



Chapter Four – Facility Requirements

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4 | Section 1 – Introduction

This chapter will identify the facilities necessary to meet the 20-year forecast of aviation demand at Tracy Municipal Airport. It will also identify facilities needed to meet airspace and airfield design standards recommended by the FAA and MnDOT and address the goals and objectives of the Tracy Airport Board and City of Tracy.

For the purposes of this analysis, facility needs are discussed based upon their role in airfield or terminal area functions. Airfield components include, but are not limited to, runways, taxiways, NAVAIDs, aprons, and airfield marking, signage, and lighting. Terminal components include, but are not limited to, storage hangars, the A/D building, airport access, automobile parking, fencing and security, and support facilities. Deficiencies in the design or function of these components may affect airport safety, security, efficiency, or capacity.

The planning period of this study covers years 2017 through 2037. The long-term Ultimate analysis and recommendations are included to provide general guidelines for adequate future development. Whether the recommendations for the Ultimate development will actually be implemented will depend on the actual future demand and the willingness and available resources of the local, state, and federal decision-makers to meet that demand. This report will consider an Ultimate design that will address the most demanding contingencies that may present themselves during the planning period.

As conditions change within the Tracy community, the Airport itself, and in federal, state, and local general aviation trends, the existing facilities and operations at TKC should be continuously monitored and evaluated against the recommendations of this Master Plan in the near- and long-term. Consistent monitoring of buildings, lighting, NAVAIDs, paving, obstructions, and documentation of actual aviation activity at the Airport will assist with this evaluation in the future.

Please note that in the course of the writing of this Master Plan, Runway 06/24 was decommissioned and closed. Its removal created opportunities for hangar development and reduced problems with the airport's Runway Visibility Zone and obstructions to

The identified facilities will meet the needs of the 20-year demand forecast, FAA and MnDOT design standards, and the Airport's goals and objectives.

navigation; therefore, no further analysis of this runway will be performed. The conditions leading to the runway's closure will be discussed further in the Identification and Evaluation of Alternatives Chapter. The City sewer treatment ponds were also closed and filled in.

In addition, the airport's apron was reconstructed. As noted in the Inventory chapter of the Master Plan, the apron was problematic due to its poor condition, severe slope and center drain condition which sometimes led to propeller strikes, and its narrow Taxilane Object Free Area. Corrections to the apron were a top priority for the Sponsor and the FAA, so as a result, an AIP grant was awarded to improve the apron in 2019. With the project completed, all of the conditions described above have been addressed. The condition of the apron prior to the project and the improvements that were made will be discussed further in the Identification and Evaluation of Alternatives Chapter.

An overview of the current facilities' deficiencies and opportunities are listed below.

4.1.1 Deficiencies:

- Runway length is too short to meet the needs of all users
- Taxilane Object Free Area (TLOFA) obstructions and congestion due to small apron
- AWOS location restricts opportunities to add hangars
- Tie-downs in Runway Visibility Zone (RVZ), not enough tie-downs
- Ownership of Runway Protection Zones (RPZ) and Clear Zones, and incompatible uses, such as roads, in these areas
- Wastewater treatment ponds are too close and attract wildlife
- Incompatible uses in Safety Zone A – e.g., campground
- Runway Safety Area (RSA) out of compliance at Runway 29 end
- Need building area for future hangars and replacement of existing T-hangar
- Airport perimeter fence
- Obstructions identified by the AGIS survey

4.1.2 Opportunities:

- Use box culvert to rectify RSA problems and extend runway in future at unprotected/unregulated watercourse
- Address apron condition and size to improve user experience, solve TLOFA clearance and RVZ issues, provide needed tie-downs and access funding for revenue-generating projects
- Identify properties to be purchased to meet RPZ ownership recommendations
- Identify and mitigate incompatible uses in Safety Zone A
- Abandon Runway 06/24 to solve RVZ issue and provide building area for hangars
- Capitalize on TKC's proximity to Marshall with upgraded infrastructure

This chapter will provide:

- A review of the criteria used to develop TKC's facility requirement recommendations for the planning period;

- Identification of existing non-standard FAA design conditions;
- A review of the airspace and airfield capacity of the airport; and
- Recommendations for specific airfield or terminal improvements and/or facilities.

Potential options and preliminary costs of providing the identified facilities will be provided in Chapter 5, *Identification and Evaluation of Alternatives*.

4 | Section 2 – Criteria for Determination of Facility Requirement Recommendations

Any growth in local aviation-related activities or change in existing or anticipated use of an airport facility requires a corresponding program of development and implementation to assure the airport remains able to accommodate its demand.

The developed schedule of recommendations for maintenance, new or expanded facilities at Tracy is based upon the following considerations:

- Standards described in FAA Advisory Circular 150/5300-13A, *Airport Design*;
- The recommendations of the **2012 Minnesota State Airport System Plan (SASP)**;
- Fundamental Airfield Development Criteria;
- Inventory of the existing facilities, found in Chapter 2;
- Forecast of aviation demand, found in Chapter 3;
- The recommended Critical Design Aircraft, found in Chapter 3; and
- The goals and objectives of the Airport Board and City of Tracy.

The facility requirements were developed with acknowledgement of the following criteria:

- The Airport is currently designed to accommodate aircraft in Approach Category A/B and Airplane Design Group I and is able to serve small (12,500 pounds or less) aircraft.
- According to airport staff and the managing Airport Board, the current critical aircraft operating on Runway 14/32 are those such as the Piper PA series and Cessna 100 series, which are ARC A-I (Small).
- The current fleet using Runway 11/29 are a mix of single-engine and multi-engine aircraft such as Pipers, Cessnas (100 series), and the occasional Beechcraft King Air or Bonanza. These procedures account for approximately 7,800 operations a year.
- The Ultimate forecast critical aircraft will be “small” (12,500 pounds or less) aircraft in the A-I, B-I, and B-II classifications. Designing for the recommended critical aircraft, the Beechcraft King Air 90, ARC category B-II, requires only minimal additional facilities or changes from the existing condition. All major

Any growth or change in use requires a corresponding development and implementation program review.

facilities such as paved runways and taxiways should be designed for B-II (Small) aircraft, including all B-II (Small) movement areas on aprons.

After FAA approval of the Tracy Airport Master Plan Forecast in the Summer of 2018, the City of Tracy received significant interest in construction of new hangars. The approved forecast showed a long-term forecast of 17 based aircraft, with 10 of those based on the field in 2018. This forecast is expected to be exceeded in the short-term due to increased interest in improved facilities.

As of April 2020, there are 10 based aircraft in existing facilities. These facilities have met their useful life and should be replaced. All ten of these aircraft owners have submitted Letters of Intent to lease space in a newly constructed hangar. Additionally, eight other aircraft owners have submitted Letters of Intent to lease or construct a hangar. A total of 18 aircraft owners submitted Letters of Intent to lease a 45' x 45' hangar, 65' x 65' hangar, or t-hangar. (Please see the Appendix for the referenced Letters of Intent.) All aircraft are expected to be fixed-wing single engine aircraft, therefore not changing the critical aircraft determined by the approved forecast. Aircraft owners not currently based at Tracy are now based at neighboring airports and plan to relocate to Tracy once hangar facilities are constructed, per the Tracy City Administrator's research. Tracy Municipal Airport intends to seek financing using MnDOT's Revolving Hangar Loan program to replace the existing T-hangars and construct additional hangars to accommodate demand. For purposes of facility requirements, growth is expected to be high in the short-term at a 1.6% growth rate, with 18 based aircraft expected by 2022.

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TKC is classified as an Intermediate Airport in the Minnesota SASP. Table 4-1 illustrates the minimum objectives for an Intermediate Airport and any recommended improvements for TKC to meet these standards. These recommendations will be discussed further in upcoming sections of this chapter.

Facility	TKC	Minimum System Objectives	Recommendation
Primary Runway Length	3,100'	2,400'	No Change
Primary Runway Width	75'	75'	No Change
Parallel Taxiway Length	Turnaround	Full Parallel if more than 20,000 Ops/Year	No Change
Primary Runway Approaches	Visual/Basic Non-precision	Enhanced Non-Precision with Vertical Guidance	Upgrade to Non-precision with vertical guidance
Navigation Systems	Wind Cone	Wind Cone	No Change
	Rotating Beacon	Rotating Beacon	No Change
	None	PAPI	Install
	None	REILs or Greater	Install
	None	Approach Lighting System	No Change
Runway Lighting	MIRL	LIRL or Greater	No Change
Weather Reporting	AWOS	AWOS/ASOS as Needed	No Change

Facility	TKC	Minimum System Objectives	Recommendation
Hangars (For Based Aircraft)	8 city-owned T-Hangars, 1 city-owned box hangar	100 percent of Jets/TP 95 percent of SEP & MEP	No Change
Aprons (For Based & Transient Aircraft)	4,642 sq. yds.	All Based Aircraft Not in Hangars + Peak Hour Itinerant Operations	No Change
GA/Administration Buildings	Yes 700 sq. ft.	G/A Administration Building	No Change
Automobile Parking	6	1 Space for Each Based Aircraft and 25 percent Increase for Employee and Visitor Parking	Construct
Perimeter Fencing	Partial	Entire Airport Desirable	No Change
Fuel	24/7 100LL	24/7 100LL Desirable	No Change

Table 4-1: MN SASP Minimum System Objectives Comparison; Source: SASP, 2012

Guidelines for fundamental airfield development are included in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS).

Fundamental development is the basic configuration recommended for an airport in the national system and is affected by the type of activity the airport serves. It includes, but is not limited to, land acquisition, aircraft movement areas, landing and NAVAIDs, and aircraft parking areas.

Many of the development items recommended by Order 5090.3C are already in place in Tracy. As TKC continues to grow, it is valuable to consider the expansion or addition of fundamental development to support future demand. Development determined to be necessary based upon the analysis in this chapter will adhere to these standards and to criteria included in the appropriate Advisory Circulars, Orders, and Engineering Briefs.

According to FAA AC 150/5300-13A, *Airport Design*, airports, runways, and taxiways must be designed and constructed for the most demanding airplane (Critical Design Aircraft) currently using or projected to use the facility on a regular basis. Airport design criteria is based on the **Airport Reference Code** (ARC) designation, which provides minimum safety standards in accordance with the performance characteristics of the family or aircraft represented by the airport's **critical or design aircraft**. This aircraft, classified by approach speed, wingspan, and tail height, is within a design category of aircraft that conducts at least 500 annual itinerant operations (as a total of landings and takeoffs) in one year. The types of approach aids, lighting, and navigational equipment required at an airport are determined primarily by the level of annual activity, weather, terrain, and the role of the airport in the national system of airports.

TKC's current ARC is A/B-I (Small), with the great majority of its airport users flying aircraft with approach speeds of less than 91 knots, tail heights of less than 20 feet, and wingspans of less than 49 feet. **The Ultimate Critical Design Aircraft for Runway 11/29 has also been identified in Chapter 3 as ARC B-II (Small), represented by the Beechcraft King Air 90.**

Some recommended airfield components designed to support Runway 11/29 will support A/B-I (Small) aircraft only, such as hangars and their associated taxilanes. These smaller aircraft are expected to be the majority of users of the airport for the foreseeable future. Other apron and building areas may be designed to accommodate larger B-II aircraft, separate from designated A/B-I areas.

As discussed in Chapter 3, *Aviation Demand Forecast*, aviation activity and operations are expected to steadily grow during the 20-year planning period. A significant portion of these increasing operations counts can be attributed to the planned addition of a crop spraying operation based at TKC in the next five years. Other factors contributing to the development at TKC are the City's outreach efforts to new and local businesses to base their business aircraft there, as well as interest in a flight instruction operation. Ongoing efforts by the City to improve airport infrastructure has enhanced the attractiveness and usefulness of the airport to both based and itinerant users. In order to accommodate forecasted growth, airside and landside improvements are necessary.

The goals and objectives of the Airport Board play a significant role in determining the future facility needs and development opportunities for TKC. As outlined in the first chapter, the Board has several distinct focus areas as part of this planning effort grouped in the following categories:

- **Airfield and Airspace** – Use forecasts to review taxiways and runways for future development, evaluate land use as needed in safety zones, evaluate NAVAIDs for compliance with FAA requirements, evaluate airspace obstructions and RSAs for compliance with standards.
- **General Aviation Facilities** – Review capacity and layout of current A/D building and hangars against forecasts and Airport Board and City's goals.
- **Support Facilities** – Evaluate equipment and equipment storage needs and review suitability of fuel facility to meet future needs.
- **Access, Circulation and Parking** – Analyze need for improvements to airport wayfinding, security fencing, security lighting, and visitor/employee parking.
- **Other Needs** – Creating/updating of FAA required documents such as the Airport Layout Plan, Wildlife Hazard Management Plan, Solid Waste Management Plan, Obstacle Action Plan, Airport Capital Improvement Plan, and Exhibit "A" Document and submit safety-critical Airport Geographical Information.

4 | Section 3 – FAA Design Standards and Non-Standard Conditions

AC 150/5300-13A, *Airport Design*, provides design standards for airport geometrical layout, runway and taxiway/taxilane design and associated elements. This guidance references many other AC documents for specific applications and is complemented by 14 CFR Part 77. A key objective of any airport planning project should be to identify any non-standard conditions that exist at the facility and offer recommendations on actions to achieve full compliance with FAA and MnDOT standards.

If the non-standard condition cannot be reasonably corrected in the field, a Modifications of Standards (MOS) should be secured and documented in the final ALP. Issues that can be addressed with a MOS include items such as too-narrow Object Free Areas for taxiways or runways, but will not be issued for obstructions, lack of fencing, or other like items. FAA does not currently have a record of approved *Modifications of Standards* for non-standard conditions for Tracy.

