply 10% Lime/fly ash of the soil's dry unit weight to the entire area and mix according to industry standards to a depth of 16 inches at optimum moisture content
- Compact lime/fly ash and soil in accordance with project specifications
- Protect the area from all construction traffic for a minimum of 48 hours

Option 2 - Undercut and Replace

- Remove the top 16 inches of the surface soil
- Place a Tensar BX-1200 geogrid over the entire area
- Replace the undercut volume with P-209 granular material in two 8-inch lifts compacted in accordance with project specifications.

Because of the uncertainty of the subject situation, it is recommended to perform a test section (10 ft X 30 ft) in the vicinity of the worst area to verify the adequacy of the stabilization option employed. All repair efforts should be done under the observation of a Resource International soils engineering technician or staff engineer.

If you have any questions, please call.

Sincerely,

RESOURCE INTERNATIONAL, INC.

Dane P. Redinger, E.I.
Staff Engineer – Construction Services

Karl E. Berghauer, P.E.
Staff Engineer – Geotechnical Services

DPR/JRN

File: W-07-043 Subgrade Soil Problems

Appendix H – Noise Report

Technical Report

THE OHIO STATE UNIVERSITY AIRPORT

Master Plan Update Noise Contour Development

Prepared for
Woolpert Inc.

November 2018



Technical Report

THE OHIO STATE UNIVERSITY AIRPORT

Master Plan Update Noise Contour Development

Prepared for
Woolpert Inc.

November 2018

550 West C Street
Suite 750
San Diego, CA 92101
619.719.4200
www.esassoc.com



Bend	Oakland	San Francisco
Camarillo	Orlando	Santa Monica
Delray Beach	Pasadena	Sarasota
Destin	Petaluma	Seattle
Irvine	Portland	Sunrise
Los Angeles	Sacramento	Tampa
Miami	San Diego	

D160608.00

OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

TABLE OF CONTENTS

OSU Master Plan Update Noise Contour Development

	<u>Page</u>
1.0 - Introduction and Overview	1
2.0 - 2037 Forecasted Aircraft Operations	1
3.0 - Aircraft Fleet Mix	1
4.0 - Stage Lengths	1
5.0 - Time of Day	2
6.0 - Runway Use	3
7.0 - Flight Track and Flight Track Use Percentages.....	3
8.0 - 2037 DNL Contours	4

Appendices

A. Aircraft Operational Information	5
---	---

List of Tables

1 Day-Night Percentages	2
2 Runway Use	3
A-1 2037 Annual Average Day Aircraft Operations.....	6
A-2 Flight Track Use – Jet	11
A-3 Flight Track Use – Turboprop and Multi-Engine Piston – Daytime	13
A-4 Flight Track Use – Turboprop and Multi-Engine Piston – Nighttime	14
A-5 Flight Track Use – Single-Engine Piston	16
A-6 Flight Track Use – Helicopter.....	17
A-7 Flight Track Use – Multi- and Single-Engine Piston – Touch and Go	17
A-8 Flight Track Use – Helicopter – Track and Go.....	18

List of Figures

Figure 1 2037 DNL Contour Map	19
Figure A-1 Jet Arrival Flight Tracks – East Flow	20
Figure A-2 Jet Arrival Flight Tracks – West Flow	21
Figure A-3 Jet Departure Flight Tracks – East Flow	22
Figure A-4 Jet Departure Flight Tracks – West Flow	23
Figure A-5 Turboprop/Multi-/Single-Engine Piston Arrival Flight Tracks – East Flow	24
Figure A-6 Turboprop/Multi-/Single-Engine Piston Arrival Flight Tracks – West Flow	25
Figure A-7 Turboprop/Multi-/Single-Engine Piston Departure Flight Tracks – East Flow	26
Figure A-8 Turboprop/Multi-/Single-Engine Piston Departure Flight Tracks – West Flow	27
Figure A-9 Helicopter Arrival Flight Tracks.....	28
Figure A-10 Helicopter Departure Flight Tracks.....	29
Figure A-11 Multi-/Single-Engine Piston Touch and Go Flight Tracks – East Flow	30
Figure A-12 Multi-/Single-Engine Piston Touch and Go Flight Tracks – West Flow	31
Figure A-13 Helicopter Touch and Go Flight Tracks – East Flow.....	32
Figure A-14 Helicopter Touch and Go Flight Tracks – West Flow.....	33

THE OHIO STATE UNIVERSITY AIRPORT

Master Plan Update Noise Contour Development

1.0 Introduction and Overview

This report provides an analysis and overview of the noise modeling data preparation and resulting Day-Night Average Sound Level (DNL) contours for the future year 2037 at The Ohio State University Airport (OSU). This noise analysis was prepared as a part of the OSU Airport Master Plan Update (MPU) project. The FAA's Aviation Environmental Design Tool version 2d (AEDT 2d) was used to develop the DNL contours for this project.

The DNL contours were prepared using the forecasted aircraft activity for the OSU MPU. A detailed discussion of the model inputs used to develop these contours is included in the following sections.

2.0 2037 Forecasted Aircraft Operations

The number of 2037 aircraft operations was forecasted to be 112,000, which was broken into 66,100 itinerant operations and 45,900 local operations. The definition of the local operation is aircraft operations that stays the traffic pattern known as touch-and-go operations. Itinerant operations mean aircraft operations other than local operations.

3.0 Aircraft Fleet Mix

The MPU forecast provided a comprehensive list of aircraft that are expected to utilize OSU for in calendar year 2037. This list was used to determine equivalent AEDT aircraft for the purposes of developing DNL contours. In determining the AEDT equivalent aircraft for the purposes of noise modeling, research was conducted by aircraft type to determine the specific airframe, engine codes, and engine modification codes of the expected 2037 aircraft fleet. The AEDT fleet mix was developed and is presented in **Appendix A**.

4.0 Stage Lengths

Once the specific fleet mix was completed, departure destination information was analyzed to determine departure stage lengths. An aircraft's stage length (or trip length) refers to the distance an aircraft flies from its origin airport (OSU) to its intended destination. Stage length is important in noise modeling since the longer the distance an aircraft will fly to its destination, the greater the fuel load required and overall weight and, as a result, the lower its departure profile will be. Stage lengths used in the AEDT include the following stages:

Stage Length 1:	0 to 500 miles
Stage Length 2:	500 to 1,000 miles
Stage Length 3:	1,001 to 1,500 miles
Stage Length 4:	1,501 to 2,500 miles
Stage Length 5:	2,501 to 3,500 miles
Stage Length 6:	3,501 to 4,500 miles
Stage Length 7:	4,501 to 5,500 miles
Stage Length 8:	5,501 to 6,500 miles
Stage Length 9:	6,500+ miles

Three aircraft were identified other than the Stage Length of 1. All of Bombardier Global 5000 Business and Bombardier Global Express were modeled as Stage Length 3 and 2, respectively. 97.5% of Eclipse 500 were modeled as Stage Length 2, while 2.5% of Eclipse 500 were modeled as Stage Length 1.

5.0 Time of Day

Another important component in developing the DNL contours is determining the day-night use percentages for each AEDT aircraft. This data is important because the DNL metric is a 24-hour, time-weighted energy average. The time-weighting refers to the fact that noise events occurring during certain noise sensitive time periods receive a penalty. For the DNL metric, noise events occurring between the hours of 10:00:00 p.m. and 6:59:59 a.m. receive a 10-dB “penalty”. This penalty attempts to account for the higher sensitivity to noise in the nighttime and the expected decrease in background noise levels at night in comparison with background noise levels during the day. Because noise is measured on a logarithmic scale, a 10-dB penalty means each nighttime noise event is weighted as equivalent to 10 daytime events.

The forecasted aircraft operation data provided for this project used day-night percentages as presented in **Table 1**.

**TABLE 1
DAY-NIGHT PERCENTAGES**

Aircraft Category	Day	Night	Total
Jet	96.00%	4.00%	100%
Turboprop	91.00%	9.00%	100%
Multi-Engine Piston	85.07%	14.93%	100%
Single-Engine Piston	95.00%	5.00%	100%
Helicopter (Civilian)	78.48%	21.52%	100%
Helicopter (Military)	76.55%	23.45%	100%

SOURCE: Woolpert, 2018.

6.0 Runway Use

Runway use percentages are another important component in developing DNL contours. Some airports have a preferential runway use system that balances noise concerns with the safest and most efficient use of the airport. If a certain runway is used predominantly for departures while another runway is used for arrivals, the noise contours will differ to reflect the type of activity. Woolpert provided runway use information by aircraft category for the development of the 2037 noise contours. **Table 2** shows the runway use percentages by departures and arrivals. It should be noted that Runway 5/23 is expected to be closed by 2037.

From Table 2, it can be determined that jet aircraft are utilizing Runway 09L/27R (north runway) for 80% of the time while other aircraft are utilizing Runway 09R/27L (south runway) for the most of the time.

**TABLE 2
RUNWAY USE**

Aircraft Category	09R	27L	09L	27R	Total
Arrival/Departure					
Jet	6.6%	13.4%	26.4%	53.6%	100%
Turboprop	21.05%	43.96%	11.54%	23.45%	100%
Multi-Engine Piston	21.05%	43.96%	11.54%	23.45%	100%
Single-Engine Piston	27.65%	57.35%	4.95%	10.05%	100%
Touch and Go					
Multi- and Single-Engine Piston	25.5%	59.5%	4.5%	10.5%	100%

SOURCE: Woolpert, 2018.

Note that helicopter takeoff and landing locations were consolidated to one location at MedFlight, immediately north of Runway 09R/27L. All helicopter takeoff and landing activity was assigned to this location, labeled as H1 throughout **Appendix A**.

7.0 Flight Track and Flight Track Use Percentages

To determine noise levels on the ground, it is not only important to know how many operations are occurring and on what runways, but also to know where the aircraft are flying beyond the runways as they ingress and egress the airport. Flight track and flight track use percentages are a key element in the development of the DNL contours.

Flight tracks developed for the Part 150 Study were reviewed by OSU and accepted for this contour development effort. There were no changes to the flight tracks from the previous (2009) OSU 14 CFR Part 150 Study.

The flight track use percentages used in the modeling effort also remained unchanged from the OSU Part 150 Study and are provided by runway end in **Appendix A**. Dispersion of aircraft

operations across subtracks is presented in **Appendix A**. The modeled flight tracks are depicted in **Figures A-1 through A-14**.

8.0 2037 DNL Noise Contours

The information described above was compiled and incorporated into the AEDT. The AEDT calculates aircraft noise exposure using a defined network of grid points at ground level around an airport. It computes the noise generated by each aircraft operation, by aircraft type and engine thrust level along each flight track. Corrections are applied for atmospheric acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are then summed at each grid point. The cumulative noise exposure levels at all grid points are then used to develop noise exposure contours for selected values (e.g., DNL 60, 65, 70 and 75 dB). Using the results of the grid point analysis, noise contours of equal noise exposure can then be plotted.

The 2037 DNL 60, 65, 70, and 75 dB contours are shown in **Figure 1**. These contours represent the 24-hour aircraft noise exposure to areas surrounding OSU on an average annual day. The overall shape of the DNL contours reflect the east and west orientation of the runways at OSU.