Non-Standard Condition	Existing Condition Requiring Modification of Standards	FAA or MnDOT Standard	Ultimate Condition
TLOFA at T-hangar	TLOFA is too narrow	TLOFA width must conform with Engineering Brief 78	Conforming taxilane and hangar configuration

Table 4-2: Existing Non-Standard Conditions at TKC

4 | Section 4 – Airfield and Airspace Capacity

The ability of an airport to accommodate aviation activity is a function of the number of runways, runway and taxiway configuration, and the mix of aircraft using the airport. The capacity of any runway is finite in relation to the number of hourly and annual operations it can accommodate. Capacity is expressed in two terms: **annual service volume (ASV)** and **hourly capacities** under **Visual Flight Rules (VFR)** and **Instrument Flight Rules (IFR)**.

These variables are used to provide a quantitative breakdown of the airport’s annual service volume and hourly capabilities. The procedures used for this analysis are detailed in FAA AC 150/5060-5, *Airport Capacity and Delay* and FAA Airport Design Program, Version 4.2D.

4.4.1 Runway and Airspace Capacity

There are currently no problems with runway or airspace capacity at TKC based on the current number of operations, with no reports of conflicts for aircraft landing/takeoffs. Activity naturally increases during warmer weather and decreases in the winter.

According to the aviation demand forecast presented in Chapter 3, growth at TKC is expected to continue at a slow but steady pace, reaching a threshold of 18 based

aircraft and 10,500 total operations by 2037. At this rate, runway and airspace capacity will not be a problem for many years.

No additional runway or airspace capacity improvements are required for the planning period.

4.4.2 Obstructions

4.4.2.1 Part 77 Surfaces

Part 77 imaginary surfaces are geometric shapes in relation to each runway, with the size and dimension based on that runway's operations.

14 Code of Federal Regulations (CFR) Part 77 defines and establishes the standards for determining obstruction to an airport's imaginary surfaces. These surfaces are geometric shapes in relation to each runway, the size and dimension of which are based on the category of each runway for existing and planned airport operations. An obstruction is defined as "Any object of natural growth, terrain, permanent or temporary construction equipment, or permanent or temporary manmade structure that penetrates an imaginary surface." An object which penetrates these surfaces is deemed an obstruction to navigable airspace and must be removed. A detailed description of each of the five imaginary surfaces is included in Chapter 2, Section 2.4.3.3 *FAR Part 77 Imaginary Surfaces*.

Runway 11/29 is currently 3,100 feet long and 75 feet wide. The runway is considered a *Utility Runway* with *Non-Precision Instrument approaches* and visibility minimums of not lower than one mile.

Runway 17/35 is 1,778 feet long and 200 feet wide. The Runway is considered a *Utility Runway* suitable for *Visual approaches* only.

Primary Surfaces: A rectangular surface longitudinally centered about a runway.

- As a paved Non-Precision Utility runway, **Runway 11/29's** Primary Surface is 500 feet wide and extends 200 feet beyond each end of the runway, yielding a surface 500 feet wide and 3,500 feet long.
- As a Visual Runway, **Runway 17/35's** Primary Surface is 250 feet wide and ends at the turf runway ends (2,178 feet long).

Approach Surfaces: A surface longitudinally centered on the extended runway centerline, extending outward and upward from the primary surface at each end of the runway, at a designated slope and distance.

- As a paved Non-Precision Utility runway, **Runway 11/29's** Approach Surface expands uniformly to a width of 2,000 feet at a distance of 5,000 feet, at a 20:1 slope.
- As a Visual Utility Runway, **17/35** has an Approach Surface which expands uniformly to a width of 1,250 feet at a distance of 5,000 feet, at a 20:1 slope.

Horizontal Surfaces: A horizontal surface surrounding a runway at a height of 150 feet above the designated airport elevation of 1,341, the perimeter of which is

constructed by swinging arcs of specified radii from the center of each end of the Primary surface and connecting the arcs by lines tangent to those arcs.

- As a paved Non-Precision Utility runway, **Runway 11/29's** Horizontal Surface has arc radii of 5,000 feet, at an elevation of 1,490 feet.
- As a Visual Utility Runway, **Runway 17/35 has** a Horizontal Surface with arc radii of 5,000 feet, at an elevation of 1,490 feet.

Conical Surfaces: A surface that extends upwards and outwards from the outer limits of the Horizontal Surface, for a horizontal distance of 4,000 feet at a slope of 20:1.

Transitional Surfaces: A surface that extends upwards and outwards, at right angles to the runway centerline, from the sides of the Primary Surface and the Approach Surfaces. It slopes at 7:1 until it intersects with the Horizontal or Conical Surfaces.

The city of Tracy has adopted a zoning ordinance (Section 3.60) for airports, which specifically includes provisions for airspace obstructions. These zones mirror the Part 77 zones, with a few differences. ***As was noted in Section 2.3.4 of Chapter 2, the zoning ordinance must be updated to reflect the current and planned Ultimate conditions of the airport and by approved by MnDOT as part of the Master Planning process. Changes to the Ultimate Airspace Obstruction Zoning standards will be determined as part of the runway length and approach procedures alternatives analysis in Chapter 5.***

Noted differences between Tracy's Ordinance and the Part 77 requirements include:

- **Primary Zone:** City ordinance sets the length of the primary surface to 100 feet beyond each end of Runway 17/35, rather than coinciding with the turf runway ends.
- **Approach Zone:** City ordinance sets the approach zone as Approach Surfaces expands uniformly to a width of 2,500 feet at a distance of 10,000 feet, at a 40:1 slope, rather than 2,000 feet at a distance of 5,000, at a 20:1 slope.
- **Horizontal Zone:** City ordinance sets the height of the zone at 100 feet above the established airport elevation, rather than 150 feet. The ordinance sets the arc radii at 6,000 feet rather than 5,000 feet.
- **Conical Zone:** City ordinance is the same as FAR Part 77 standards.
- **Transitional Zone:** City ordinance does not identify a Transitional Zone.

The recommended Ultimate Airspace Zoning standards will be determined as part of the runway length alternatives analysis in Chapter 5.

4.4.2.2 Existing Obstructions

According to Assurance #20 in the *Airport Sponsor Assurances* document dated February 2020, an Airport must “take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport... will be adequately cleared and protected by... mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.” Part 77 Primary Surfaces and Approach Surfaces are required to be kept clear of penetrations by MnDOT licensing standards, while other surfaces are desired be clear, and a clear plan to address the issues must be established.

An obstruction survey was completed in May 2018 as part of the Master Plan effort to determine if there are obstructions to the Part 77 surfaces up to 100 feet above airport elevation. The obstruction analysis has determined that there are many obstructions to the existing Part 77 surfaces of Runway 11/29. Many of these obstructions were trees which can be trimmed or removed completely to restore the integrity of the Part 77 surfaces. The remainder of the obstructions are road surfaces and natural high points which will need to be addressed through grading operations on the site or by shifting the runway threshold, or by other action approved by MnDOT and FAA. Runway 17/35 has similar obstructions, though far fewer.

Obstacles on airport property should be addressed directly with removal of the obstacle. Obstacles off-airport property, depending on severity, can be mitigated in multiple ways, sometimes with removal, marking and lighting, or inclusion in the published arrival and departure procedures.

It is recommended that all existing obstructions to the Part 77 Approach Surfaces of all runways be cleared where practicable, and for those that cannot, be mitigated by obstruction lighting. The Airport should continue to monitor the Part 77 surfaces of the runways for future penetrations.

The first priority for obstruction mitigation in the Part 77 surfaces will be acquisition of sufficient property interest in affected lands and removal or marking of obstructions. However, the cost of acquisition of such property interests (i.e. eminent domain proceedings, etc.) may exceed the cost of installing obstruction lighting. If such an instance occurs, the Board may coordinate this alternative with the FAA and MnDOT. Off-airport obstruction lighting requires acquisition of an easement for the land use, including access to the land for installation and maintenance of the lighting.

Furthermore, if the runway is lengthened in the future, a new GPS approach should be considered. Longer runways provide service to larger aircraft, such as business and charter craft, and with those larger craft comes a greater expectation for reliability when landing or taking off in poor weather conditions. This often means lower visibility minimums, to 3/4 of a mile or less. The opportunity for the implementation of a lower minimum may be constrained by

existing construction on the airport, such as buildings, that can restrict the possible primary surface width or transitional surfaces.

4.4.2.3 Approach and Departure Surfaces per Engineering Brief 99A (7/24/2020)

Approach and Departure Surfaces identified within Table 3-2 of AC 5300/150-13A, *Airport Design*, updated in Engineering Brief 99A, are imaginary surfaces that specify the maximum elevation allowed for obstacles off the ends of runways to ensure the safe transition of aircraft to and from the airport under instrument meteorological conditions. These imaginary surfaces directly correlate to FAA Order 8260.3B, the *United States Standard for Terminal Instrument Procedures*, “TERPS”. TERPS regulates the method for the creation and publishing of instrument procedures at an airport.

Table 3-2. Approach and Departure Standards Table ^{1,2}

Runway Type		DIMENSIONAL STANDARDS ⁺					Slope
		Feet (Meters)					
		A	B	C	D	E	
1	Approach end of runways expected to serve small airplanes with approach speeds less than 50 knots. (Visual runways only, day/night).	0 (0)	120 (37)	300 (91)	500 (152)	2,500 (762)	15:1
2	Approach end of runways expected to serve small airplanes with approach speeds of 50 knots or more. (Visual runways only, day/night).	0 (0)	250 (76)	700 (213)	2,250 (686)	2,750 (838)	20:1
3	Approach end of runway expected to serve large airplanes. (Visual runways only, day/night).	0 (0)	400 (122)	1,000 (305)	1,500 (457)	8,500 (2591)	20:1
4	Approach end of runways expected to accommodate instrument approaches having visibility greater than or equal to 3/4 statute mile. ³	200 (61)	400 (122)	3,400 (1036)	10,000 ⁴ (3048)	0 (0)	20:1
5	Approach end of runways expected to accommodate instrument approaches having visibility minimums less than 3/4 statute mile.	200 (61)	800 (244)	3,400 (1036)	10,000 ⁴ (3048)	0	34:1
6 ⁵	Approach end of runways expected to accommodate instrument approaches with vertical guidance.	0 (0)	Runway Width + 200 (61)	1520 (463)	10,000 ⁴ (3048)	0 (0)	30:1
7	Departure runway ends used for any instrument operations.	Runway Width (RW)	500 (152) – ½ RW	7,512 (2290)	12,152 (3704)	6,160 (1878)	40:1

* The letters are keyed to those shown in Figure 3-2 of AC 150/5300-13A. For Row 7, refer to Figure 1 of this Engineering Brief

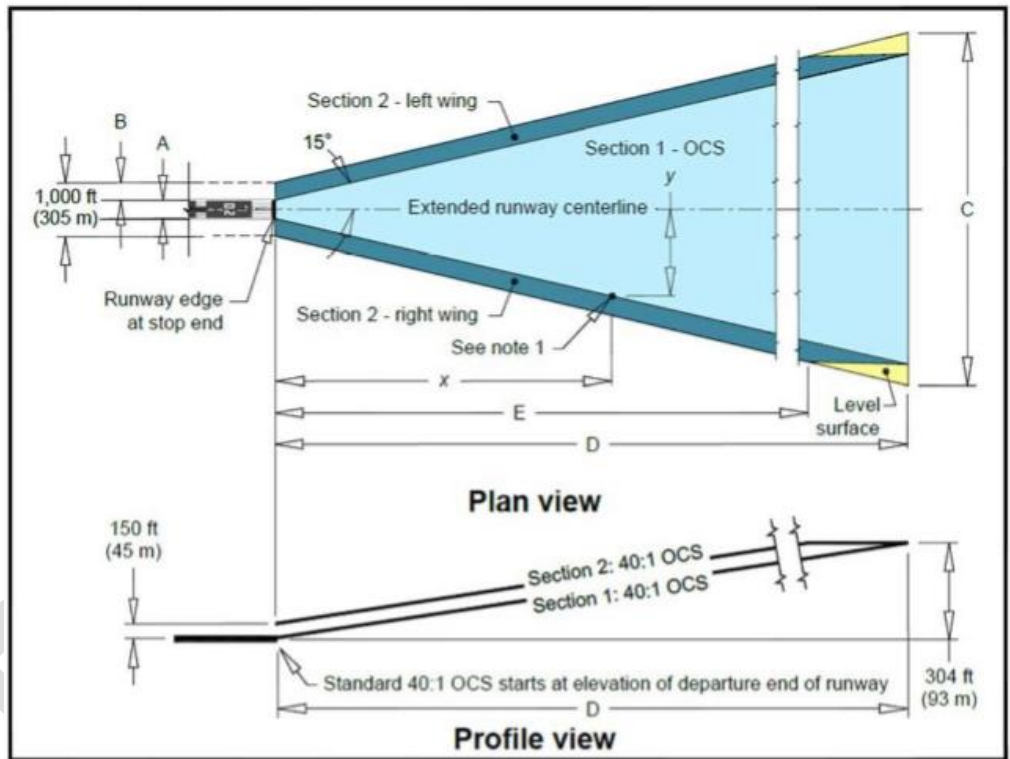
Figure 4-3: Table 3-2, Approach/Departure Standards Table

Source: Engineering Brief 99A (7/24/2020)

- As a runway expected to support instrument approaches having visibility greater than or equal to ¾ statute mile, **Runway 11/29’s** Approach TERPS Surface has an inner edge which is 400 feet wide, expanding uniformly to a width of 3,400 feet at a distance of 10,000 feet and a slope of 20:1. The inner edge is offset from the runway end by 200 feet (Line 4 of figure above). If vertical guidance is desired for future approaches, Line 6 of the table would apply, with a 30:1 slope.
- **Runway 11/29’s** Departure TERPS surface (Line 7 of table above) refers to Figure 1 of the Engineering Brief. This complex shape has an inner edge

which begins at the runway threshold and is the width of the runway, expanding uniformly to a width of 7,512 feet at a distance of 12,152 feet and a slope of 40:1. This lower-sloped surface is the mostly likely to be the first to become obstructed by trees, roads, or other construction. Per FAA’s takeoff minimum information for this runway, Runway 29 has a non-standard climb gradient. The new departure surface included in EB 99A may allow construction in areas which were previously barred from development, and possibly reduce the number of identified obstructions at TKC. The figure below illustrates the new departure surface.

Figure 1. Instrument Departure Runway Obstacle Clearance Surface



Note 1: The half-width of Section 1 is calculated by the formula:

$$\text{Section 1 Half Width} = (1/2 \text{ RWY Width}) + (\tan 15^\circ * X)$$
 where X = distance from stop end.

Figure 2. Departure Surface – Perspective View

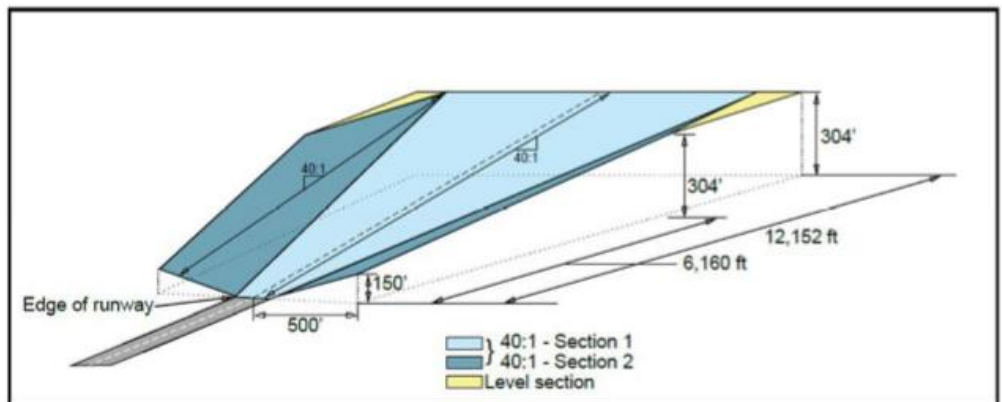


Figure 4-4: Updated Departure Surface, July 2020.

- As a runway expected to support visual approaches only, serving small airplanes whose approach speed exceeds 50 knots, **17/35's** Approach TERPS Surface (Row 2 of the table above) has an inner edge which is 250 feet wide, beginning at the threshold, expanding uniformly to a width of 700 feet at a distance of 2,250 feet, continuing at 700 feet wide for another 2,750 feet, and a slope of 20:1. Per FAA's takeoff minimum information for this runway, there are no departure procedures or departure surfaces for 17/35.

The 2018 Obstruction Analysis identified obstacles in the Departure surface of Runway 11/29, including trees, utility poles, Highway 11, and a small hill, which must be re-graded to be below the Departure surface. The items on airport property can be removed and trees can be trimmed. The identified utility poles were removed in Summer 2020. The obstruction created by Highway 11 will likely require that Runway 11's threshold be shifted to the southeast to clear the obstruction. This activity will be studied in detail in the Identification and Evaluation of Alternatives chapter. Please note that the Departure surface and its penetrations were identified using the table described below, rather than the new Departure surface identified in the figure above. When this new Departure surface is applied, it is possible that some of the obstacles identified in the earlier AGIS survey will no longer be considered "obstacles to navigation."

During the 2018 AGIS survey, obstacles were identified using the current approach/departure standards table, which at that time was only a draft. **Runway 11/29** used approach standard line 4 of the Draft table during the obstruction survey, whose approach surface expanded to 3,800 feet, which is more than is currently required (3,400 feet). **Runway 17/35** used approach standard line 2 of the Draft table, which matches the dimensions currently included in Engineering Brief 99A.

These surfaces are used as the basis for FAA Order 8260.3 US TERPS, assuming an initial climb of 200' per NM after crossing the departure end of the runway at least 35' AGL. The FAA then publishes approach and departure procedures and minimums to assist pilots in avoiding obstacles during takeoff or landing. Per FAA Takeoff Minimums (TPP N/C 1, 1/30/20 – 03/26/20) standard, climb departure procedures are not available for runway 17/35 due to environmental conflicts. Runway 29 has a minimum climb of 250' per NM to 1800' or a standard climb if there are 300' ceilings and 2 ¼ mile visibility.

Identified Obstructions	Penetration of Surface
Runway 11/29, Part 77 Approach Surfaces	
Highway 11	6.59'
Highway 11	0.50'
Ground	2.03'
Ground	0.60'

Identified Obstructions	Penetration of Surface
Runway 17/35, Part 77 Approach Surfaces	
Airfield Light	2.38'
Airfield Light	0.01'
Tree	3.96'
Tree	9.58'
Tree	5.46'
Runway 11/29, Part 77 Departure Surfaces	
Tree	38.42'
Pole	0.32'
Utility Pole	4.68'
Highway 11	16.29'
Tree	51.43'
Natural High Point	2.62'
Airfield Light	0.44'
Tree	2.31'
Trees	3.07'
Trees	4.27'
Tree	2.71'

Table 4-5: Obstructions Identified in 2018 AGIS Survey; Woolpert, Inc.

Approach obstacles on airport property should be addressed directly with removal of the obstacle. Departure obstacles on airport property need to have an accepted plan to address the issue, while such obstacles found off-airport may be mitigated pending a review from FAA Flight Procedures department and dealt with in several ways, including removal, marking and lighting, notation in the published instrument flight procedures, or a combination of these.

If the Ultimate length for Runway 11/29 is pursued, TERPS Approach and Departure Surfaces must be reevaluated based on the desired approach minimums. These options will be reviewed in Chapter 5, Identification and Evaluation of Alternatives.

4.4.2.4 Future Obstructions

The Airport should continue to monitor all runway Part 77 and TERPS surfaces for upcoming or future obstructions on a regular basis. The future planning condition is B-II (Small)-1 Mile. Trees in an easement area may be cut extra low to allow for multiple years of growth if included as a condition of the easement. Local construction can be monitored for impediments or obstructions in Airport-critical safety areas. Most importantly, any safety areas not in Airport control should be purchased by fee simple or controlled with easements to ensure the protection of life and property in and around the Airport.

4 | Section 5 – Airside Facility Requirements

The airport facility requirements are based upon AC 150/5300-13A as it relates to the current and future design aircraft. As discussed previously, the Design Aircraft determines the Airport Reference Code from which the airside geometrics are evaluated.

4.5.1 Runway Analysis

This section evaluates the Runway Design Code (RDC), runway length, width, orientation/designation, wind coverage, safety areas, and object free areas based on the existing and future aircraft expected to use TKC. The recommendations are based on FAA Advisory Circulars and specific manufacturers' aircraft performance data. Discussion of the runway lighting system is in Section 4.5.6 of this chapter.

4.5.1.1 Runway Design Code

The assigned Runway Design Code determines the requirements which must be met for many of the dimensional criteria of a runway. **The following analysis is based on the recommended RDC of B-II (Small)-1 Mile for Runway 11/29 and A/B-I (Small)-VIS for Runway 17/35 for the Ultimate Conditions.**

4.5.1.2 Runway 11/29 Length and Width

The determination of runway length required for an airport is based on standards presented in AC 150/5300-13A, Chapter 3 and AC 150/5325-4B, *Runway Length Requirements for Airport Design*. The recommended length for a primary runway at an airport is determined by the family of airplanes having similar performance characteristics requiring the greatest runway length.

Additional factors considered include Critical Aircraft approach speed, **Maximum Certificated Take-Off Weight (MTOW)**, useful load and length of haul, the airport's field elevation above sea level, the mean daily maximum temperature at the airfield, wind velocity and direction, and typical runway surface conditions, such as wet and slippery.

It should be noted that while the following process (Using AC 150/5324-4B) for establishing runway length is appropriate for Ultimate planning purposes, the length that is ultimately built will be determined by a more complex and precise process when a runway expansion project is ready to be designed. The length determined by this AC is likely to be different than the runway length as determined by the actual area available for building, and also different than the length that is truly justifiable per the detailed FAA process.

The process of establishing recommended runway length begins by identifying the MTOW of the Critical Aircraft (Beechcraft King Air 90). This aircraft has a MTOW of 10,100 lbs., falling below the 12,500-pound threshold seen in Table 1-1 of AC 150/5325-4B. Its approach speed is 121 knots and it carries less than 10 passengers.

In addition, the airports are categorized in two family groupings, “95% of fleet” or “100% of fleet.” The “100% of fleet” airport category is intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area. The “95% of fleet” airport category is intended to serve low-activity locations, small population communities, and remote recreational areas. TKC will fall into the 95% category.

Using **Figure 2-1 of this AC**, with a mean daily maximum temperature of the hottest month of the year (82°F) and the airport’s elevation above sea level (1340’), and a 95% of fleet category, the **recommended runway length would be 3,400 feet as shown in blue below.**

Figure 2-1. Small Airplanes with Fewer than 10 Passenger Seats
(Excludes Pilot and Co-pilot)

Example:

Temperature (mean day max hot month): 59° F (15° C)
 Airport Elevation: Mean Sea Level

Note: Dashed lines shown in the table are mid values of adjacent solid lines.

Recommended Runway Length:

For 95% = 2,700 feet (823 m)
 For 100% = 3,200 feet (975 m)

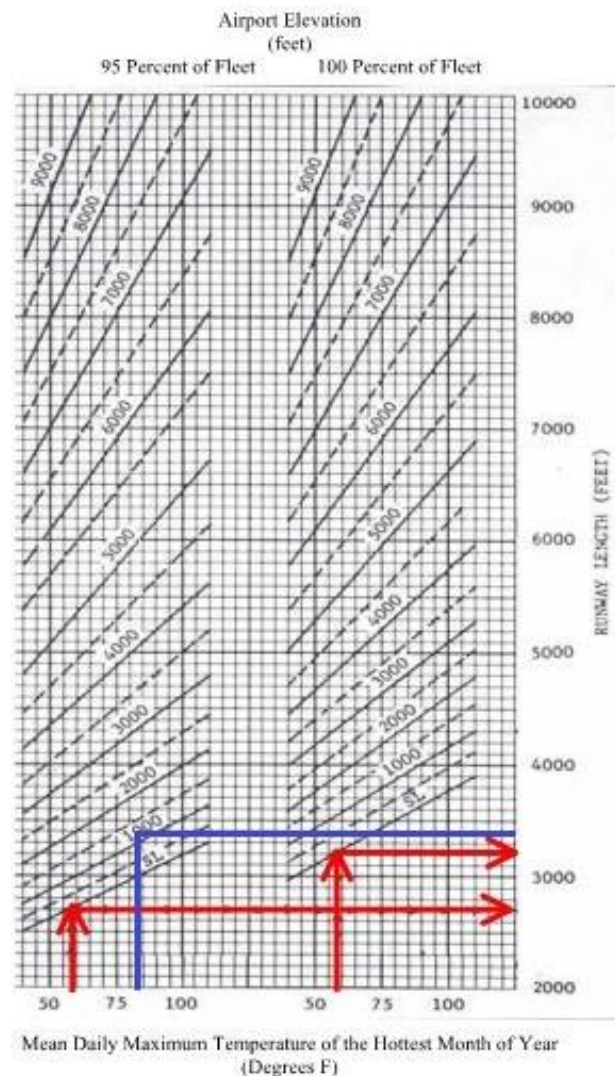


Figure 4-6: Runway Length for TKC’s Critical Aircraft; Source AC 150/5325-4B 2

Figure 2-2 of the AC references “Small Airplanes Having 10 or More Passenger Seats,” listing the Raytheon E90 King Air as a Representative Airplane. Prior to March 26, 2007, Beechcraft Corporation was owned by Raytheon Company. The AC was published July 1, 2005. ***In this case, the required runway length should be approximately 4,300 feet (rounded down from 4,340 as shown in the figure below in blue).***

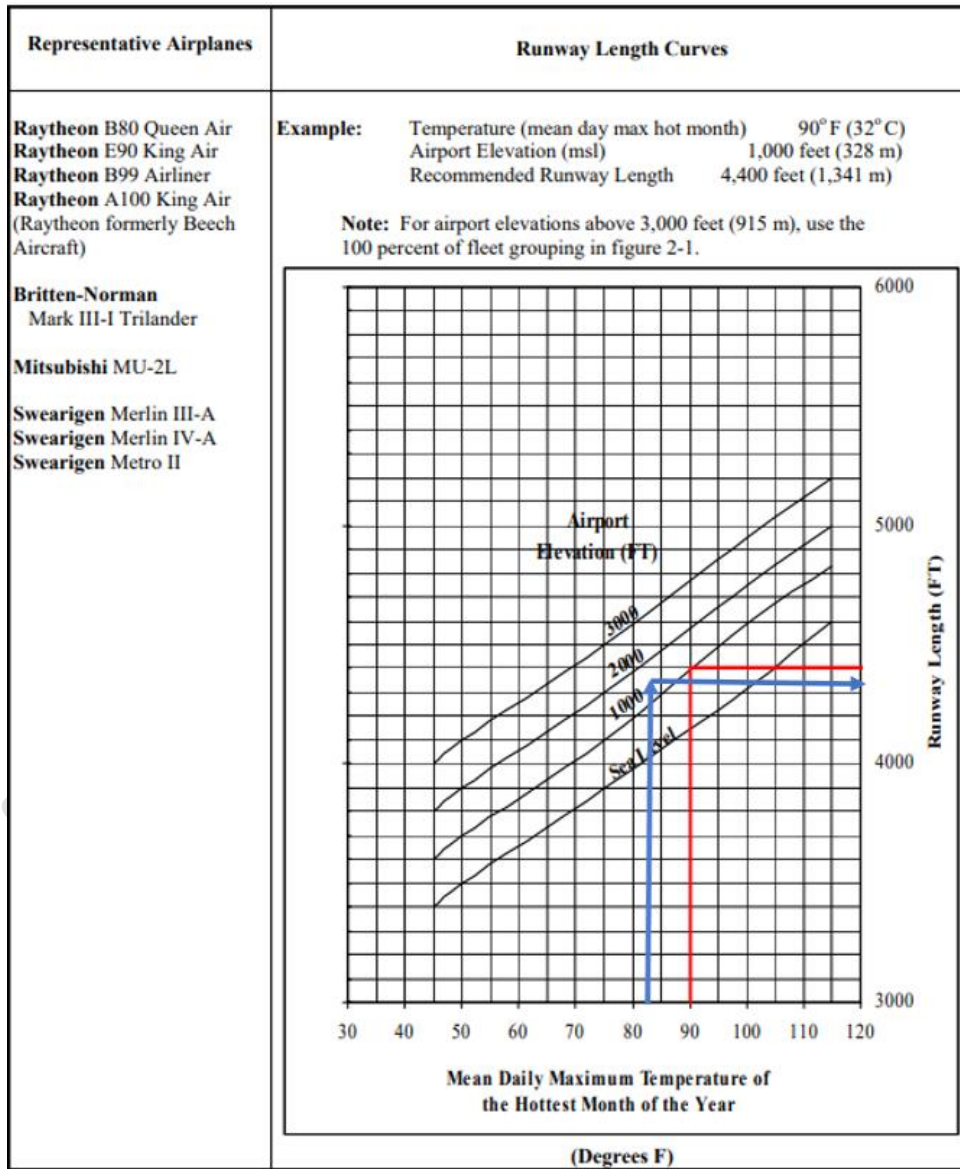


Figure 4-7: Runway Length for TKC’s Critical Aircraft; Source: AC 150/5325-4B 2

Note that Type Certificate Information would need to be submitted to the Airport District Office identifying the specific aircraft that are designated to accommodate 10 or more seats, showing the necessity for the runway extension. Airport operations is forecasted to increase to 10,476 by 2037. At least 500 operations of those aircraft having the specific Type Certificate documenting

that it has 10 or more passenger seats are required to be eligible and justified for federal funding for a runway extension.