Appendix A
Aircraft Operational Information

TABLE A1 - 2037 ANNUAL AVERAGE DAY AIRCRAFT OPERATIONS

Airframe	Engine	Engine Mod Code	Arrival		Departure		Touch-and-Go		Total
			Day	Night	Day	Night	Day	Night	
1985 1-ENG COMP	TIO540	NONE	0.1160	0.0061	0.1160	0.0061			0.2442
Aerospatiale SA-350D Astar (AS-350)	TPE3	NONE	3.6065	0.9889	3.6065	0.9889			9.1909
Aerostar PA-60	TIO540	NONE	0.0832	0.0146	0.0832	0.0146			0.1955
Agusta A-109	250B17	NONE	0.0014	0.0004	0.0014	0.0004			0.0036
BAE Jetstream 31	TPE10	NONE	0.0032	0.0003	0.0032	0.0002			0.0068
BEECH MENTOR (BE45) PT6A-25	NM PT6A34	PT6A-25	0.0063	0.0006	0.0063	0.0006			0.0139
Bell 214B-1	T400	NONE	0.5665	0.1553	0.5665	0.1553			1.4437
Boeing 737-800 Series	1CM007	NONE	0.0030	0.0001	0.0030	0.0001			0.0062
Boeing CH-46 Sea Knight	T588F	NONE	0.0345	0.0104	0.0345	0.0104			0.0899
Bombardier Challenger 300	6AL006	NONE	1.0525	0.0439	1.0525	0.0439			2.1927
Bombardier Challenger 601	6AL006	NONE	0.2087	0.0087	0.2087	0.0087			0.4348
Bombardier Global 5000 Business ¹	4BR009	NONE	0.0060	0.0002	0.0060	0.0002			0.0125
Bombardier Global Express ²	4BR008	NONE	0.0484	0.0020	0.0484	0.0020			0.1008
Bombardier Learjet 31	1AS001	NONE	0.0575	0.0024	0.0575	0.0024			0.1197
Bombardier Learjet 35	1AS001	NONE	0.0423	0.0017	0.0423	0.0018			0.0882
Bombardier Learjet 40	BIZMEDIUMJET_F	NONE	0.0847	0.0035	0.0847	0.0035			0.1764
Bombardier Learjet 45	BIZMEDIUMJET_F	NONE	0.4143	0.0173	0.4143	0.0173			0.8632
Bombardier Learjet 60	BIZMEDIUMJET_F	NONE	0.1512	0.0063	0.1512	0.0063			0.3150
Bombardier Learjet 70	BIZLIGHTJET_F	NONE	0.0181	0.0007	0.0181	0.0007			0.0377
Bombardier Learjet 75	BIZLIGHTJET_F	NONE	0.8559	0.0357	0.8559	0.0357			1.7831
Cessna 150 Series	O200	NONE	22.6697	1.1931	22.6697	1.1931			47.7257
Cessna 172 Skyhawk	IO320	NONE	1.5501	0.0816	1.5501	0.0816	42.2155	0.3417	45.8207
Cessna 182	IO360	NONE	0.3606	0.0190	0.3606	0.0190			0.7592
Cessna 206	IO360	NONE	22.3642	1.1771	22.3642	1.1771	46.7788	0.3417	94.2031
Cessna 206	TIO540	IO-540-AC	0.1621	0.0085	0.1621	0.0085	34.1744	0.3417	34.8575
Cessna 206	TIO540	TIO-540-AJ1A	0.0937	0.0049	0.0937	0.0049			0.1972

Airframe	Engine	Engine Mod Code	Arrival		Departure		Touch-and-Go		Total
			Day	Night	Day	Night	Day	Night	
Cessna 208 Caravan	PT6A14	NONE	0.0918	0.0090	0.0918	0.0090			0.2016
Cessna 210 Centurion	TIO540	NONE	0.1611	0.0086	0.1611	0.0086			0.3394
Cessna 310	TIO540	NONE	0.0771	0.0135	0.0771	0.0135			0.1813
Cessna 337 Skymaster	IO360	NONE	0.0060	0.0010	0.0060	0.0011			0.0141
Cessna 340	TIO540	NONE	0.0398	0.0070	0.0398	0.0070			0.0935
Cessna 414	TIO540	NONE	0.0482	0.0085	0.0482	0.0085			0.1133
Cessna 421 Golden Eagle	TIO540	NONE	0.1362	0.0239	0.1362	0.0239			0.3202
Cessna 425 Conquest I	PT6112	NONE	0.0555	0.0055	0.0555	0.0055			0.1220
Cessna 441 Conquest II	TPE10	NONE	0.0190	0.0019	0.0190	0.0019			0.0418
Cessna 500 Citation I	BIZLIGHTJET_F	NONE	0.1059	0.0044	0.1059	0.0044			0.2205
Cessna 501 Citation ISP	1PW035	NONE	0.0423	0.0017	0.0423	0.0018			0.0882
Cessna 525 CitationJet	BIZLIGHTJET_F	NONE_GNR_VAR1	1.3035	0.0543	1.3035	0.0543			2.7156
Cessna 525A CitationJet	BIZLIGHTJET_F	NONE	0.1694	0.0071	0.1694	0.0071			0.3528
Cessna 525B CitationJet	BIZLIGHTJET_F	NONE	0.4627	0.0193	0.4627	0.0193			0.9640
Cessna 525C CitationJet	BIZLIGHTJET	NONE	0.0726	0.0030	0.0726	0.0030			0.1512
Cessna 550 Citation II	BIZLIGHTJET_F	NONE	0.4385	0.0183	0.4385	0.0183			0.9136
Cessna 551 Citation IISP	1PW036	NONE	0.0544	0.0023	0.0544	0.0023			0.1134
Cessna 560 Citation V	1PW037	NONE	0.4325	0.0180	0.4325	0.0180			0.9010
Cessna 560 Citation XLS	BIZLIGHTJET_F	NONE	2.3590	0.0983	2.3590	0.0983			4.9146
Cessna 650 Citation III	TFE731	NONE	0.0484	0.0020	0.0484	0.0020			0.1008
Cessna 680 Citation Sovereign	14PW103	NONE	0.6079	0.0253	0.6079	0.0253			1.2665
Cessna 680-A Citation Latitude	BIZMEDIUMJET_F	NONE	0.7440	0.0310	0.7440	0.0310			1.5500
Cessna 750 Citation X	4AL003	NONE	0.1996	0.0083	0.1996	0.0083			0.4159
CESSNA CITATION 510	BIZLIGHTJET_F	NONE	0.1059	0.0044	0.1059	0.0044			0.2205
Cirrus SR20	IO360	NONE	0.5493	0.0289	0.5493	0.0289			1.1565
Cirrus SR22	TIO540	NONE	1.1336	0.0597	1.1336	0.0597			2.3865
COMMANDER980/1000	TP10UK	NONE	0.0048	0.0008	0.0048	0.0008			0.0113
Dassault Falcon 10	1AS001	NONE	0.0121	0.0004	0.0121	0.0005			0.0251

Airframe	Engine	Engine Mod Code	Arrival		Departure		Touch-and-Go		Total
			Day	Night	Day	Night	Day	Night	
Dassault Falcon 2000	CF700D	NONE	1.2309	0.0513	1.2309	0.0513			2.5644
Dassault Falcon 20-C	CF700D	NONE	0.0242	0.0010	0.0242	0.0010			0.0503
Dassault Falcon 50	16PW114	NONE	0.0454	0.0019	0.0454	0.0019			0.0945
Dassault Falcon 900	TFE731	NONE	0.0786	0.0033	0.0786	0.0033			0.1638
EADS Socata TB-9 Tampico	IO320	NONE	0.0063	0.0006	0.0063	0.0006			0.0139
EADS Socata TBM-700	PT6A60	NONE	0.2379	0.0235	0.2379	0.0235			0.5228
Eclipse 500 / PW610F ³	BIZLIGHTJET_F	NONE	0.4809	0.0200	0.4809	0.0200			1.0018
Embraer 500	BIZLIGHTJET_F	NONE	0.0333	0.0014	0.0333	0.0014			0.0693
Embraer 505	BIZLIGHTJET_F	NONE	0.7047	0.0294	0.7047	0.0294			1.4681
Embraer ERJ135	6AL012	NONE	0.0181	0.0007	0.0181	0.0007			0.0377
Embraer ERJ145	4AL003	NONE	0.0121	0.0004	0.0121	0.0005			0.0251
Embraer ERJ170	8GE107	NONE	0.0121	0.0004	0.0121	0.0005			0.0251
Embraer Legacy 450 (EMB-545)	14HN007	NONE	0.0302	0.0012	0.0302	0.0012			0.0630
EPIC LT/Dynasty	PT667A	NONE	0.0159	0.0016	0.0159	0.0016			0.0348
Eurocopter EC-130	TPE3	NONE	5.0860	1.3948	5.0860	1.3948			12.9617
Eurocopter EC-155B1	T400	NONE	1.0714	0.2956	1.0714	0.2956			2.7340
Fairchild SA-226-T Merlin III	TPE10	NONE	0.0063	0.0006	0.0063	0.0006			0.0139
Fairchild SA-227-AC Metro III	PT6A45	NONE	0.0032	0.0003	0.0032	0.0002			0.0068
Gulfstream G150	BIZMEDIUMJET_F	NONE	0.0302	0.0012	0.0302	0.0012			0.0630
Gulfstream G200	7PW077	NONE	0.1089	0.0045	0.1089	0.0045			0.2268
Gulfstream G280	11HN005	NONE	0.0181	0.0007	0.0181	0.0007			0.0377
Gulfstream G400	6RR042	NONE	0.5232	0.0218	0.5232	0.0218			1.0900
Gulfstream G500	3BR001	NONE	0.1028	0.0043	0.1028	0.0043			0.2142
Gulfstream G600	16PW116	NONE	0.0060	0.0002	0.0060	0.0002			0.0125
Honda HA-420 Hondajet	BIZLIGHTJET_F	NONE	0.0181	0.0007	0.0181	0.0007			0.0377
Israel IAI-1124-A Westwind II	CJ6102	NONE	0.0121	0.0004	0.0121	0.0005			0.0251
Lancair 360	IO360	NONE	0.0140	0.0007	0.0140	0.0007			0.0294
Lockheed C-130 Hercules	250B17	NONE	0.0032	0.0003	0.0032	0.0002			0.0068