Future Justification for Runway Extension

At some time in the future, to meet FAA's justification for a runway extension and be eligible for federal financial participation in the cost, certain documentation based on one of two scenarios is required, as well as documentation that there are or will be 500 annual operations by those specific aircraft in the next 5 years.

1. **Runway extension based on AC 150/5324-4B, Chapter 2.** Provide documentation of the FAA Type Certificate(s) identifying the specific aircraft having 10 or more passenger seats.
2. **Runway extension based on AC 150/5324-4B, Chapter 5.** Provide runway length needs documentation using airport planning manuals from the most demanding aircraft using or wishing to use the airport.

Tracy's current Runway 11/29 length is 3,100 feet, which does not accommodate 95% of all aircraft weighing less than 12,500 pounds, considered "small" aircraft (3,400' per Fig. 2-1). In addition, TKC wishes to be able to accommodate business aircraft and Medivac aircraft which often require a longer runway. A survey of airport users revealed several companies were limited in their operations at Tracy airport because of the current runway length. One charter company is not able to use their Cessna Citation for Medivac or transporting medical personnel to Tracy because the runway length is prohibitive to safe operations. Also, a manufacturing company with a facility in Tracy would like to purchase a larger plane if the runway at Tracy was extended. Some airport users stated that they use Marshall airport (30 nm from Tracy) and drive to Tracy if the aircraft performance or weather dictates that a landing at TKC is not feasible. These businesses indicated that the agility and responsiveness that airport access provides is critical for their continued growth.

The Sponsor has received a letter from Premium Plant Services, a business based in Tracy, that they would like a runway and hangar to accommodate their future Beechcraft Super King Air 350i. If the appropriate facilities and runway length were provided, they would anticipate 100 operations at TKC annually. The King Air 350i is a B-II aircraft with 57.92' wingspan, 14.33' height, a MTOW of 15,000 lbs, up to 10 passengers, and an approach speed of 107 knots. *Note that with the MTOW being more than 12,500 lbs, other changes to paving, safety areas, and approaches would also need to occur if this aircraft becomes the Critical Aircraft with over 500 operations.*

In addition, Sanford Hospital is also interested in basing a Medivac facility for rotorcraft and fixed-wing aircraft at TKC. The current Sanford facility in Tracy has an existing heliport.

According to AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, “FAA policy is the public need has been fully met if the project meets the FAA standards. Therefore, a project that is designed or built to a more rigorous standard is considered to exceed FAA standards. As described in FAA Order 5100.38, *Airport Improvement Program Handbook*, FAA will not provide AIP funds for work exceeding FAA standards, except for the limited exceptions outlined in that Order.” **Runway extensions generally require at least 500 operations per year of aircraft falling into the aircraft category requiring a longer runway for approval from FAA for funding.**

Runway width requirements are a function of the Approach Category of the Critical Aircraft and the type of instrument approach at the airport. The existing paved runway is 75 feet wide. According to AC 150/5300-13A, the required runway width for aircraft in B-II (Small) categories, shown in Table A7-3 *Runway Design Standards Matrix, A/B-II Small Aircraft* with a non-precision instrument approach and greater than ¾-mile visibility minimums is 75 feet.

The current Minnesota SASP also recommends a width of 75 feet as a Minimum System Objective.

Please note that prior to any runway widening or lengthening projects, an environmental assessment must be completed to ensure that the proposed development does not threaten historical, biological, water, or other environmental resources.

4.5.1.4 Runway Magnetic Declination and Designation

Since magnetic north is utilized for runway identifier designations, it is prudent to evaluate this designation periodically to ensure that it is still accurate. Since magnetic forces change and shift over time, a **magnetic declination** must be applied to a compass to determine a true north heading.

According to the National Geophysical Data Center, which was consulted on April 7, 2021, the magnetic declination at the airport reference point is 1° 59’ East and is drifting 0° 4’ west per year.

The magnetic bearing for a runway is the true bearing corrected for magnetic declination at a particular point in time. If the declination is easterly, it is subtracted from the bearing.

Current Runway Designation	Azimuths	Magnetic Declination	Magnetic Bearing	Verified Runway Designation
11	118° 23’ 48.98156”	(-) 1° 59’ E	116° 24’ 48.98156”	12
29	298° 24’ 15.09918”	(-) 1° 59’ E	296° 25’ 15.09918”	30
17	174° 20’ 37.73829”	(-) 1° 59’ E	172° 21’ 37.73829”	17
35	354° 20’ 39.41785”	(-) 1° 59’ E	352° 21’ 39.41785”	35

Table 4-8: Runway Designation Analysis

A review of the actual magnetic bearing for Runway 11/29 shows that when adjusted for magnetic declination, the runway designation may need to be revised.

4.5.1.5 Pavement Strength and Condition

Runway 11/29 is constructed of asphalt and is currently reported at a strength of 12,500 pounds for Single Wheel Gear (SWG) equipped aircraft. The critical design aircraft for TKC, the Beechcraft King Air E90, is a SWG aircraft and has a MTOW of 10,100 pounds.

The Existing and Ultimate conditions are anticipated to serve small aircraft (12,500 pounds or less). The pavement strength of Runway 11/29 meets the requirements of the existing and recommended Critical Aircraft (Beechcraft King Air E90), therefore no additional strengthening is recommended.

As documented in Chapter 2, the condition of runways, taxiways, and aprons are in Very Good to Fair condition (See Figure 2-37) per the 2016 **Pavement Condition Index (PCI)** inspection and report. The pavement condition was re-evaluated and documented in a new report in 2019, which adjusted the findings to report that the runway and taxiways were now in Good condition and the taxiway and a portion of the apron as being Fair. However, the apron rehabilitation project completed in the summer of 2019 improved the surface of the apron, so we expect that the apron would now be considered to be in Excellent condition, with the remaining pavements remaining in Good condition.

No surface treatment of the runway is recommended other than routine maintenance, such as joint and crack sealing and patching, or a mill and overlay, which should be performed on a regularly-scheduled basis to extend the life of the pavement. A major reconstruction project will be needed in the near future.

Runway 11/29 was last overlaid in 2002 and has a PCI of 59 (Good), due to subsequent crack repair and sealcoat maintenance projects. **Airport Improvement Project (AIP)** funding for runway maintenance (a crack seal and sealcoat project with a five-year useful life) is projected in federal fiscal year 2021.

The current PCN number for the runway has not been calculated, because adequate historical construction data and details are not available to analyze. However, AC 150/5355-5C, *Standard Method of Reporting Airport Pavement Strength – PCN*, states that, “The use of the standardized method of reporting pavement strength applies only to pavements with bearing strengths of 12,500 pounds of greater.” When PCN numbers are calculated, the FAA’s current COMFAA software with the theoretical analysis method is used.

Runway 17/35, being a turf runway, was not evaluated.

Runway 11/29 is constructed of asphalt and is currently reported at a strength of 12,500 pounds for SWG aircraft.

Understanding PCN Numbers

Aircraft operators utilize the published PCN number to help determine if an airfield pavement strength is able to accommodate their aircraft.

What does the PCN Number mean?

##/A/B/C/D

- #: Load bearing capacity of the pavement based on a standard single wheel gear load at a tire pressure of 181 psi
- A: Type of pavement
- B: Subgrade (soil) strength (Ultra Low, Low, Medium or High)
- C: Maximum tire pressure (Low, Medium or High)
- D: Indicates whether load bearing capacity was calculated using physical testing or theoretical analysis

Additional information can be found in AC 150/5335-5C.

4.5.1.6 Runway Wind Coverage

Runway orientation is primarily determined by topography and the direction of prevailing winds. Per AC 150/5300-13A, when the current runway system provides less than 95% wind coverage for any aircraft using the airport on a regular basis, a crosswind runway should be considered. For an RDC of B-II, (Small) which is the recommended RDC for Runway 11/29, the runway configuration should provide 95% coverage for a 13-knot crosswind.

As detailed in Section 2.4.2.3 *Wind Analysis*, Table 2-22, primary Runway 11/29 does not meet the 95% coverage threshold at 10.5 or 13 knots when considered individually. However, using the FAA Airport Data and Information Portal Wind Analysis Tool in January 2020, when both runways 11/29 and 17/35 are considered together, they provide 95.58% wind coverage at 10.5 kts. and 98.21% coverage at 13 knots for All Weather conditions.

The closure of turf runway 06/24 opens up opportunities for improved and increased building area development at TKC. As of April 04, 2019, FAA Form 7480 was signed and submitted to decommission Runway 06/24 at the Tracy airport. This will allow the Sponsor to update infrastructure to support current airport users and encourage future growth at TKC, creating opportunities for building area development adjacent to the existing airport infrastructure such as the apron, A/D building, electrical equipment and NAVAIDs with their associated underground conduit routes. The table below reflects the current runway configuration of 11/29 and 17/35 only.

2011-2020 Wind Data	10.5 knots	13 knots	16 knots
Runway 11/29			
IFR	79.89%	88.81%	95.66%
VFR	81.0%	88.54%	95.6%
All Weather	80.78%	88.49%	95.54%

2011-2020 Wind Data	10.5 knots	13 knots	16 knots
Runway 17/35			
IFR	91.68%	95.63%	98.52%
VFR	91.69%	96.11%	98.92%
All Weather	91.68%	96.04%	98.87%
Runway 11/29 and Runway 17/35			
IFR – All Runways	96.63%	98.73%	99.57%
VFR – All Runways	95.4%	98.14%	99.47%
All Weather – All Runways	95.52%	98.2%	99.48%

Table 4-9: Wind Coverage; Source: National Climatic Data Center FAA Standard wind analysis tool. Wind data from Tracy Municipal Airport, April 2021.

No further runway configuration changes are recommended at this time.

4.5.1.7 Instrument Approach Procedures

Runway 11/29 has a **non-precision instrument landing procedure**, having only directional guidance to the runway using an RNAV/GPS system. **Precision approach procedures** provide both vertical and horizontal guidance to a runway, using NAVAIDs such as an **Instrument Landing System (ILS)**.

An enhancement to the GPS approach is **Localizer Performance with Vertical Guidance (LPV)** approaches for each end. The LPV approach utilizes the WAAS system and very precise GPS capabilities to attain an aircraft's position with great accuracy. It is considered a non-precision approach, but provides both horizontal and vertical guidance to as low as a 200-foot decision altitude, making it possible for aircraft to land in very low visibility. An LPV approach is similar to an instrument landing system (ILS) but more accurate, using satellites to pinpoint location, rather than locally-mounted ground equipment. Most LPV approaches require only non-precision design standards at an airport. TKC does not currently employ this system.

As previously discussed, Runway 11/29 has an RNAV/GPS landing procedure, while Runway 17/35 is Visual approach only. Instrument approaches to 11 and 29 require a minimum of one-mile visibility and cloud ceiling minimums of 250 feet.

The MnDOT SASP recommends that Intermediate airports, like TKC, have a non-precision approach with vertical guidance on at least one runway end, such as an LPV approach. **It is recommended that LPV approach procedures be established for both ends of Runway 11/29 with a Decision Altitude of 250' in the planning period.**

Runway 17/35 is a visual runway with no published instrument approach procedures, which will accommodate small A/B-I (Small) aircraft. Operators of such aircraft are more likely to fly during VFR conditions. **No instrument approaches are recommended for Runway 17/35.**

Runway 11/29 has an RNAV/GPS landing procedure, while Runway 17/35 is Visual approach only.

4.5.1.8 Runway Safety Areas

A **Runway Safety Area (RSA)** is defined as a surface surrounding the runway which is suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. AC 150/5300-13A designates a minimum Runway Safety Area based on the Runway Design Code (RDC) of the runway. A runway with an RDC of B-II (Small)-1 Mile, which is the ultimate RDC for Runway 11/29, is required to have an RSA of 300 feet beyond the departure end, 300 feet prior to the threshold, and 75 feet on either side of the runway centerline. Please see Table 4-16 for a summary of the dimensional standards for each RSA.