Airframe	Engine	Engine Mod Code	Arrival		Departure		Touch-and-Go		Total
			Day	Night	Day	Night	Day	Night	
Mitsubishi MU-2	TPE1	NONE	0.1110	0.0110	0.1110	0.0110			0.2440
Mitsubishi MU-300 Diamond	1PW036	NONE	0.0121	0.0004	0.0121	0.0005			0.0251
Mooney M20-K	TSIO36	NONE	0.0825	0.0043	0.0825	0.0043			0.1736
Partenavia P.68 Victor	IO360	NONE	0.0169	0.0030	0.0169	0.0030			0.0397
Piaggio P.180 Avanti	PT6A60	NONE	0.0159	0.0016	0.0159	0.0016			0.0348
Pilatus PC-12	PT6A67	NONE	3.2081	0.3173	3.2081	0.3173			7.0508
Piper PA-23 Apache/Aztec	TIO540	NONE	0.0036	0.0006	0.0036	0.0006			0.0084
Piper PA-24 Comanche	TIO540	NONE	0.0210	0.0011	0.0210	0.0011			0.0441
Piper PA-27 Aztec	TIO540	NONE	0.0060	0.0010	0.0060	0.0011			0.0141
Piper PA-28 Cherokee Series	IO320	O-320-D3G	0.2614	0.0138	0.2614	0.0138			0.5503
Piper PA-30 Twin Comanche	IO320	NONE	0.0558	0.0094	0.0558	0.0095			0.1305
Piper PA-31 Navajo	TIO540	NONE	0.0241	0.0042	0.0241	0.0042			0.0567
Piper PA-31T Cheyenne	PT6A11	NONE	0.1618	0.0160	0.1618	0.0160			0.3555
Piper PA-32 Cherokee Six	TIO540	NONE	0.2935	0.0154	0.2935	0.0154			0.6180
Piper PA-34 Seneca	IO360	NONE	0.0663	0.0116	0.0663	0.0116			0.1558
Piper PA46-TP Meridian	PT6A42	NONE	0.3406	0.0281	0.3406	0.0281			0.7375
Raytheon Beech 1900-C	PT6A6B	NONE	0.0032	0.0003	0.0032	0.0002			0.0068
Raytheon Beech 55 Baron	TIO540	TS10-520-L	0.0458	0.0080	0.0458	0.0080			0.1077
Raytheon Beech Baron 58	TIO540	NONE	0.1326	0.0233	0.1326	0.0233	1.0051	0.0101	1.3268
Raytheon Beech Bonanza 36	TIO540	NONE	0.4962	0.0261	0.4962	0.0261			1.0446
Raytheon Beechjet 400	BIZLIGHTJET_F	NONE	0.5020	0.0209	0.5020	0.0209			1.0459
Raytheon Hawker 1000	1AS002	NONE	0.0121	0.0004	0.0121	0.0005			0.0251
Raytheon Hawker 4000 Horizon	7PW079	NONE	0.0696	0.0029	0.0696	0.0029			0.1449
Raytheon Hawker 800	BIZMEDIUMJET_F	NONE	0.5323	0.0222	0.5323	0.0222			1.1089
Raytheon King Air 100	PT6A28	NONE	0.0523	0.0052	0.0523	0.0052			0.1150
Raytheon King Air 90	P6135A	NONE	0.1427	0.0141	0.1427	0.0141			0.3137
Raytheon Premier I	BIZLIGHTJET_F	NONE	0.0317	0.0031	0.0317	0.0031			0.0697
Raytheon Super King Air 200	PT6A40	NONE	0.3188	0.0315	0.3188	0.0315			0.7006

Airframe	Engine	Engine Mod Code	Arrival		Departure		Touch-and-Go		Total
			Day	Night	Day	Night	Day	Night	
Raytheon Super King Air 300	P660AG	NONE	1.1592	0.1147	1.1592	0.1147			2.5478
Robinson R22 Mariner	IO320	NONE	0.0109	0.0030	0.0109	0.0030			0.0278
Rockwell Commander 500	TIO540	NONE	0.8252	0.1448	0.8252	0.1448			1.9400
Rockwell Commander 690	TPE1	NONE	0.0571	0.0056	0.0571	0.0056			0.1255
Rockwell Sabreliner 60	CF700D	NONE	0.0060	0.0002	0.0060	0.0002			0.0125
Ryan Navion B	TIO540	NONE	0.0028	0.0001	0.0028	0.0001			0.0058
Sikorsky S-76 Spirit	T70070	NONE	0.1229	0.0337	0.1229	0.0337			0.3131
Sikorsky S-92	T70041	NONE	0.5069	0.0644	0.5069	0.0644			1.1426
Sikorsky SH-60 Sea Hawk	T70041	NONE	0.0145	0.0044	0.0145	0.0044			0.0379
SOCATA TBM 850	PT6A66	NONE	0.0301	0.0030	0.0301	0.0030			0.0662
T-38 Talon	J855HA	NONE	0.0030	0.0001	0.0030	0.0001			0.0062
Grand Total			83.7349	7.0834	83.7349	7.0837	124.1739	1.0353	306.8461

SOURCE: Woolpert, 2018; ESA, 2018.

¹Departure stage length of Bombardier Global 5000 Business is 3.

²Departure stage length of Bombardier Global Express is 2.

³97.5% of departure stage length of Eclipse 500 / PW610F is 2. 2.5% is Stage Length 1.

TABLE A2 - FLIGHT TRACK USE – JET

Arrival			Departure		
Runway	Track	Track Use %	Runway	Track	Track Use %
09R	09RJAE1	6.5%	09R	09RJDE1	7.1%
	09RJAE2	5.2%		09RJDE2	21.3%
	09RJAE3	6.5%		09RJDE3	3.9%
	09RJAE4	2.6%		09RJDE4	21.3%
	09RJAE5	15.6%		09RJDE5	8.4%
	09RJAE6	9.7%		09RJDE6	14.1%
	09RJAE7	27.9%		09RJDE7	3.2%
	09RJAE8	6.5%		09RJDE8	7.1%
	09RJAE9	4.6%		09RJDE9	3.9%
	09RJAE10	5.8%		09RJDE10	9.7%
	09RJAE11	3.9%		Total	100.0%
	09RJAE12	5.2%		27LJDW1	20.2%
Total	100.0%	27LJDW2	12.4%		
27L	27LJAW1	4.4%	27LJDW3	4.7%	
	27LJAW2	3.9%	27LJDW4	17.0%	
	27LJAW3	3.4%	27LJDW5	10.1%	
	27LJAW4	3.9%	27L	27LJDW6	12.4%
	27LJAW5	42.7%		27LJDW7	3.9%
	27LJAW6	4.4%		27LJDW8	10.8%
	27LJAW7	1.4%		27LJDW9	6.2%
	27LJAW8	1.4%		27LJDW10	2.3%
	27LJAW9	1.4%		Total	100.0%
	27LJAW10	3.9%	9LXJDE1	7.1%	
	27LJAW11	5.8%	9LXJDE2	21.3%	
	27LJAW12	10.7%	9LXJDE3	3.9%	
	27LJAW13	7.8%	9LXJDE4	21.3%	
	27LJAW14	4.9%	9LXJDE5	8.4%	
Total	100.0%	09L	9LXJDE6	14.1%	
09L	9LXJAE1		6.5%	9LXJDE7	3.2%
	9LXJAE2		5.2%	9LXJDE8	7.1%
	9LXJAE3		6.5%	9LXJDE9	3.9%
	9LXJAE4		2.6%	9LXJDE10	9.7%
	9LXJAE5		15.6%	Total	100.0%
	9LXJAE6	9.7%	7RXJDW1	20.2%	
	9LXJAE7	27.9%	7RXJDW2	12.4%	
	9LXJAE8	6.5%	27R	7RXJDW3	4.7%
	9LXJAE9	4.6%		7RXJDW4	17.0%
	9LXJAE10	5.8%		7RXJDW5	10.1%

	9LXJAE11	3.9%
	9LXJAE12	5.2%
	Total	100.0%
	7RXJAW1	4.4%
	7RXJAW2	3.9%
	7RXJAW3	3.4%
	7RXJAW4	3.9%
	7RXJAW5	42.7%
	7RXJAW6	4.4%
	7RXJAW7	1.4%
27R	7RXJAW8	1.4%
	7RXJAW9	1.4%
	7RXJAW10	3.9%
	7RXJAW11	5.8%
	7RXJAW12	10.7%
	7RXJAW13	7.8%
	7RXJAW14	4.9%
	Total	100.0%

	7RXJDW6	12.4%
	7RXJDW7	3.9%
	7RXJDW8	10.8%
	7RXJDW9	6.2%
	7RXJDW10	2.3%
	Total	100.0%

TABLE A3 - FLIGHT TRACK USE - TURBOPROP AND MULTI-ENGINE PISTON – DAYTIME

Arrival			Departure		
Runway	Track	Track Use %	Runway	Track	Track Use %
09R	09RTAE1	5.1%	09R	09RTDE1	13.0%
	09RTAE2	8.6%		09RTDE2	13.0%
	09RTAE3	5.2%		09RTDE3	20.4%
	09RTAE4	6.9%		09RTDE4	16.7%
	09RTAE5	50.0%		09RTDE5	18.4%
	09RTAE6	5.2%		09RTDE6	3.7%
	09RTAE7	13.8%		09RTDE7	7.4%
	09RTAE8	5.2%		09RTDE8	7.4%
	Total	100.0%		Total	100.0%
27L	27LTAW1	17.9%	27L	27LTDW1	12.9%
	27LTAW2	40.3%		27LTDW2	17.1%
	27LTAW3	4.5%		27LTDW3	24.3%
	27LTAW4	7.4%		27LTDW4	5.7%
	27LTAW5	6.0%		27LTDW5	7.1%
	27LTAW6	6.0%		27LTDW6	10.0%
	27LTAW7	17.9%		27LTDW7	14.3%
	Total	100.0%		27LTDW8	8.6%
09L	9LXTAE1	5.1%	09L	Total	100.0%
	9LXTAE2	8.6%		9LXTDE1	13.0%
	9LXTAE3	5.2%		9LXTDE2	13.0%
	9LXTAE4	6.9%		9LXTDE3	20.4%
	9LXTAE5	50.0%		9LXTDE4	16.7%
	9LXTAE6	5.2%		9LXTDE5	18.4%
	9LXTAE7	13.8%		9LXTDE6	3.7%
	9LXTAE8	5.2%		9LXTDE7	7.4%
	Total	100.0%		9LXTDE8	7.4%
27R	7RXTAW1	17.9%	27R	Total	100.0%
	7RXTAW2	40.3%		7RXTDW1	12.9%
	7RXTAW3	4.5%		7RXTDW2	17.1%
	7RXTAW4	7.4%		7RXTDW3	24.3%
	7RXTAW5	6.0%		7RXTDW4	5.7%
	7RXTAW6	6.0%		7RXTDW5	7.1%
	7RXTAW7	17.9%		7RXTDW6	10.0%
	Total	100.0%		7RXTDW7	14.3%
		7RXTDW8	8.6%		
		Total	100.0%		

TABLE A4 - FLIGHT TRACK USE - TURBOPROP AND MULTI-ENGINE PISTON – NIGHTTIME

Arrival			Departure		
Runway	Track	Track Use %	Runway	Track	Track Use %
09R	09RTAE1	1.9%	09R	09RTDE1	9.1%
	09RTAE3	5.9%		09RTDE2	2.4%
	09RTAE5	35.4%		09RTDE3	2.4%
	09RTAE7	5.9%		09RTDE4	9.1%
	09RTAE8	1.9%		09RTDE5	9.1%
	09RTAE9	3.9%		09RTDE6	11.3%
	09RTAE10	23.6%		09RTDE7	11.3%
	09RTAE11	13.7%		09RTDE8	6.8%
	09RTAE12	7.8%		09RTDE9	6.8%
	Total	100.0%		09RTDE10	4.5%
27L	27LTAW1	6.0%	09RTDE11	9.1%	
	27LTAW2	38.7%	09RTDE12	11.3%	
	27LTAW3	3.6%	09RTDE13	6.8%	
	27LTAW4	4.8%	Total	100.0%	
	27LTAW5	1.2%	27LTDW1	9.5%	
	27LTAW6	4.8%	27LTDW2	2.1%	
	27LTAW7	1.2%	27LTDW3	10.5%	
	27LTAW9	13.3%	27LTDW4	3.2%	
	27LTAW10	9.6%	27LTDW5	8.4%	
	27LTAW11	7.2%	27LTDW6	6.3%	
	27LTAW12	9.6%	27LTDW7	5.3%	
	Total	100.0%	27LTDW8	2.1%	
09L	9LXTAE1	1.9%	27LTDW9	4.2%	
	9LXTAE3	5.9%	27LTDW10	12.6%	
	9LXTAE5	35.4%	27LTDW11	29.5%	
	9LXTAE7	5.9%	27LTDW12	6.3%	
	9LXTAE8	1.9%	Total	100.0%	
	9LXTAE9	3.9%	9LXTDE1	9.1%	
	9LXTAE10	23.6%	9LXTDE2	2.4%	
	9LXTAE11	13.7%	9LXTDE3	2.4%	
	9LXTAE12	7.8%	9LXTDE4	9.1%	
	Total	100.0%	9LXTDE5	9.1%	
27R	7RXTAW1	6.0%	09L	9LXTDE6	11.3%
	7RXTAW2	38.7%	9LXTDE7	11.3%	
	7RXTAW3	3.6%	9LXTDE8	6.8%	
	7RXTAW4	4.8%	9LXTDE9	6.8%	
	7RXTAW5	1.2%	9LXTDE10	4.5%	
	7RXTAW6	4.8%	9LXTDE11	9.1%	

Arrival		
Runway	Track	Track Use %
	7RXTAW7	1.2%
	7RXTAW9	13.3%
	7RXTAW10	9.6%
	7RXTAW11	7.2%
	7RXTAW12	9.6%
	Total	100.0%

Departure		
Runway	Track	Track Use %
	9LXTDE12	11.3%
	9LXTDE13	6.8%
	Total	100.0%
	7RXTDW1	9.5%
	7RXTDW2	2.1%
	7RXTDW3	10.5%
	7RXTDW4	3.2%
	7RXTDW5	8.4%
	7RXTDW6	6.3%
27R	7RXTDW7	5.3%
	7RXTDW8	2.1%
	7RXTDW9	4.2%
	7RXTDW10	12.6%
	7RXTDW11	29.5%
	7RXTDW12	6.3%
	Total	100.0%

TABLE A5 - FLIGHT TRACK USE - SINGLE-ENGINE PISTON

Arrival			Departure		
Runway	Track	Track Use %	Runway	Track	Track Use %
09R	09RTAE1	13.8%	09R	09RTDE1	5.0%
	09RTAE4	3.4%		09RTDE2	12.5%
	09RTAE5	65.7%		09RTDE3	15.0%
	09RTAE6	3.4%		09RTDE4	12.5%
	09RTAE8	3.4%		09RTDE5	7.5%
	09RTAE9	10.3%		09RTDE6	5.0%
	Total	100.0%		09RTDE7	7.5%
27L	27LTAW1	3.3%	09RTDE8	2.5%	
	27LTAW2	53.4%	09RTDE9	17.5%	
	27LTAW4	3.3%	09RTDE10	15.0%	
	27LTAW7	23.3%	Total	100.0%	
	27LTAW8	16.7%	27LTDW1	6.0%	
	Total	100.0%	27LTDW2	2.0%	
09L	9LXTAE1	13.8%	27LTDW3	8.0%	
	9LXTAE4	3.4%	27LTDW4	12.0%	
	9LXTAE5	65.7%	27LTDW5	6.0%	
	9LXTAE6	3.4%	27LTDW6	10.0%	
	9LXTAE8	3.4%	27LTDW7	10.0%	
	9LXTAE9	10.3%	27LTDW8	16.0%	
	Total	100.0%	27LTDW9	12.0%	
27R	7RXTAW1	3.3%	27LTDW10	18.0%	
	7RXTAW2	53.4%	Total	100.0%	
	7RXTAW4	3.3%	9LXTDE1	5.0%	
	7RXTAW7	23.3%	9LXTDE2	12.5%	
	7RXTAW8	16.7%	9LXTDE3	15.0%	
	Total	100.0%	9LXTDE4	12.5%	
09L			9LXTDE5	7.5%	
			9LXTDE6	5.0%	
			9LXTDE7	7.5%	
			9LXTDE8	2.5%	
			9LXTDE9	17.5%	
			9LXTDE10	15.0%	
			Total	100.0%	
			7RXTDW1	6.0%	
			7RXTDW2	2.0%	
			7RXTDW3	8.0%	
27R			7RXTDW4	12.0%	
			7RXTDW5	6.0%	
			7RXTDW6	10.0%	
			7RXTDW7	10.0%	
			7RXTDW8	16.0%	
			7RXTDW9	12.0%	
			7RXTDW10	18.0%	
		Total	100.0%		

TABLE A6 - FLIGHT TRACK USE – HELICOPTER

Arrival			Departure		
Runway	Track	Track Use %	Runway	Track	Track Use %
H1	HA1	2.5%	H1	HD1	60.7%
	HA2	10.7%		HD2	15.7%
	HA3	32.8%		HD3	23.6%
	HA4	25.4%		Total	100.0%
	HA5	9.0%			
	HA6	6.6%			
	HA7	1.6%			
	HA8	4.1%			
	HA9	5.7%			
	HA10	1.6%			
Total	100.0%				

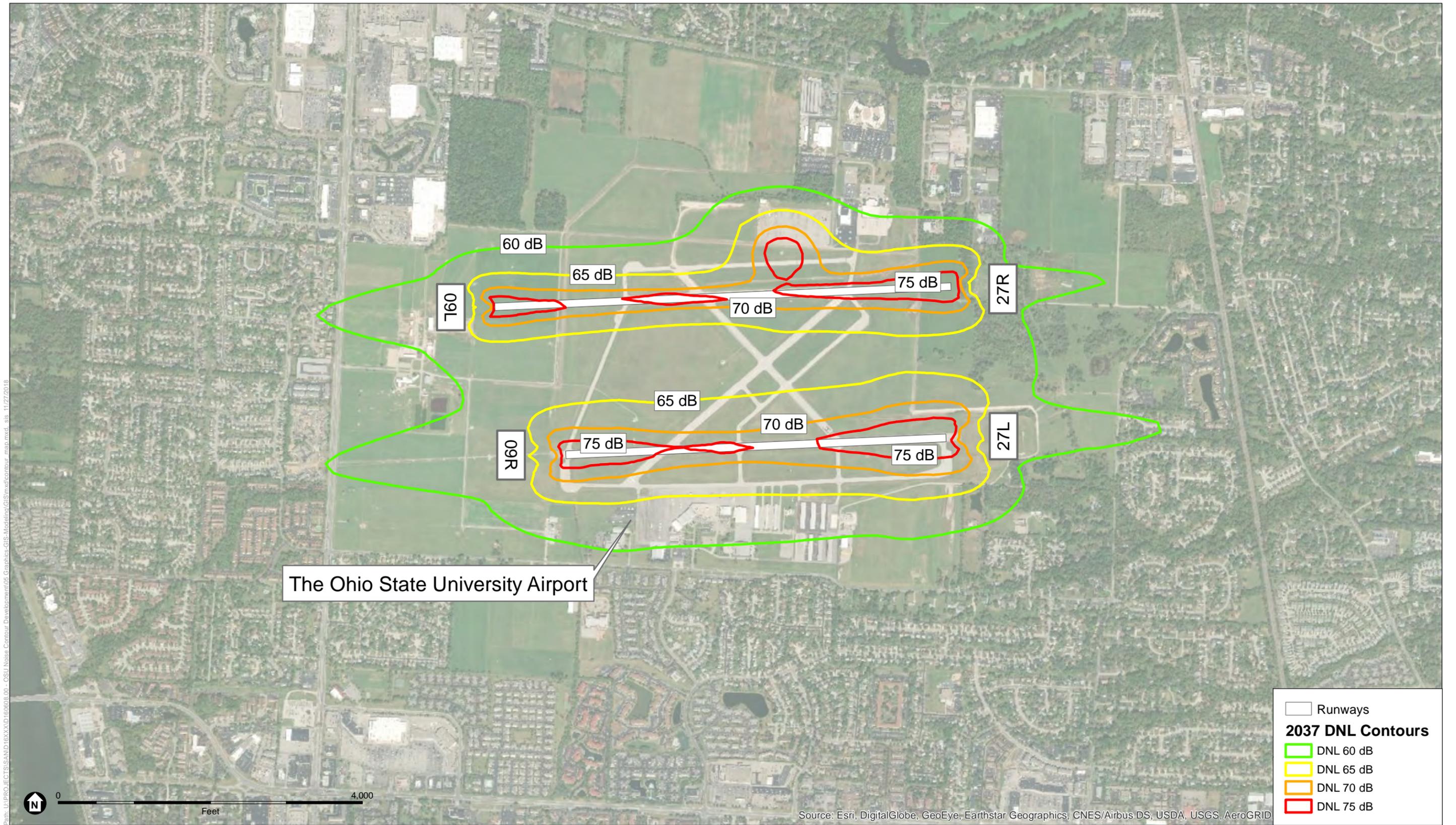
TABLE A7 - FLIGHT TRACK USE - MULTI AND SINGLE ENGINE PISTON

Runway	Track	Track Use %
09R	9RXTGO1	30.5%
	9RXTGO2	33.3%
	9RXTGO3	36.2%
	Total	100.0%
27L	7LXTGO1	30.5%
	7LXTGO2	33.3%
	7LXTGO3	36.2%
	Total	100.0%
09L	9LXTGO1	100.0%
	Total	100.0%
27R	7RXTGO1	100.0%
	Total	100.0%

TABLE A8 - FLIGHT TRACK USE - HELICOPTER - TOUCH AND GO

Arrival			Departure		
Helipad	Track	Track Use %	Helipad	Track	Track Use %
H09R	H09RA1	100.0%	H09R	H09RD1	100.0%
	Total	100.0%		Total	100.0%
H27L	H27LA1	100.0%	H27L	H27LD1	100.0%
	Total	100.0%		Total	100.0%
H09L	H09LA1	100.0%	H09L	H09LD1	100.0%
	Total	100.0%		Total	100.0%
H27R	H27RA1	100.0%	H27R	H27RD1	100.0%
	Total	100.0%		Total	100.0%