A stream and its associated small ravine that run to the south of Runway 29's threshold will need to be addressed. Due to the sharp drop in elevation at the stream, the runway's RSA is non-compliant. Solutions to this would be to shorten the runway (which is undesirable to the Sponsor and pilots), to realign the stream (undesirable to the MnDNR), or to leave the stream in place and utilize a box culvert for the stream to run through. The installation of a culvert would provide the Sponsor with the ability to preserve the stream course and to build up the ground elevation in the RSA to bring it into compliance. This activity would also support the development of a runway extension to the southeast in the future.

This section of streambed was washed out during an extreme rain and flooding event in July 2018. The Tracy City Administrator has applied for Federal Emergency Management Administration (FEMA) funding to install a box culvert in this location, sized to accommodate the width dimensions of the RSA, which will prevent further washouts. However, it appears that FEMA will not be favorable to the airport's request for 100% funding of the culvert.

This stream is not regulated by City, Township, County, or State shoreland zoning requirements. As documented in Chapter 2, Section 2.6.13 - Water Resources, Wetlands, Floodplains, Surface Waters, Groundwater and Wild and Scenic Rivers, neither the City, Township, or County have shoreland regulations that place restrictions on land use and construction on or near wetlands. There are no MnDNR public Protected Waters watercourses on airport property or nearby. (https://files.dnr.state.mn.us/waters/watermgmt_section/pwi/lyoncountypublicwaters_2011october28.pdf)

It is recommended that a box culvert be installed at the streambed to improve the RSA for Runway 11/29. The recommended Ultimate Runway Safety Area will be discussed as part of the runway length alternatives analysis in Chapter 5 and based on the standards in AC 150/5300-13A outlined above.

Runway 17/35, a runway with an RDC of A/B-I-Visual, which is the existing and ultimate RDC, is required to have an RSA of 240 feet beyond the departure end, 240 feet prior to the threshold, and 60 feet on either side of the runway centerline. The RSA for the south end of Runway 35 was reviewed closely and found to be in compliance. Please see Table 4-16 for a summary of the

dimensional standards for each RSA. ***It is recommended that the RSA for Runway 17/35 be maintained throughout the planning period. The recommended Ultimate Runway Safety Area will be discussed as part of the runway length in Chapter 5 and based on the standards in AC 150/5300-13A outlined above.***

4.5.1.9 Runway Object Free Area

The **Runway Object Free Area (ROFA)** is a two-dimensional surface centered on the runway centerline. It is provided to enhance the safety of aircraft operations by ensuring the area is free of objects except for those that need to be located within the ROFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the ROFA. The ROFA clearing standard requires clearing the OFA of above ground objects protruding above the RSA edge elevation. Objects within the ROFA should meet the same frangibility requirements as the RSA, to an extent that is practicable.

A runway such as Runway 11/29 with a recommended RDC of B-II-1 Mile is required to have an ROFA of 300 feet beyond the departure end, 300 feet prior to the threshold, and 250 feet on either side of the runway centerline. Swift Lake, a manmade lake which was created by damming a stream that runs underneath Runway 11/29, intrudes into the Runway Object Free Area. According to Simon Schmitz, Program Manager for TKC, this condition is acceptable to FAA as long as it does not create an obstruction. This body of water has not been flagged in the 5010 Inspections conducted by MnDOT, though obstructions related to this feature, such as trees or cattails, have been identified and have had to be removed in the past.

There are currently no other objects in this area other than fixed-by-function runway and taxiway lighting. Please see Table 4-16 below for a summary of the dimensional standards for each ROFA. ***It is recommended that the ROFA for Runway 11/29 be maintained throughout the planning period. The recommended Ultimate Runway Object Free Area will be discussed as part of the alternatives analysis in Chapter 5 and based on the standards in AC 150/5300-13A outlined above.***

Runway 17/35, a runway with an RDC of A/B-I-Visual, which is the existing and ultimate RDC, is required to have an ROFA of 240 feet beyond the departure end, 240 feet prior to the threshold, and 125 feet on either side of the runway centerline. There are currently no objects in this area other than fixed-by-function runway and taxiway lighting. Please see Table 4-16 for a summary of the dimensional standards for each ROFA. ***It is recommended that the ROFA for Runway 17/35 be maintained throughout the planning period. The recommended Ultimate Runway Object Free Area will be discussed as part of the alternatives analysis in Chapter 5 and based on the standards in AC 150/5300-13A outlined above.***

4.5.1.10 Runway Obstacle Free Zone

Figure 4-10 illustrates a runway's **Runway Obstacle Free Zone (ROFZ)**, which is a volume of airspace centered above the runway centerline and is required to be clear of all objects, except for frangible NAVAIDs. These NAVAIDs need to be located in the OFZ due to their function in order to provide clearance protection for aircraft landing or takeoff from the runway, and for missed approaches, where applicable.

The ROFZ is subdivided as follows:

- **Runway OFZ:** The airspace above the runway surface centered on the runway centerline. The elevation of the OFZ at any point is the same as the elevation of the nearest point on the runway centerline. The OFZ extends 200 feet beyond each runway end. The width of the OFZ is **300 feet** for runways with lower than $\frac{3}{4}$ statute mile approach visibility minimums, **250 feet** for operations on other runways by small aircraft with speeds over 50 knots, and **120 feet** for operations on other runways by small aircraft with approach speeds less than 50 knots.
- **Inner-Approach OFZ:** The volume of airspace centered on the approach area, with a slope of 50:1, and applies only to runways with an approach lighting system (ALS). *Consequently, this does not apply to TKC.*
- **Inner-Transitional OFZ:** The volume of airspace along the sides of the runway OFZ and the inner-approach OFZ, and applies only to runways with approach visibility minimums lower than three-quarter statute mile. *Consequently, this does not apply to TKC.*

The ROFZ for Runway 11/29 as a B-II (Small) 1-mile runway and for Runway 17/35 as an A-I (Small) visual runway currently meets ROFZ standards. Please see Table 4-16 for a summary of the dimensional standards for each ROFZ.

The ROFZs at Runways 11/29 and 17/35 currently meet this standard. It is recommended that the ROFZ for the runways be maintained throughout the planning period. The recommended Ultimate Runway Object Free Zone will be discussed as part of the alternatives analysis in Chapter 5 and based on the standards in AC 150/5300-13A outlined above.

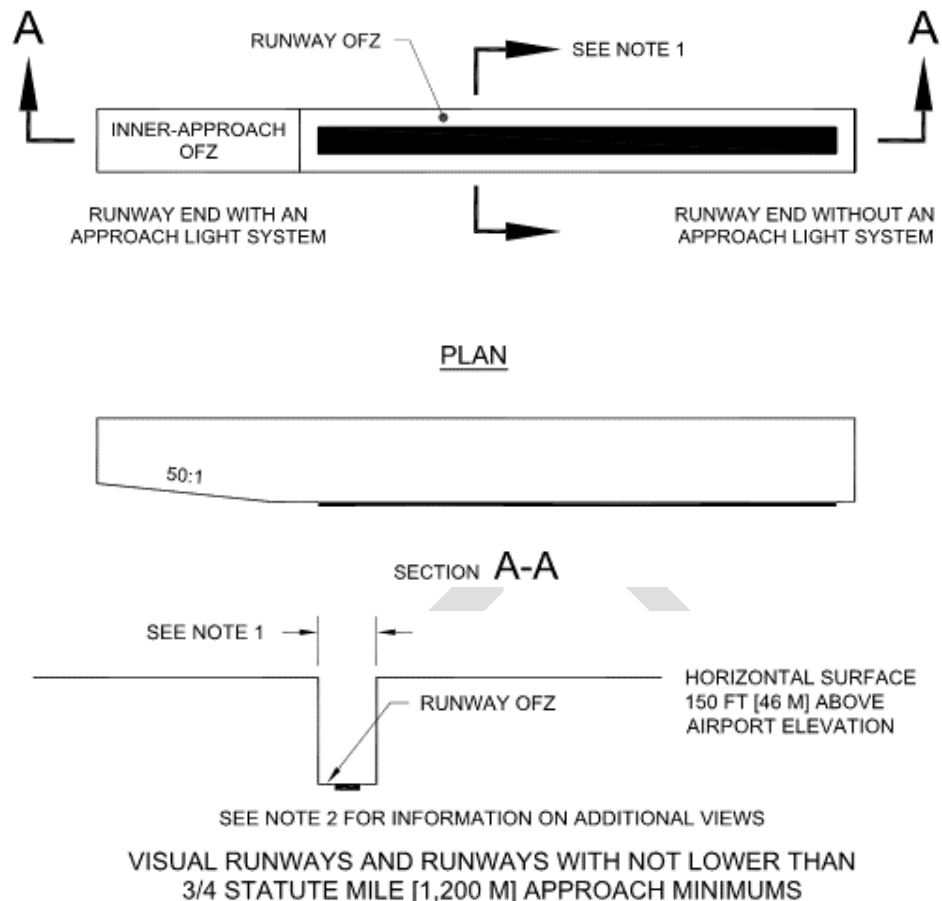


Figure 4-10: Obstacle Free Zone; Source: AC 150/5300-13A

Airports are required by the FAA to control, to the greatest extent possible, the land within an RPZ to prevent the creation of hazards to landing and departing aircraft.

4.5.1.11 Runway Protection Zones and Clear Zones

Runway Protection Zones (RPZs) are airfield design elements intended to protect airspace, prevent incompatible land uses, and protect people and property on the ground within the vicinity of a runway end. RPZs are trapezoid-shaped areas that are located on both the arrival and departure ends of a runway, within the innermost portion of the FAR Part 77 approach surface. The dimensions of the RPZs are determined by the type of aircraft expected to use a runway and its approach visibility minimums.

Clear Zones are defined in MnDOT Office of Aeronautics' *Policy Statement No. 1, Clear Zone Requirements*, with a similar purpose to RPZs, "restricting land uses which may be hazardous to the operational safety of aircraft and protect life and property in runway approach areas." In addition, "State participation in the acquisition, construction, maintenance, operation and improvement will be limited to those airports at which adequate Clear Zones for the ultimate development of the airport have been acquired and maintained." The dimensions of these zones are often similar to the dimensions of a runway's RPZs. The actual property interests to be acquired may be impacted by property lines, availability of property, severance, or other factors, in cooperation with MnDOT.

Please see Table 4-16 for a summary of the dimensional standards for each RPZ and Clear Zone. The dimensions for the Existing and Ultimate condition RPZs and Clear Zones are equal.

Airports are recommended by the FAA to control, to the greatest extent possible, the land within an RPZ to prevent the creation of hazards to landing and departing aircraft. According to AC 150/5300-13A, *control* is exercised through the acquisition of property interest as well as the clearing and maintenance of incompatible objects and activities in those areas. The preferred method of control is through fee simple interest, giving the airport owner the greatest influence over construction and activity in the area.

The RPZ of Runway 35 is currently owned in fee by the City of Tracy. The RPZs and Clear Zones of Runways 11, 17, and 29 are only partially owned, with the remaining area controlled by easement, except for the RPZ and Clear Zone of Runway 17, for which the city has no easement to protect the approach. ***It is recommended that the City gain control of all runway RPZs and Clear Zones through fee simple acquisition or avigation easement.***

The FAA’s Memorandum, *Interim Guidance on Land Uses within a Runway Protection Zone*, issued September 27, 2012, clarifies issues raised in AC 150/5300-13A regarding new guidance on RPZs. This Memorandum discusses restricted land uses with respect to existing conditions versus proposed or modified conditions. See Table 4-11 below:

Restricted Land Uses	Additional Details/Examples
Buildings and Structures	Including but not limited to: residences, schools, churches, hospitals or other medical care facilities, commercial/industrial buildings
Recreational Land Use	Including but not limited to: golf courses, sports fields, amusement parks, or other places of public assembly
Transportation Facilities	Including, but not limited to: rail facilities (light or heavy, passenger or freight), public roads/highways, vehicular parking facilities
Fuel Storage Facilities	Above and below ground
Hazardous Material Storage	Above and below ground
Wastewater Treatment Facilities	N/A
Above-Ground Utility Infrastructure	Electrical substations, including any type of solar panel installations

Table 4-11: RPZ Land Uses Requiring Coordination with FAA

Source: FAA Interim guidance on Land Uses within a Runway Protection Zone

The RPZs for TKC’s runways contain several incompatible uses.

- 11 – CSAH 11 Right of Way

- 17 – County Road 56 Right of Way
- 29 – None
- 35 – Public Campground

Where practicable, it is recommended that the City of Tracy acquire fee simple interest in the portions of the RPZs and Clear Zones that they do not currently control to prevent incompatible land uses. The recommended Ultimate Runway Protection Zone will be discussed as part of the alternatives analysis in Chapter 5 and based on the standards in AC 150/5300-13A outlined above. Should the city desire to extend Runway 11/29 to the proposed Ultimate length, it will be necessary for the City to coordinate compatible land uses at that time including possible relocation or other mitigation measures to these existing conditions.