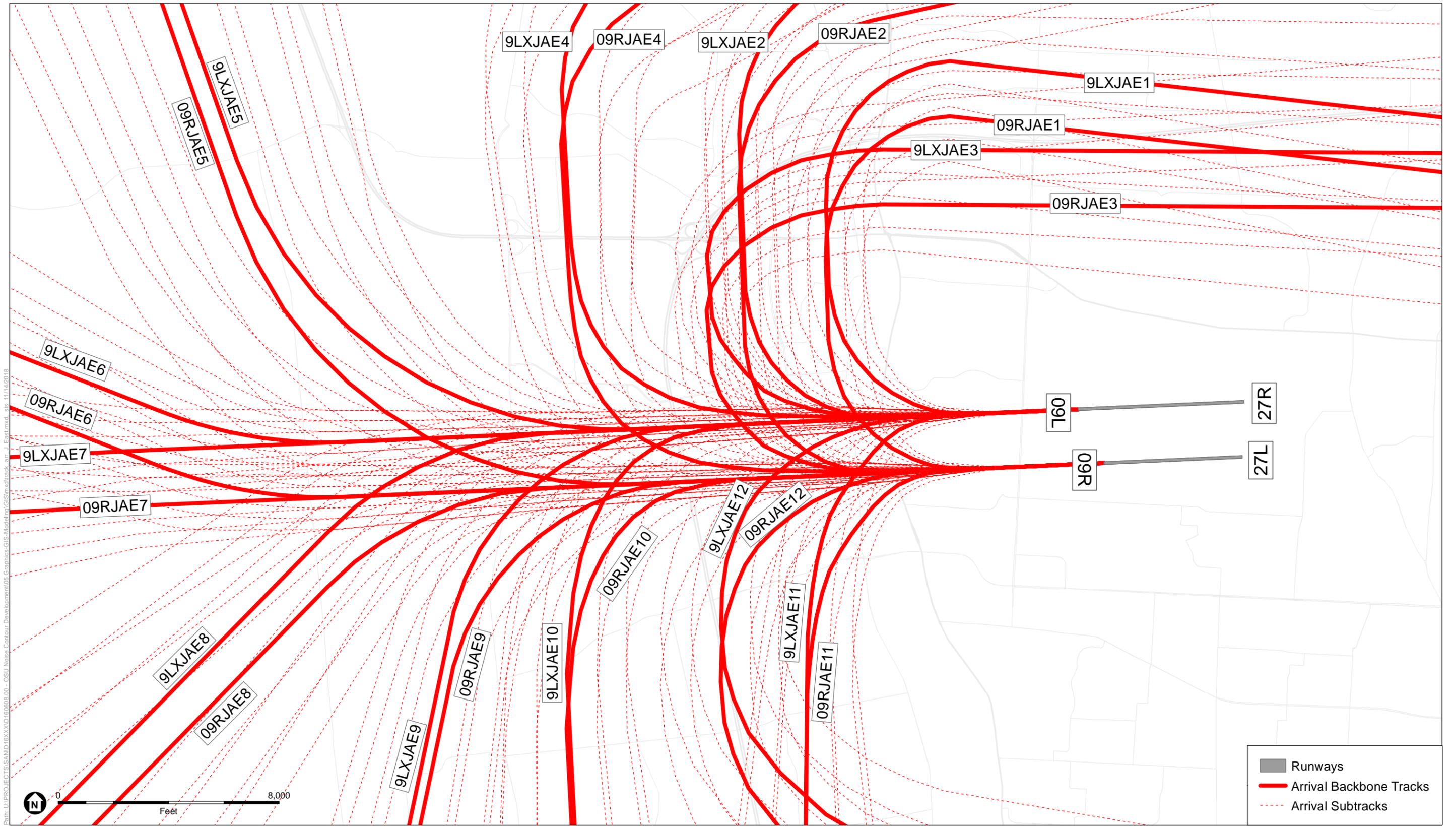
Note: These helipads are located at each runway end. AEDT requires helicopters to have a helipad instead of using runways.



SOURCE: ESRI; ESA, 2018.

OSU Airport Master Plan Update

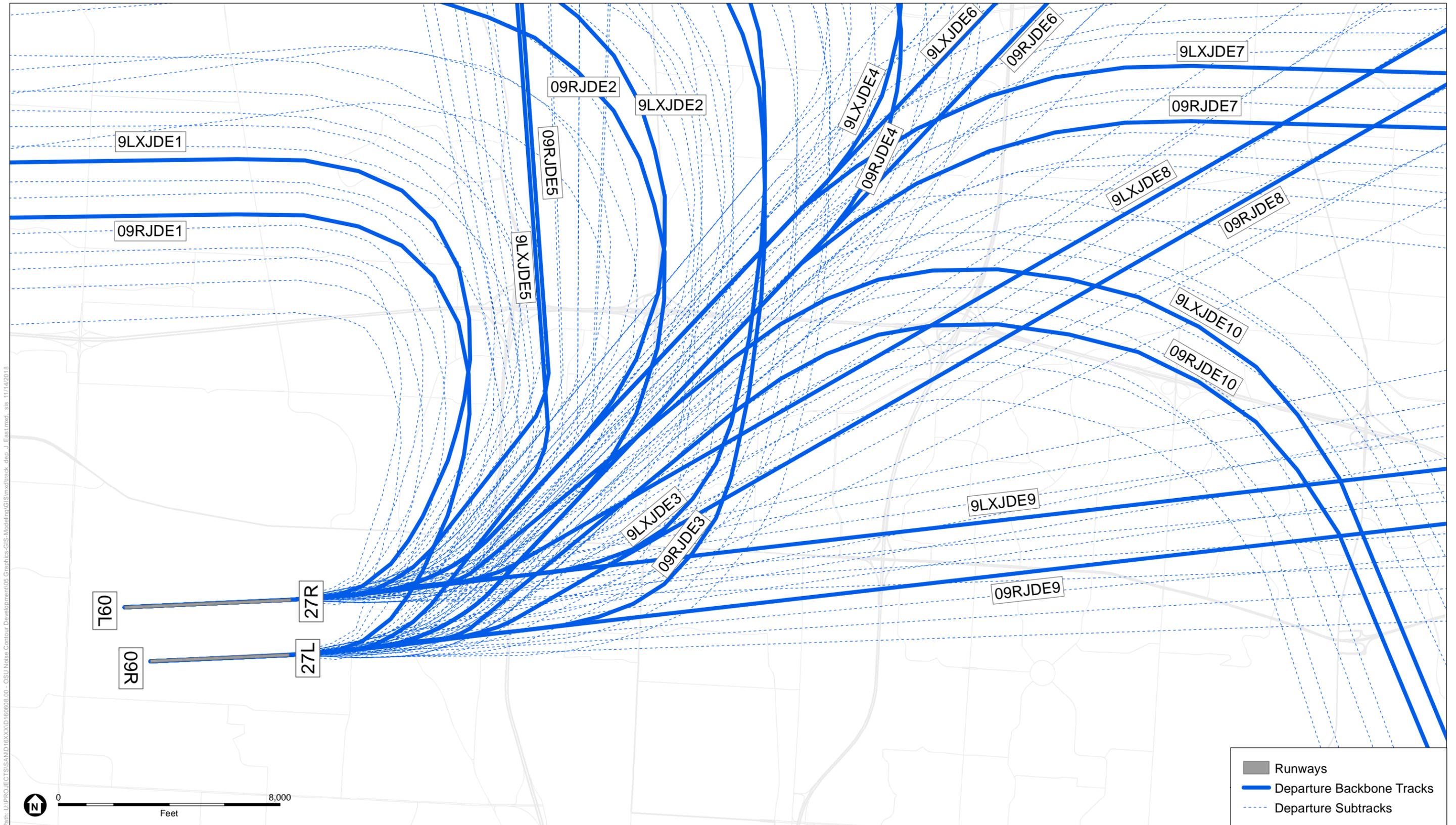
Figure 1
2037 DNL Contour Map



SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-1
Jet Arrival Flight Tracks - East Flow



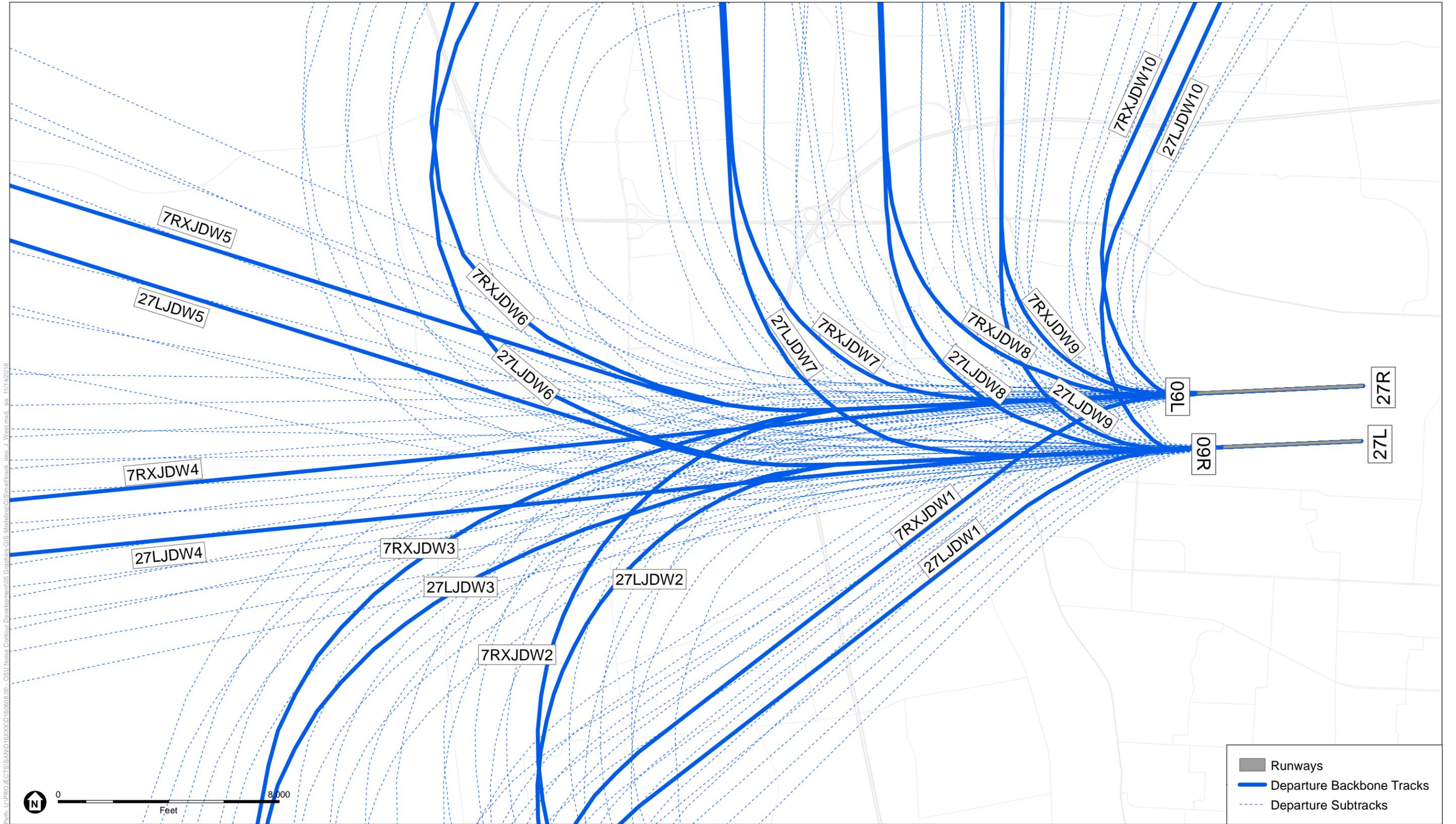
Path: U:\PROJECTS\SAND\66666\00 - OSU Noise Contour Development\05 Graphics-GIS-Mapping\GIS\mxd\track_dep_j_East.mxd, srs: 11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-3
Jet Departure Flight Tracks - East Flow

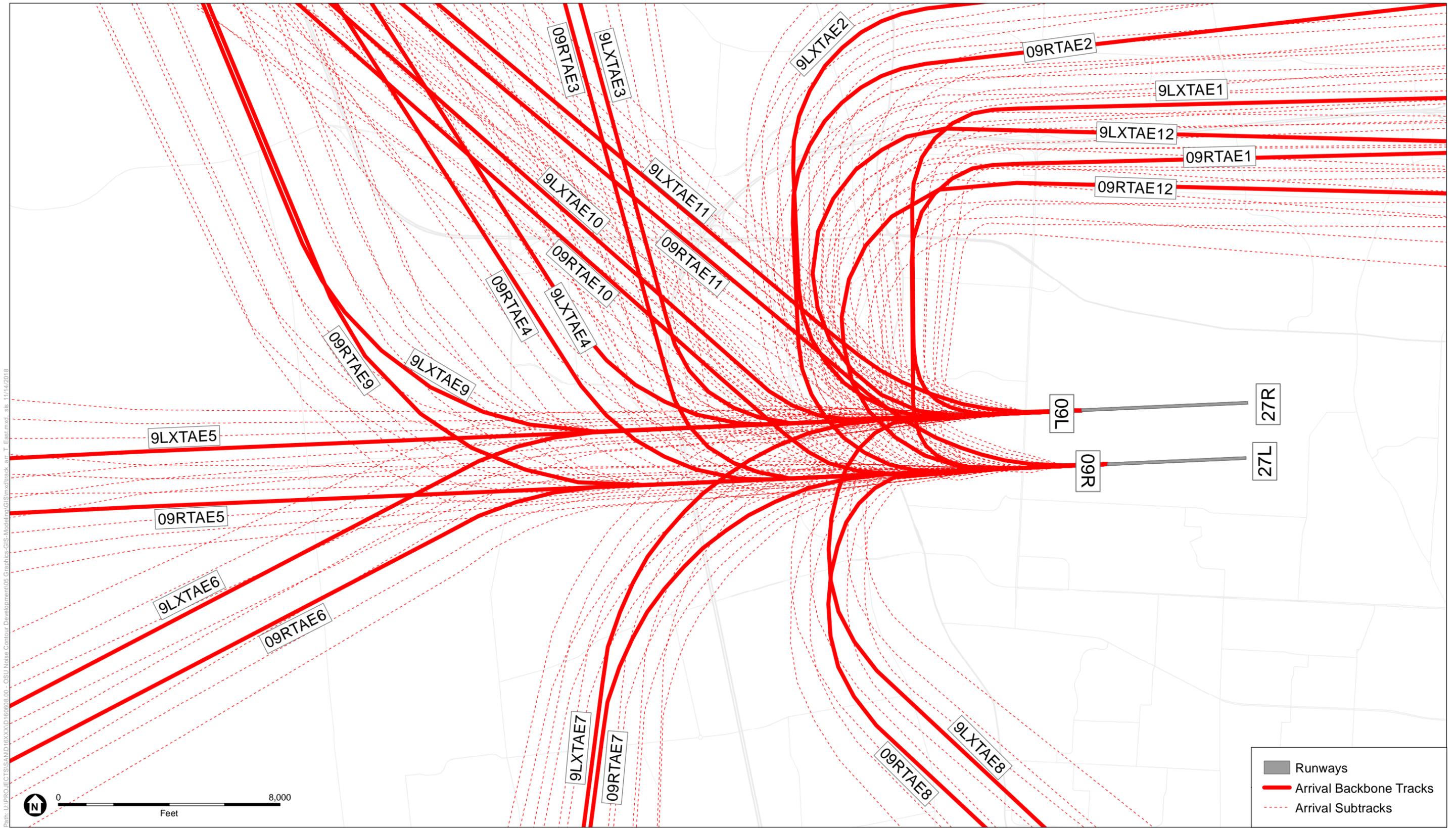




SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-4
Jet Departure Flight Tracks - West Flow



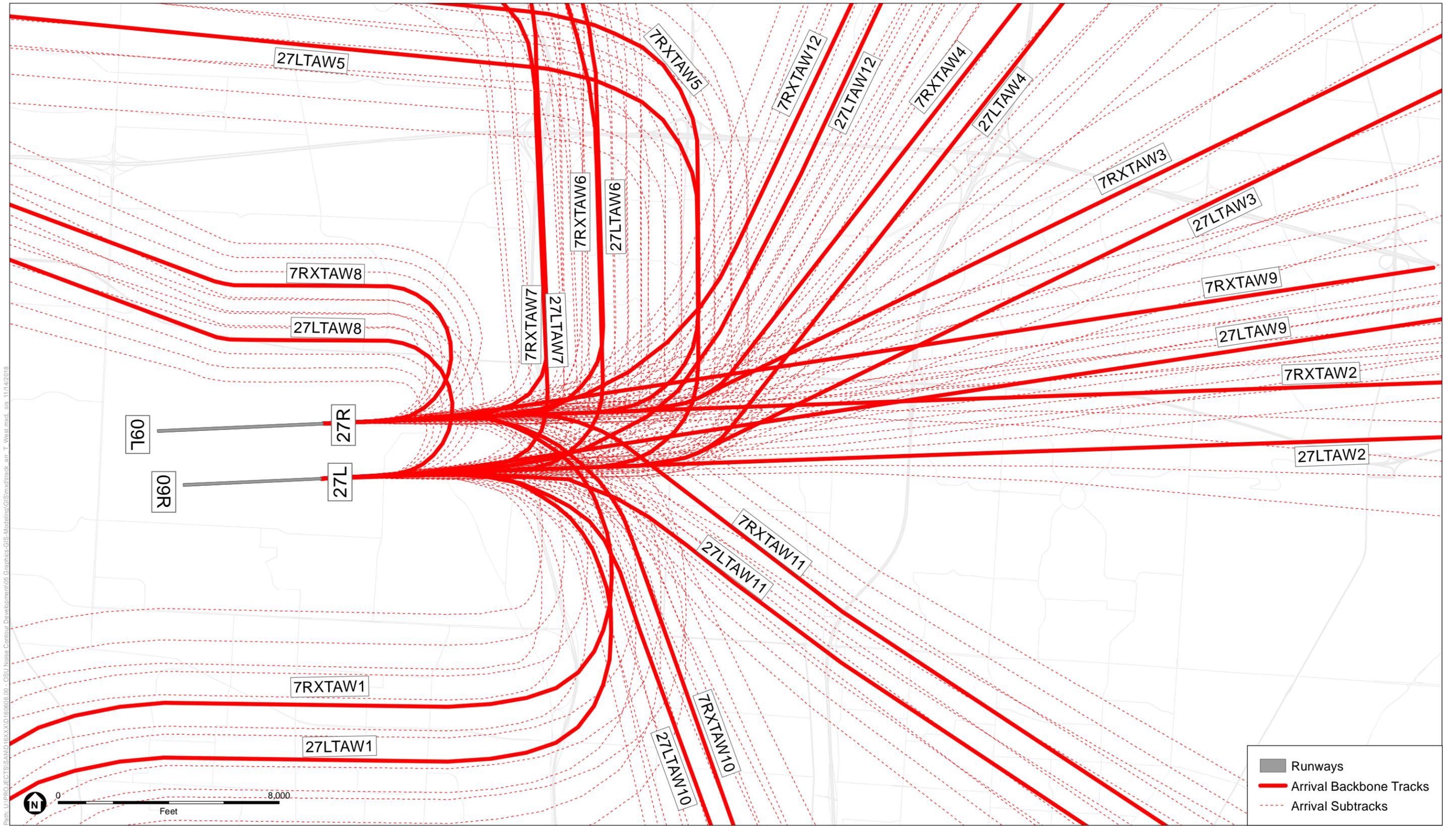
Path: U:\PROJECTS\AMDP\2009\10\10\090808_00 - OSU Noise Contour Development\05 Graphics\GIS\mxd\track_ar_T_East.mxd, srs: 11714/2018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-5
Turboprop/Multi-/Single-Engine Piston Arrival Flight Tracks - East Flow





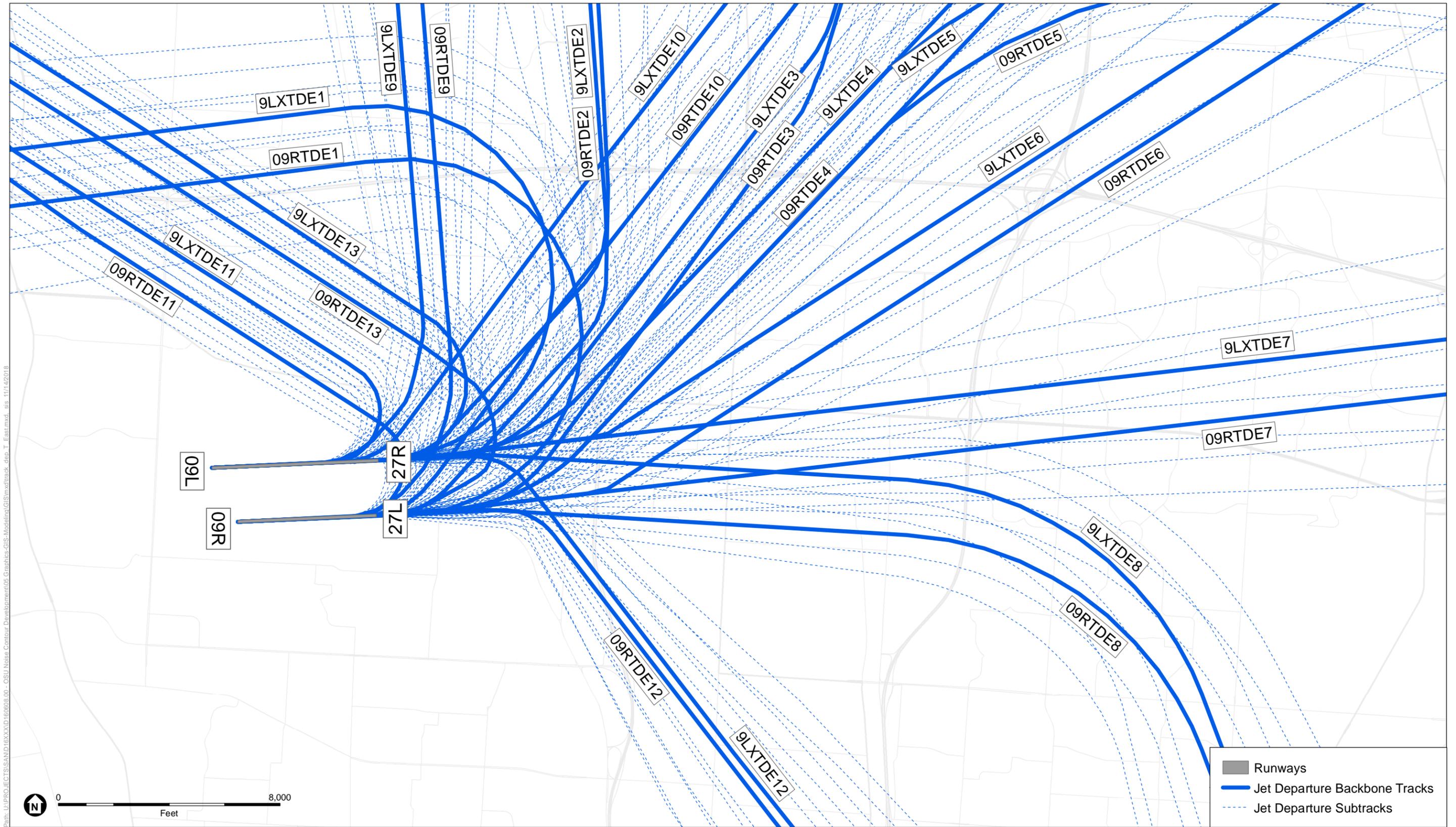
Path: U:\proj\ECTS\SAM\02\0000\00 - OSU Noise Contour Development\05 Graphics-GIS-Mapping\GIS\mxd\track_arr_T_West.mxd, srs: 11142018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-6
Turboprop/Multi-/Single-Engine Piston Arrival Flight Tracks - West Flow