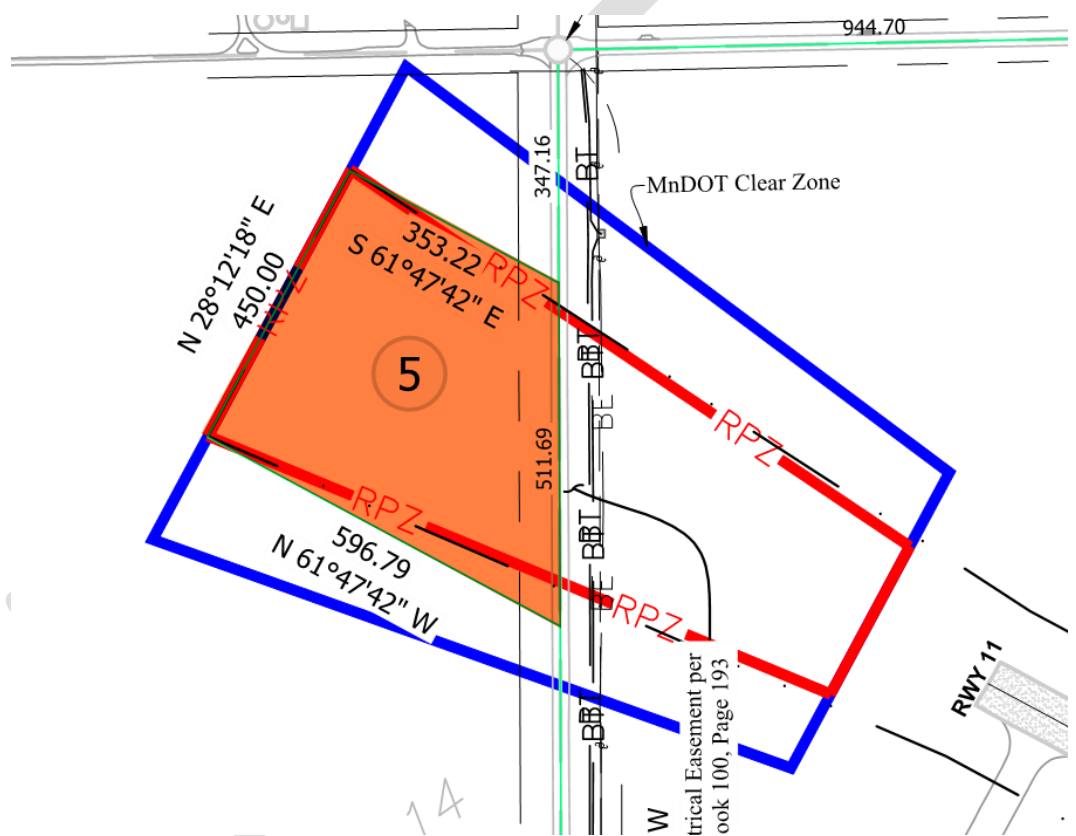


Figure 4-12: Runway 11 Existing RPZ and Clear Zone – Area controlled by easement shown in orange.

Runway 11’s RPZ is controlled by easement, but its Clear Zone is not fully protected. Relocating the runway threshold to the southeast might allow the entire RPZ and Clear Zone to be fully located on existing airport property.

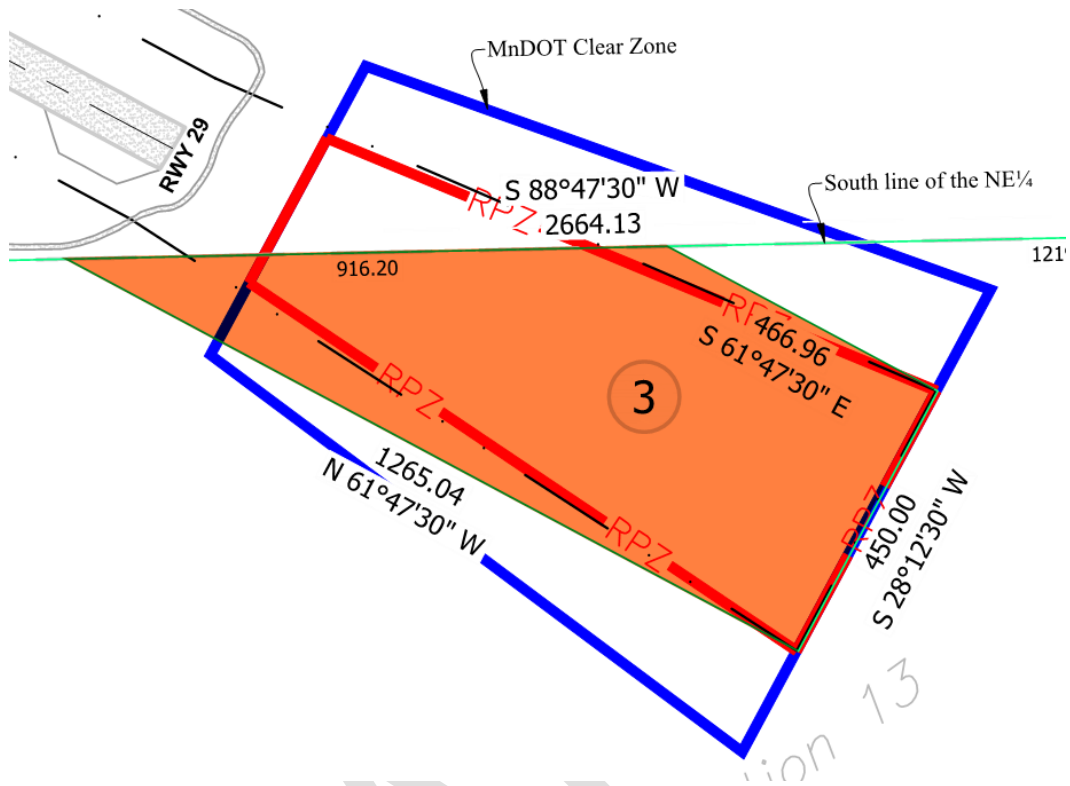


Figure 4-13: Runway 29 Existing RPZ and Clear Zone – Area controlled by easement shown in orange.

Runway 29's RPZ is controlled by easement, but its Clear Zone is not fully protected. MnDOT and FAA recommend that Clear Zones and RPZs be owned in fee by the airport.

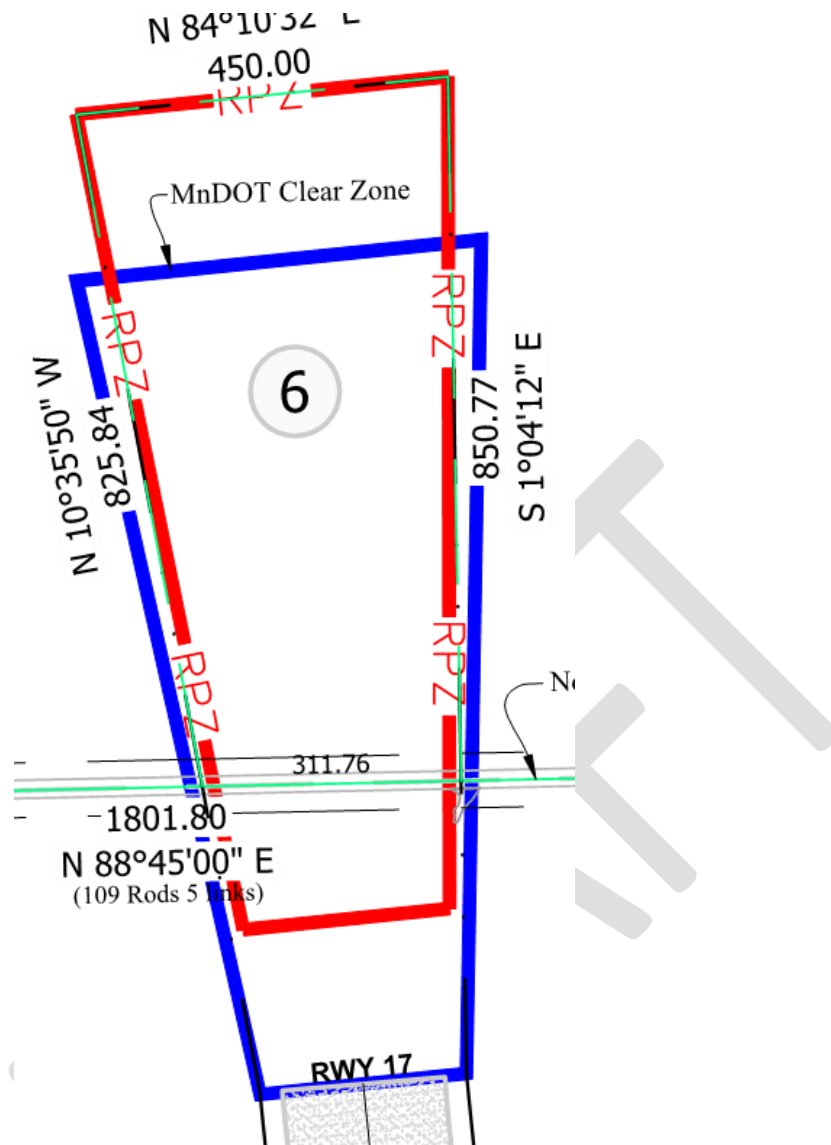


Figure 4-14: Runway 17 Existing RPZ and Clear Zone

Runway 17's RPZ and Clear Zone are not controlled by easement or ownership. Purchase of the property that underlies these two zones is desirable.

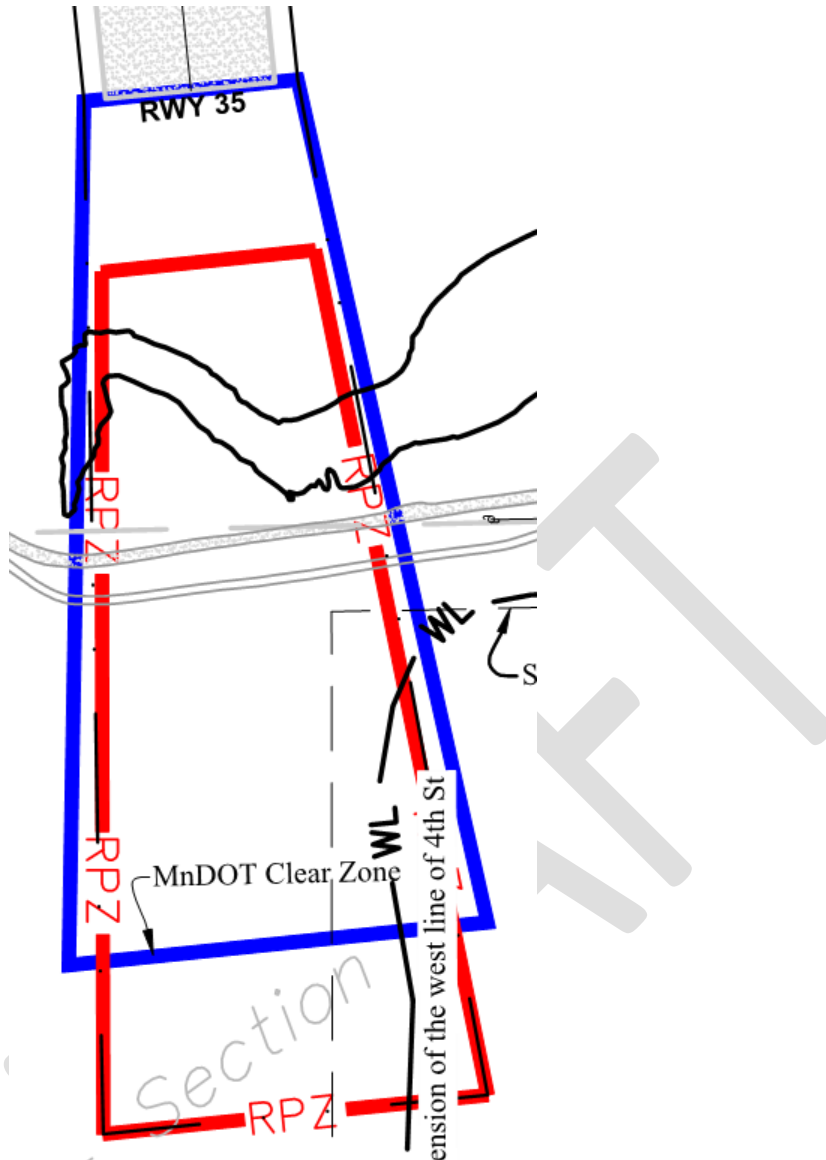


Figure 4-15: Runway 35 Existing RPZ and Clear Zone

Runway 35's RPZ and Clear Zone are fully on airport property. No additional purchases or easements are necessary for these zones. The driveway which accesses Swift Lake Campground runs through the RPZ which is likely an incompatible use.

	Runway 17/35 Existing/ Ultimate	Runway 11/29 Existing	Runway 11/29 Ultimate
Runway Design Code (RDC)	A/B-I(S)-VIS	B-II(S)-1 Mile	B-II(S)- 1 Mile
Runway Width Federal	60	75'	75'
Runway Width MNDOT	75'	75'	75'
Shoulder Width	10'	10'	10'
Blast Pad Width	80'	95'	95'
Blast Pad Length	60'	150'	150'
Crosswind Component	10.5	13 knots	13 knots
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	240'	300'	300'
Length Prior to Threshold	240'	300'	300'
Width	120'	150'	150'
Runway Object Free Area (ROFA)			
Length Beyond Runway End	240'	300'	300'
Length Prior to Threshold	240'	300'	300'
Width	250'	500'	500'
Runway Obstacle Free Zone (ROFZ)			
Length Beyond Departure End	200'	200'	200'
Length Prior to Threshold	200'	200'	200'
Width	250'	250'	250'
Approach Runway Protection Zone (RPZ)			
Length	1000'	1000'	1000'
Inner Width	250'	250'	250'
Outer Width	450'	450'	450'
Acres	8.035	8.035	8.035
Departure Runway Protection Zone (RPZ)			
Length	1000'	1000'	1000'
Inner Width	250'	250'	250'
Outer Width	450'	450'	450'
Acres	8.035	8.035	8.035
MNDOT Clear Zones			
Length	1200'	1000'	1000'
Inner Width	250'	500'	500'
Outer Width	490'	800'	800'
Splay	10:1	20:3	20:3
Slope	20:1	20:1	20:1
Runway Separation			
Runway Centerline to:			
Holding Position	125'	125'	125'
Parallel Taxiway/lane Centerline	150'	240'	240'
Aircraft Parking Area	125'	250'	250'

Table 4-16: Runway Design Standards Summary; Sources: AC 150/5300-13A, Appendix 7-3, and MnDOT Policy Statement No. 1, Clear Zone Requirements

4.5.1.12 Minnesota Safety Zones

The Minnesota State Statutes require airports to have Safety Zones in place to restrict land uses in critical operations areas, to protect the operational safety of aircraft and pilots during approach and departure and to protect life and property in those areas, as well as state and local investment.

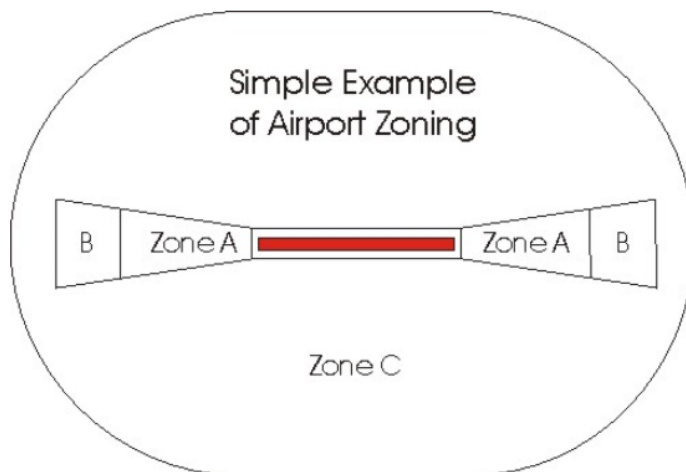


Figure 4-17: Simple Example of Airport Zoning

Source: MnDOT Aeronautics and Aviation

These zones are referred to as Safety Zones A, B, and C. According to Minnesota Administrative Rules 8800.1200, *Airport Zoning Standards*, the delineation of these zones begins with the Primary Surface.

The **Primary Surface** is defined as “An imaginary surface longitudinally centered on a runway and extending 200 feet beyond each end of a runway with a specially prepared hard surface or coinciding with each end of other runways. The width of the primary surface is 120 feet for visual runways at special purpose airports, 250 feet for visual utility runways, or 500 feet for non-precision instrument runways and for visual runways other than utility, or 1,000 feet for precision instrument runways and for non-precision instrument runways having visibility minimums as low as three-fourths of a statute mile.”

Safety Zone A extends outward from the primary surface a distance equal to two-thirds the runway length or planned runway length.

Safety Zone B extends outward from Safety Zone A a distance equal to one-third the runway length or the planned runway length.

Safety Zone C is “All that land which is enclosed within the perimeter of an imaginary horizontal plane 150 feet above an established airport elevation, the perimeter of which is constructed by swinging arcs of a specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

- 5,000 feet for all runways designated as utility or visual; and

- 10,000 feet for all other runways.”

The Safety Zones A, B, and C described in Administrative Rules 8800.1200 are summarized in Table 4-18 below.

Runway Length	Length Zone A	Inner Width Zone A	Outer Width Zone A	Length Zone B	Inner Width Zone B	Outer Width Zone B
Runway 11/29 Primary Surface: 500 wide x 3,497 long						
Runway 11/29 Zones A and B:						
11 – 3,097	2,065	500	1,119	1,032	1,119	1,429
29 – 3,097	2,065	500	1,119	1,032	1,119	1,429
Runway 11/29 Zone C: 5,000 arcs from center of designated primary surface end						
Existing Runway 17/35 Primary Surface: 250 wide x 1,778 long						
Existing Runway 17/35 Zones A and B:						
17 – 1,778	1,185	250	487	593	487	606
35 – 1,778	1,185	250	487	593	487	606
Existing Runway 17/35 Zone C: 5,000 arcs from center of designated primary surface end						
Zone C Height Restriction: No object shall exceed 1490 MSL (Airport elevation 1340 + 150)						

Table 4-18: Existing MN Safety Zones A, B, and C at TKC; Source MnDOT Zoning Calculator Application

Note: All measurements are in feet.

Each Safety Zone has its own set of restrictions on land use.

In **Zone A**, no:

- Buildings or temporary structures
- Exposed transmission lines
- Assembled groups of people
- Other similar uses
- Uses that cause interference with radio or electronic facilities on the airport
- Uses causing interference with radio or electronic communications between the airport and aircraft
- Lighting that makes it difficult for pilots to distinguish between airport lights and other lights
- Lighting that results in glare in pilot’s eyes
- Lighting that impairs visibility in the airport vicinity

In **Zone B**, no:

- Building site less than three acres
- Assembled groups of people more than 15 per acre
- Churches, hospitals, schools, theaters, stadiums, hotels and motels, trailer courts, or campgrounds

- Other places of assembly
- Uses that cause interference with radio or electronic facilities on the airport
- Uses causing interference with radio or electronic communications between the airport and aircraft
- Lighting that makes it difficult for pilots to distinguish between airport lights and other lights
- Lighting that results in glare in pilot's eyes
- Lighting that impairs visibility in the airport vicinity

In **Zone C**, no:

- Uses that cause interference with radio or electronic facilities on the airport
- Uses causing interference with radio or electronic communications between the airport and aircraft
- Lighting that makes it difficult for pilots to distinguish between airport lights and other lights
- Lighting that results in glare in pilot's eyes
- Lighting that impairs visibility in the airport vicinity

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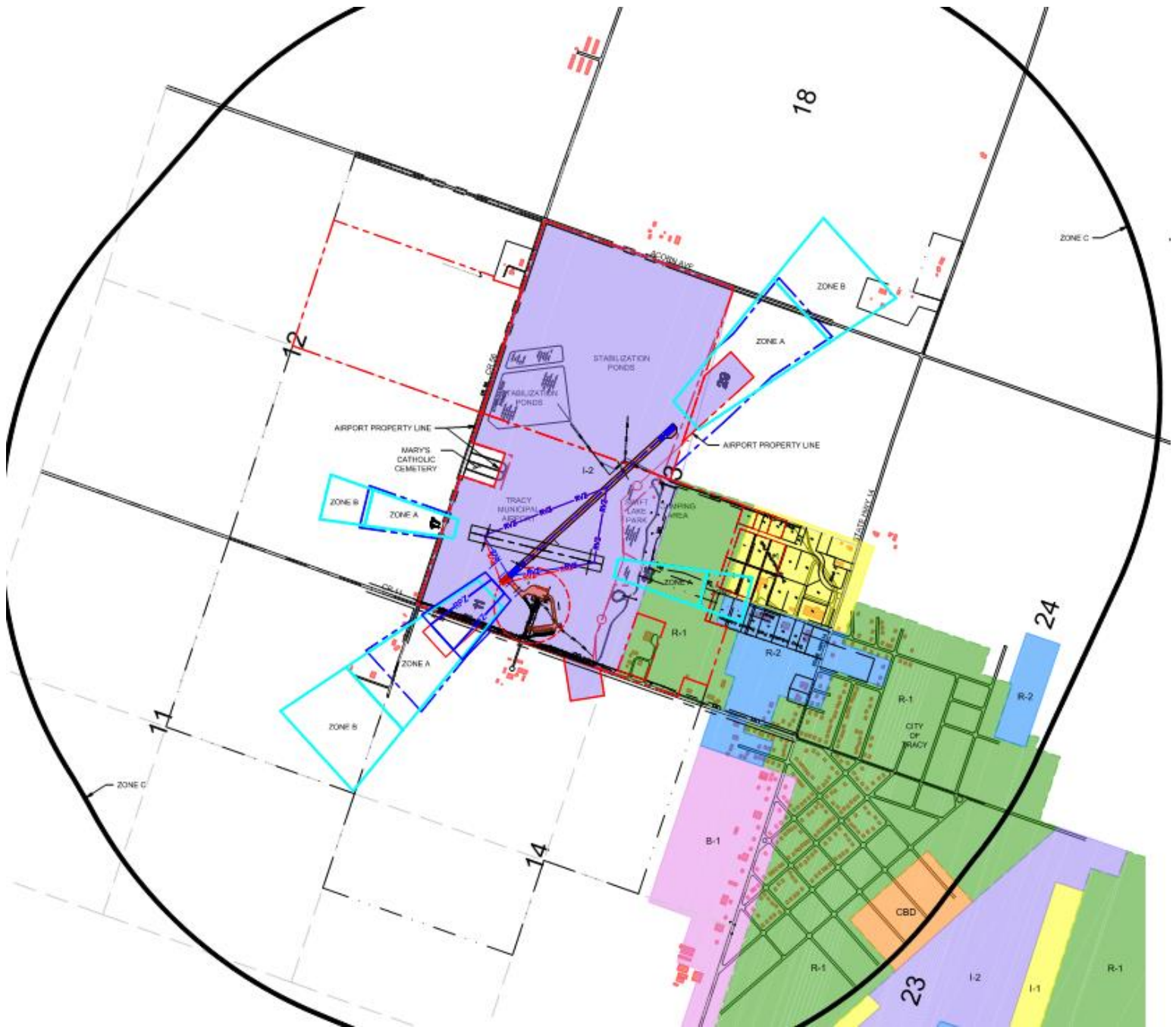


Figure 4-19: Existing Safety Zones at TKC

LEGEND		
DESIGNATION		ZONING DISTRICTS
ONE AND TWO FAMILY	■	R-1
MULTIPLE FAMILY	■	R-2
SECONDARY COMMERCIAL	■	B-1
CENTRAL BUSINESS DISTRICT	■	CBD
LIMITED INDUSTRIAL	■	I-1
SECONDARY INDUSTRIAL	■	I-2

There are a few instances in which the land use restrictions are currently violated at TKC.

Safety Zones	Violations of Restricted Use Guidelines
Zone A	Runway 11: Home and Farm Outbuildings Runway 29: None Runway 17: None Runway 35: Campground driveway
Zone B	Runway 11: None Runway 29: None Runway 17: None Runway 35: None
Zone C	Runway 11: None Runway 29: None Runway 17: None Runway 35: None

Table 4-20: Existing zoning land use restriction violations at TKC

Please note that in Zone B of Runway 35, there are two properties with buildings. One is a MnDOT facility on 4.11 acres, and the other is a privately-owned storage building on 3.85 acres. Neither are normally occupied by 15 people or more.

4.5.1.13 Tracy Airport Ordinance, Section 3.60

The City of Tracy – County of Lyon County Joint Airport Zoning Board, created and established by joint action of the city Council of the City of Tracy and the Board of County Commissioners of Lyon County, has adopted a zoning ordinance for airports, which specifically includes provisions for land use safety zoning. These zones mirror the Minnesota State Statutes’ 8800.2400 *Airport Zoning Standards*, with a few differences. ***As was noted in Section 2.3.4 of Chapter 2, the zoning ordinance must be updated to reflect the current and future conditions of the airport and be approved by MnDOT as part of the Master Planning process. Changes to the Ultimate Land Use Safety Zoning dimensions will be discussed as part of the runway length and approach procedures alternatives analysis in Chapter 5.***

Tracy has adopted a zoning ordinance for airports, which specifically includes provisions for land use safety zoning.

The differences in the ordinance are minimal, as demonstrated in Table 4-21.

MN Statute 8800.2400, Airport Zoning Standards	Tracy Airport Ordinance, Section 3.60
<p>Safety Zone A: “In the approach zones of a runway, Safety Zone A extends outward from the end of the primary surface a distance equal to two-thirds the runway length or planned runway length.”</p>	<p>Safety Zone A: “All land that portion of the approach zones of a runway, as defined in Subdivision 3A hereof, which extends outward from the end of the primary surface a distance equal to 2/3 of the planned length of the runway...”</p>
<p>Safety Zone B: “In the approach zones of a runway, Safety Zone B extends outward from Safety Zone A a distance equal to one-third the runway length or the planned runway length.”</p>	<p>Safety Zone B: “All land that portion of the approach zones of a runway, as defined in Subdivision 3A hereof, which extends outward from Safety Zone A a distance equal to 1/3 of the planned length of the runway...”</p>
<p>Safety Zone C: “All that land which is enclosed within the perimeter of the horizontal zone defined in subpart 3, Item B and which is not included in Zone A or Zone B.”</p>	<p>Safety Zone C: “All that land which is enclosed within the perimeter of the horizontal zone, as defined in Subdivision 3A hereof, and which is not included in Zone A or Zone B.”</p>

Table 4-21: Safety Zone Dimension Comparison

It should be noted that Subdivision 3A defines the airspace approach zones, which are summarized in Section 4.4.2.1 above.

Like the Minnesota State Statutes land use zoning regulations described above, there are restrictions on land uses within each one of the Safety Zones. In **Zone A**, there shall be no “...buildings or temporary structures, except as necessary and incidental to airport operations, and shall be restricted to those uses which will not create, attract, or bring together an assembly of person thereon. Permitted uses may include agriculture, light outdoor recreation (non-spectator), cemeteries and auto parking.”

In **Zone B**, agricultural, residential, commercial or industrial uses are allowed but with restrictions on density and public or private assembly. Churches, hospitals, schools, theaters, stadiums, hotels and motels, trailer courts, campgrounds, and other places of public or semi-public assembly are prohibited.

In **Zone C**, only height restrictions are in place to limit land use.

The recommended Ultimate Safety Zoning dimensions will be discussed as part of the runway length alternatives analysis in Chapter 5.

4.5.2 Taxiway and Taxilane Analysis

AC 150/5300-13A provides design standards for taxiway and taxilane development. A **taxiway** is defined as a path established for the taxiing of aircraft from one part of the airfield to another. A **taxilane** is the portion of the aircraft parking area designated for the access between taxiways and aircraft parking positions. According to the AC, the basic taxiway system design principles include:

- Whenever possible, taxiways should be designed such that the nose gear steering angle is no more than 50 degrees.
- Taxiway systems should employ the **three-node concept**, in which a pilot should have no more than three turn choices at an intersection.
- Turns should be 90 degrees whenever possible. For intersections, the preferred standard angles are: 30, 45, 60, 90, 120, 135, and 150 degrees.
- Keep taxiway design simple to reduce confusion.
- Avoid wide expanses of pavement. Wide pavements require placement of signs and edge lighting or markers far from the pilot's eye and reduces the conspicuity of visual cues.
- Minimize runway crossings and limit the runway crossing to the outer thirds of the runway.
- Avoid "high energy" intersections. "High energy" intersections are considered in the middle third of the runway.
- Increase visibility by planning for right angle intersections.
- Avoid "dual purpose" pavements such as runways being used as taxiways and vice versa.
- Taxiways should not provide direct access from an apron to a runway in order to reduce opportunity for human error.