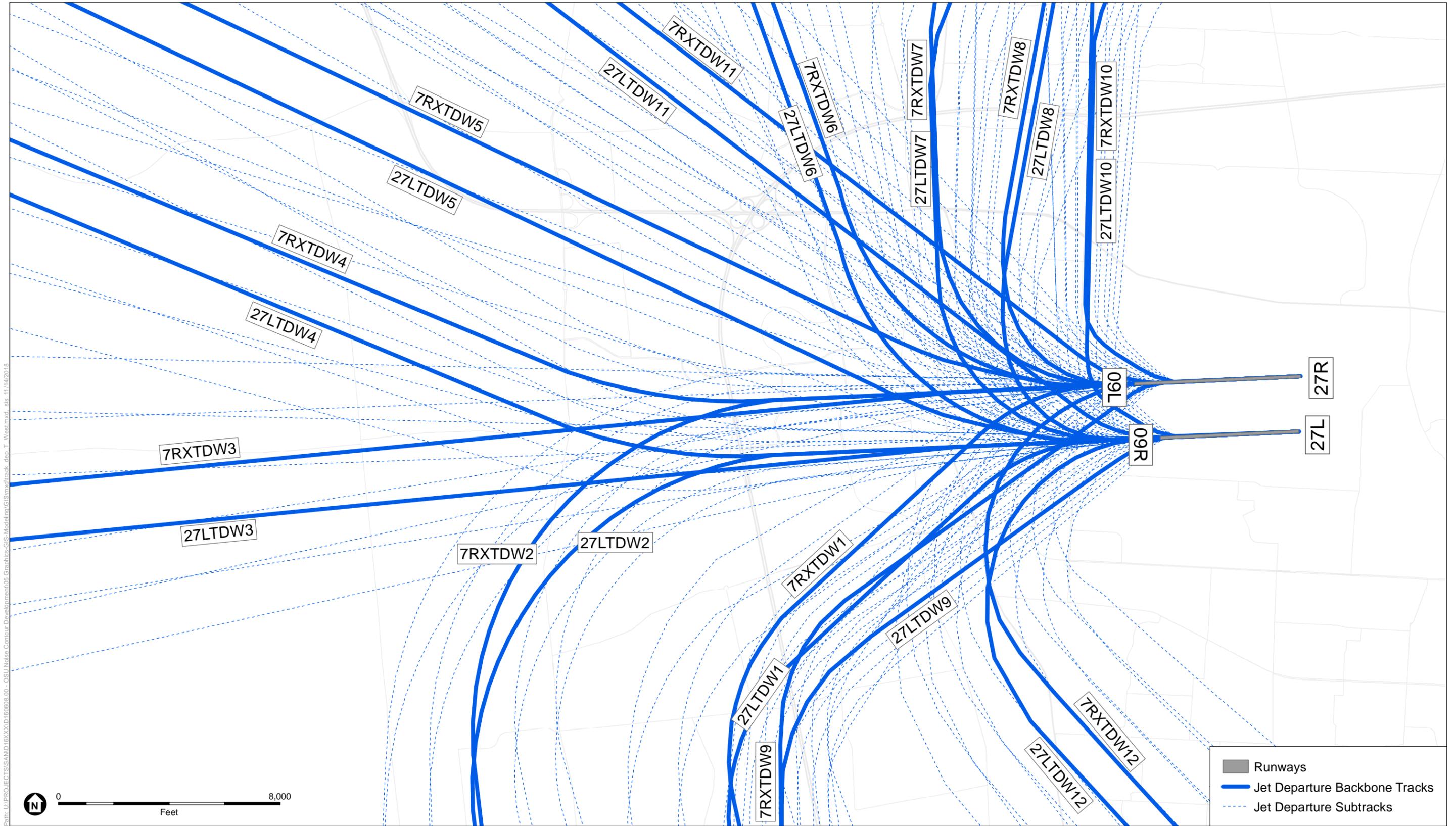
Path: U:\PROJECTS\SAND\66666\00 - OSU Noise Contour Development\05 Graphics-GIS-Mapping\GIS\mxd\track_dep_T_East.mxd_sib_11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-7
Turboprop/Multi-/Single-Engine Piston Departure Flight Tracks - East Flow





SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-8
Turboprop/Multi-/Single-Engine Piston Departure Flight Tracks - West Flow



Path: U:\PROJECTS\SAND\6XXXX\600 - OSU Noise Contour Development\05_Graphics-GIS-Mapping\GIS\mxd\track_arr_h_mxd_sib_11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-9
Helicopter Arrival Flight Tracks





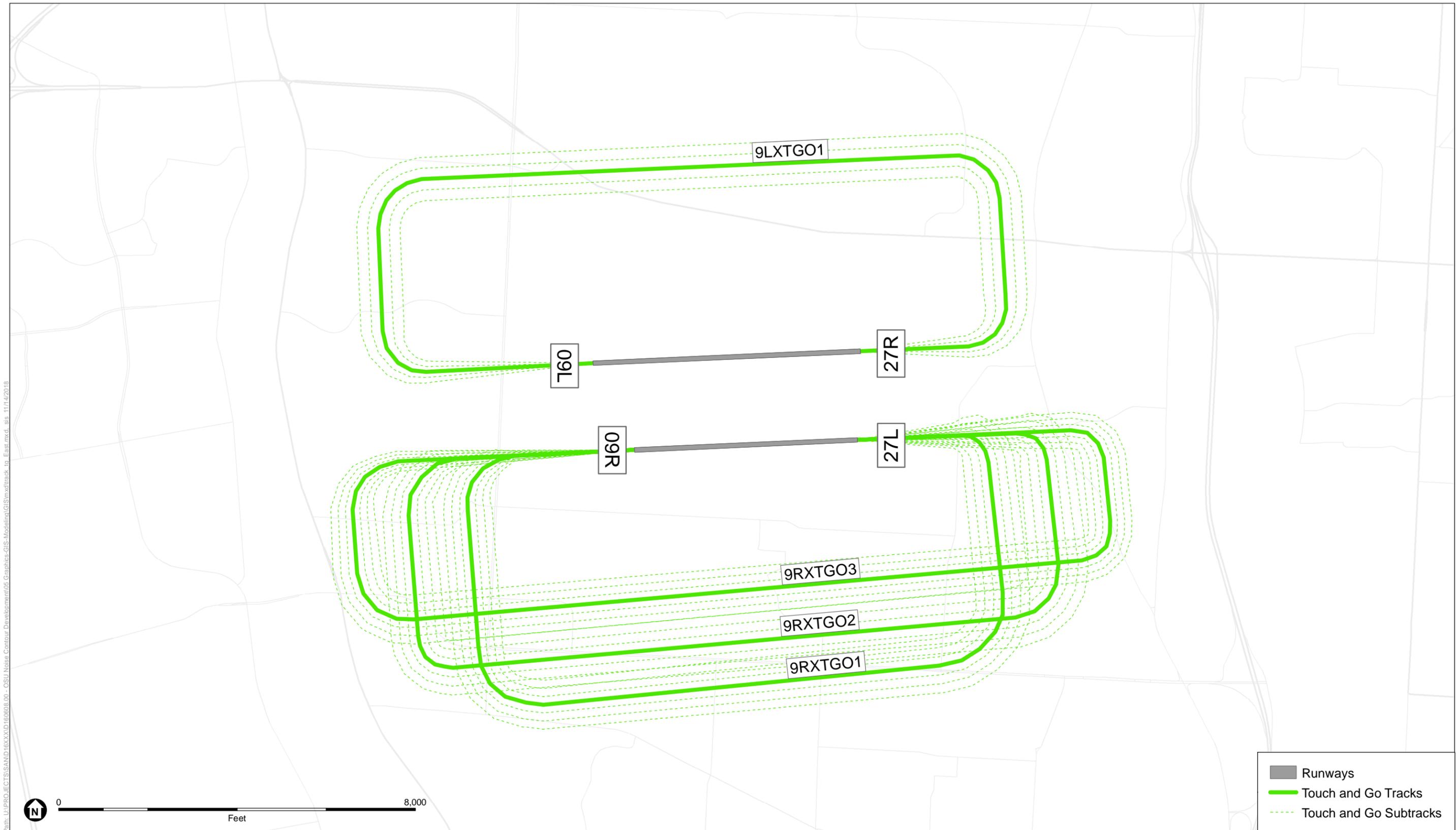
Path: U:\PROJECTS\SAND\6333\160608.00 - OSU Noise Contour Development\05_Graphics-GIS-Mapping\GIS\mxd\track_dep_h.mxd_sib_11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-10
Helicopter Departure Flight Tracks





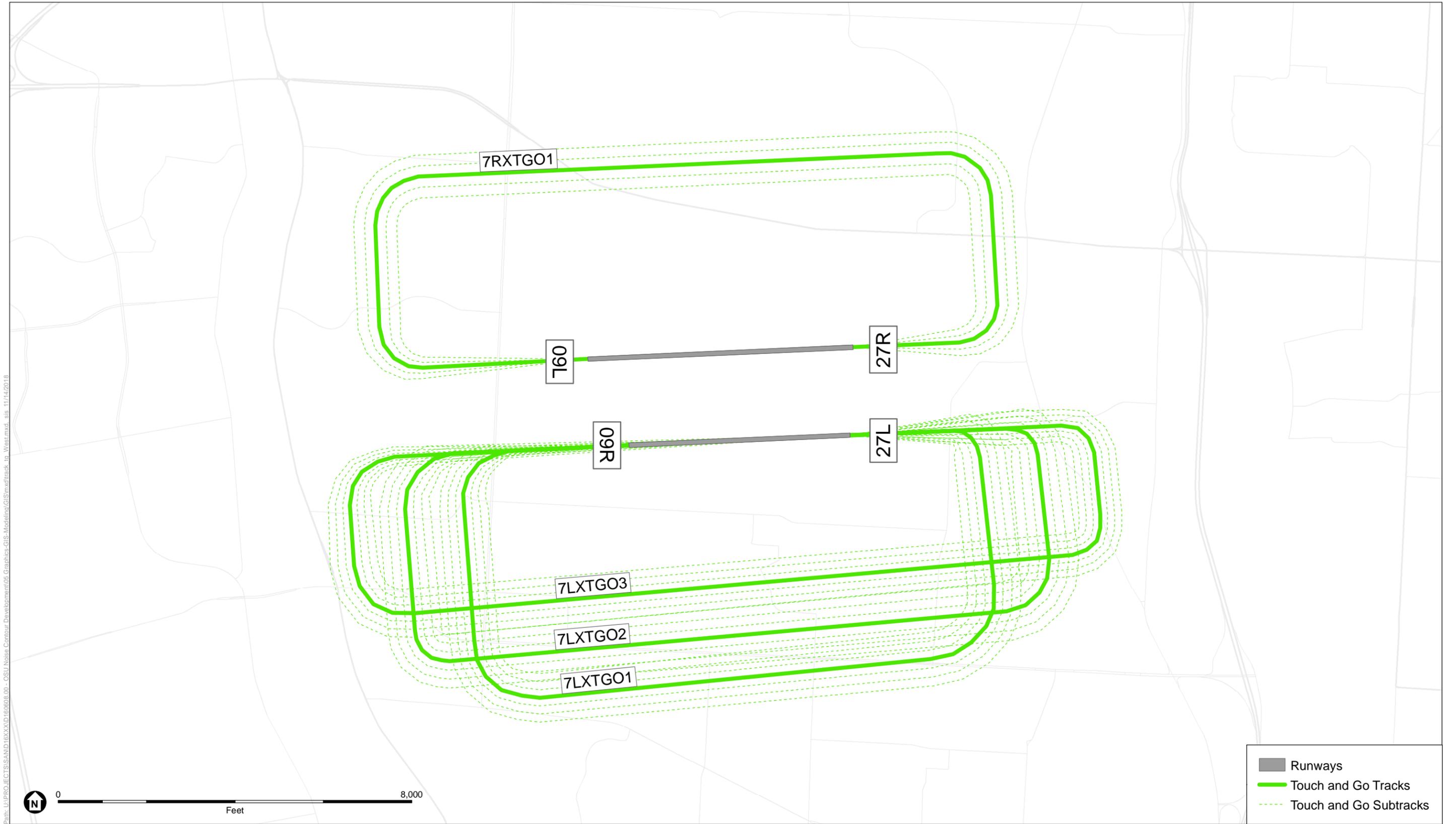
Path: U:\PROJECTS\SAND\6333\160608.00 - OSU Noise Contour Development\05 Graphics-GIS-Modeling\GIS\mxd\track_to_East.mxd_sfs_11742018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-11
Multi-/Single-Engine Piston Touch and Go Flight Tracks - East Flow



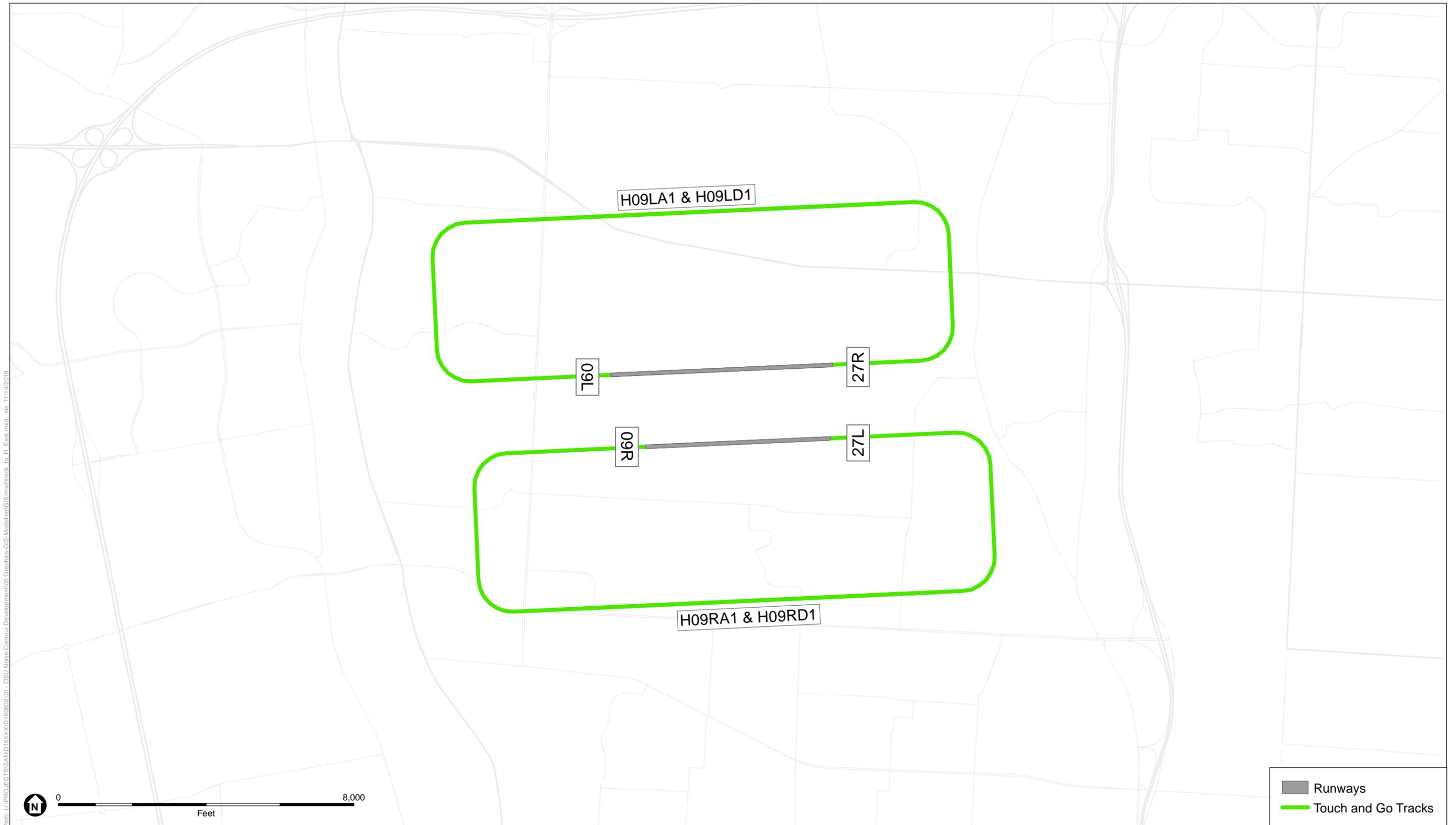


Path: U:\PROJECTS\SAND\6333\160608.00 - OSU Noise Contour Development\05 Graphics-GIS-Mapping\GIS\mxd\track_to_West.mxd_sis_11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

OSU Airport Master Plan Update

Figure A-12
Multi-/Single-Engine Piston Touch and Go Flight Tracks - West Flow



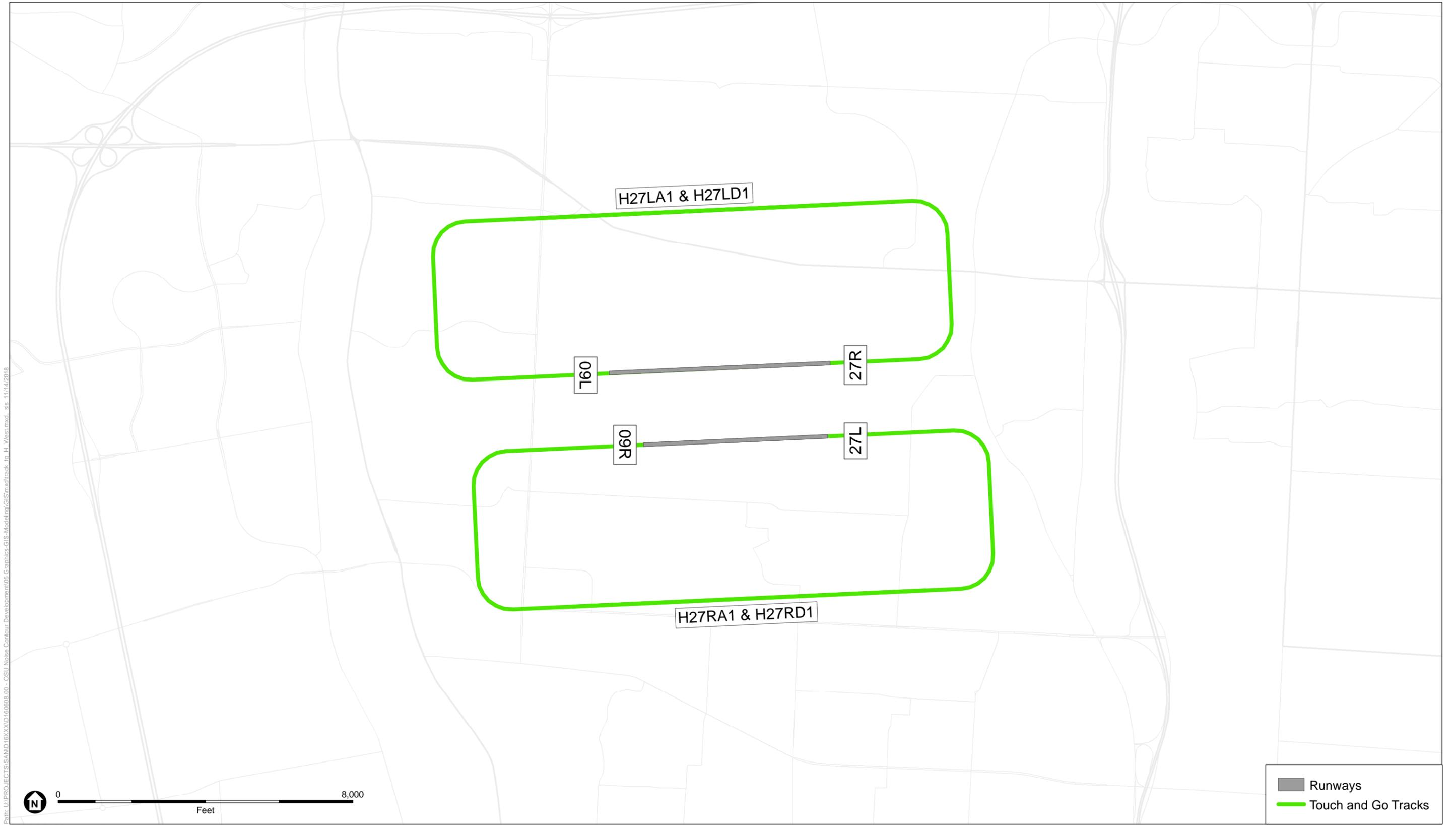
Path: U:\PROJECTS\SAND\6333\160608.00 - OSU Noise Contour Development\GIS-Modeling\GIS\mxd\track_to_H_East.mxd.sls 11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

NOTE: Helicopter touch and go operations were modeled as a combination of arrival and departures. AEDT does not model helicopter touch and go.

OSU Airport Master Plan Update

Figure A-13
Helicopter Touch and Go Flight Tracks - East Flow



Path: U:\PROJECTS\SAND\6333\163608.00 - OSU Noise Contour Development\05 Graphics-GIS-Modeling\GIS\mxd\track_to_H_West.mxd .sis 11/14/2018

SOURCE: OSU Noise Exposure Map, 2009.

NOTE: Helicopter touch and go operations were modeled as a combination of arrival and departures. AEDT does not model helicopter touch and go.

OSU Airport Master Plan Update

Figure A-14
Helicopter Touch and Go Flight Tracks - West Flow