An efficient runway/taxiway system will increase an airport's ability to handle arriving and departing aircraft, as well as expedite ground movements between the runway and terminal areas.

Additions or enhancements to the taxiway system are typically completed to increase airport capacity, for operational efficiency, and to enhance safety. An efficient runway/taxiway system will increase an airport's ability to handle arriving and departing aircraft, as well as expedite ground movements between the runway and terminal areas. Figure 4-22 depicts the existing taxiway and taxilane layout. Taxiway lighting is discussed in Section 4.5.6 of this chapter.



Figure 4-22: Terminal Area, prior to 2019 Apron Project

4.5.2.1 Taxiways

Taxiway width is determined in accordance with the stated **Taxiway Design Group (TDG)** standards provided in AC 150/5300-13A. Tracy's recommended Critical Design Aircraft, the Beechcraft King Air 90, has a **main gear width (MGW)** of 13 feet and a **cockpit-to-main gear** dimension of 13 feet. According to Figure 1-1 of the AC, this aircraft then has a TDG of 1A, and any taxiways that will serve this aircraft must meet the minimum requirements for this design group.

Premium Plant Services, a local business interested in basing at TKC, is planning to purchase a Super King Air 350i, which has a MGW of 17.17' and cockpit-to-main gear dimension of 16.25. This equals a TDG of 2 and a taxiway width of 35'.

AC 150/5300-13A requires that taxiways designed for Taxiway Design Group (TDG) 1A be 25 feet wide minimum, and taxiways for TDG 2 be 35' wide. The existing Taxiway A meets both of these design standards at 50' wide. ***It is recommended that the taxiway (or any future taxiways) should be maintained at its current width throughout the planning period using routine maintenance practices. As a cost savings measure, however, at the next taxiway reconstruction or a shift in the runway, the width could be reduced to 35 feet.***

AC 150/5300-13A also recommends that direct access to the runway from a parking apron be eliminated if possible to avoid runway incursions. Pilots who leave the apron and traverse Taxiway A to the runway must take a 90-degree right turn, improving situational awareness.

Like a runway, taxiways and taxilanes also have designated object free areas. The **Taxiway Object Free Area (TOFA)** clearing standards prohibit service vehicle roads, parked airplanes, and above ground objects, except for objects required to be located in the TOFA for air navigation or aircraft ground maneuvering purposes. The TOFA is centered on the taxiway, and for ARC B-II aircraft, it must be 131 feet wide. The existing TOFA at TKC meets this standard. ***It is recommended that the TOFA be maintained throughout the planning period using routine maintenance practices.***

Taxiway Design Standards	ADG I	ADG II (Existing)	TDG-1A	TDG-2
TAXIWAY PROTECTION				
Taxiway Safety Area	49'	79'	N/A	N/A
Taxiway Object Free Area	89'	131'	N/A	N/A
Taxilane Object Free Area	79'	115'	N/A	N/A
TAXIWAY SEPARATION				
Taxiway Centerline to:				
Parallel Taxiway/Taxilane Centerline	70'	105'	N/A	N/A
Fixed or Movable Object	44.5'	65.5'	N/A	N/A
Taxilane Centerline to:				
Parallel Taxilane Centerline	64'	97'	N/A	N/A
Fixed or Movable Object	39.5'	57.5'	N/A	N/A
WINGTIP CLEARANCE				
Taxiway Wingtip Clearance	20'	26'	N/A	N/A
Taxilane Wingtip Clearance	15'	18'	N/A	N/A
STANDARDS BASED ON TDG				
Taxiway Width	N/A	N/A	25'	35'
Taxiway Edge Safety Margin	N/A	N/A	5'	7.5'
Taxiway Shoulder Width	N/A	N/A	10'	15'

Table 4-23: Taxiway/Taxilane Design Standards; Source: AC 150/5300-13A

There is minimal taxiway lighting present at this time. ***To ensure safety for operations at night or low visibility, it is recommended that the taxiway be equipped with Medium Intensity Taxiway Lighting (MITL) along its entire length.***

4.5.2.2 Taxilanes

Taxilanes have slightly less expansive Object Free Area standards than taxiways. For Group II aircraft, such as the recommended Critical Design Aircraft, **Taxilane Object Free Area (TLOFA)** width is a minimum of 115 feet. Table 4-23 above illustrates the minimum standards for taxilanes.

TKC currently has one taxilane within the terminal area, constrained by the presence of existing buildings, tiedown positions, or other objects along the length of each.

The Taxilane Centerline to Fixed or Movable Object dimensional standard for ADG I is 39.5 feet and 57.5’ for ADG II. The current Taxilane A (TLA) meets the ADG II standard at the apron, due to a reconstruction project in 2019 which widened the paved area, providing 115 feet clear for the TLOFA between the A/D building and the tie-down positions. Prior to the project, an aircraft parked at the tie-downs or in the fueling position infringed on the space required for the TLOFA. The portion of TLA in front of the existing t-hangar only meets the standard for ADG I, but this is not a pressing issue since the taxilane only leads to hangars that can also accommodate only ADG I aircraft.

Table 4-24 identifies which taxilanes meet the TLOFA requirements. *Taxilane object free areas will be further discussed in the Alternatives chapter for consideration of segregated areas for ADG I and ADG II aircraft. Note that prior to the 2019 Apron Improvement project, the TLOFA did not comply with minimum standards, but it has now been corrected. This is indicated in the table below.*

Taxilane A	Existing Centerline to Fixed Object (feet)	Existing TLOFA Width (feet)	Meets ADG I Standard	Meets ADG II Standard
At Apron	57.5	79	YES	YES
Connecting Taxilane	57.5	79	YES	YES
At ADG I T-Hangar	39.2 – 40.8	78+	YES	Not Required

*Table 4-24: Existing Taxilane Object Free Area vs. Minimum Standards
Source: AC 150/5300-13A*

According to the 2019 Pavement Condition Report, Taxilane A at the t-hangar is in Good Condition and connecting Taxiway A is in Fair Condition with PCIs of 58 and 45, respectively. Taxiway A at the apron is now in excellent condition after the apron reconstruction project in 2019.

4.5.2.3 Taxiway Pavement Strength and Condition

As noted previously, the recommended Critical Design Aircraft is part of the B-II ADG, and has a maximum take-off weight of 12,500 pounds.

Taxiway A’s last construction date was in 1992, when Runway 11/29 was last constructed. According to the Pavement Condition Report, the asphalt taxiway is in Good Condition with a PCI of 70.

The current PCN number for the taxiway has not been calculated, because adequate historical construction data and details are not available to analyze. However, AC 150/5355-5C, *Standard Method of Reporting Airport Pavement Strength – PCN*, states that, “The use of the standardized method of reporting pavement strength

applies only to pavements with bearing strengths of 12,500 pounds of greater.” When PCN numbers are calculated, the FAA’s current COMFAA software with the theoretical analysis method is used.

Routine maintenance, such as joint and crack sealing or slurry sealing, should be performed on a scheduled basis to extend the life of the pavement.

4.5.2.4 Taxiway Designation

In AC 150/5340-18F, *Standards for Airport Sign Systems*, the FAA has recommended a new format for taxiway designation. The new format provides a simple and logical methodology that can help improve situational awareness on an airfield.

The AC offers common sense guidance for taxiway naming conventions. TKC’s simple taxiway means that no naming changes are suggested at this time. However, if a partial or full parallel taxiway is added at TKC, the following recommendations will apply:

- Keep it simple and logical.
- Use letters of the alphabet for taxiways starting at one end of the airport and continuing to the opposite end.
- Do not use letters “I” or “O” as they could be mistaken for runway numbers.
- Do not use letter “X” as it could be misconstrued as indicating a closed taxiway.
- Designate all separate, distinct taxiway segments.
- Do not change designation if there is no significant change in direction of the taxiing route. However, when the overall system design indicates a need, such a change can be made and appropriately signed at intersections.
- Do not designate taxiways by reference to a direction of travel or to a physical object, such as “inner,” “outer,” “parallel,” or “bridges.”

It is recommended that any new taxiways built at TKC conform with the FAA’s current naming convention and that sign panels reflecting that naming convention be installed per FAA standards during the next major runway or taxiway project. Proposed taxiway naming will be explored in Chapter 5.

4.5.3 General Aviation Aircraft Parking Requirements

General aviation aircraft parking requirements vary widely depending on the number of transient aircraft using the Airport and the based aircraft that might be temporarily tied down at any given time rather than being put in a hangar. The existing tie-down spaces on TKC’s apron are sized for Group I aircraft with circulation for up to Group II aircraft. The functional Taxilane Object Free Area, measured from the face of the AD building to the tie-down position on the apron, is equal to the 115’ required for ADG II.

The apron area is approximately 4,300 square yards with four aircraft tiedown positions for transient aircraft. Minnesota’s Administrative Rules 8800 require a minimum of three tiedown positions for an airport to be licensed, while the Minnesota SASP recommends that Intermediate airports have at least enough tiedowns to accommodate all unhangared based aircraft plus peak hour transient aircraft. There are currently no unhangared based aircraft at TKC, and peak hour transient activity has not been determined, because operations activity has not been actively tracked.

In addition, agricultural spray planes – which frequently use TKC – with their wingspans of 50’+ (ADG II), take up much more space on the apron than typical GA planes. While it is possible for larger aircraft to use smaller tie down sites by occupying more than one at a time, it would be beneficial to provide tie down sites sized for these aircraft, leaving the smaller sites available and increasing tie down capacity. The expected fleet mix at TKC does not indicate that many these larger sites would be needed within the planning period, with ADG I aircraft being in the majority.

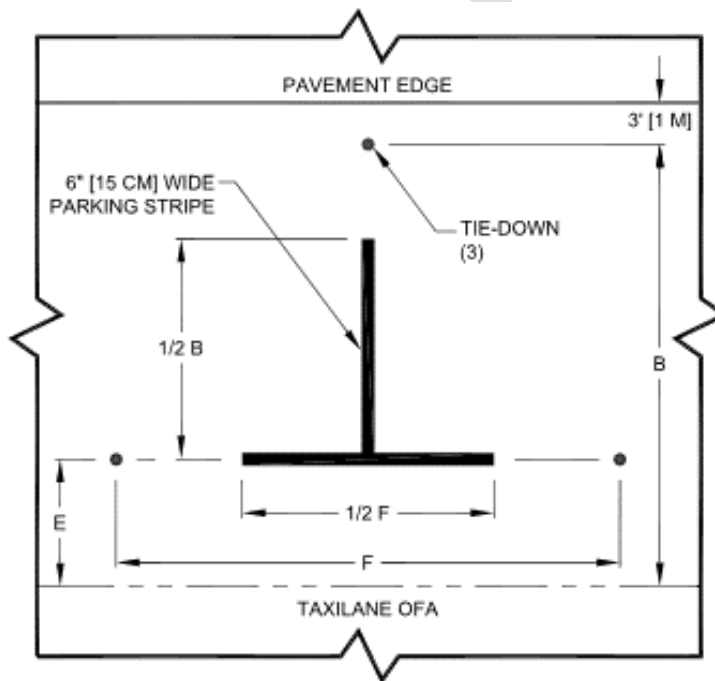


Figure 4-25: Tiedown Design Standards; Source: AC 150/5300-13A, Fig. A5-1

Note: Dimension “B” – Overall length of the Design Aircraft;
 Dimension “F” – Wingspan of the Design Aircraft

Aircraft Dimensions	Existing Tiedown Dimensions	Group II Critical Aircraft Dimensions
Wingspan	35	46
Length	20	40

Table 4-26: Existing Tiedown Dimensions vs. Recommended ADG II Dimensions

Source: AC 150/5300-13A

4.5.3.1 Transient and Based Aircraft Apron Requirements

Transient aircraft parking requirements typically comprise the largest demand for apron space requirements. **Transient aircraft** are defined as those aircraft not based at the facility.

Approximately 80% of all operations at TKC are transient operations. This is primarily due to agricultural spray operators, who are not currently based at TKC, using the airport heavily during the spraying season. It is anticipated that a crop spraying business, who has expressed interest in basing at Tracy, would move to base aircraft there within the next 5 years, if the appropriate facilities existed. This would radically change the distribution of forecast itinerant vs. local operations, driving local operations up, while pushing itinerant operations down (see Section 3-8, *TKC Forecasts*).

As documented in Figure 3-19 of the preceding Chapter 3, *Aviation Demand Forecasts*, transient, or itinerant, annual operations are expected to be 1,361 by 2022, 1,466 by 2027, and 1,701 by 2037.

Apron parking planning space allocations for the footprint of typical transient aircraft at TKC are estimated at 250 square yards (SY) for single engine piston and small multi-engine piston aircraft, 500 SY for large multi-engine piston and turbo-prop aircraft, 900 SY for jet aircraft, and 250 SY for other aircraft, such as rotorcraft. These allocations do not include circulation space.

Based aircraft, as opposed to transient aircraft, are permanently stored at the airport. For those owners not requiring hangar storage, adequate space for parking and storage of these aircraft on the apron should be provided. At this time, there is no demand for based aircraft parking on the apron. The square yardage per based aircraft used for this analysis is the same as transient aircraft and does not include Group II circulation requirements.

The Minnesota Administrative Rules require at least three tie-down positions for airport licensure. The SASP recommends that Intermediate Airports have tie-down spaces to accommodate all unhangared based aircraft (which we will assume to be zero) plus “peak hour” transient aircraft. Because TKC is not expected to see a large amount of transient traffic, as documented in the previous chapter, it is recommended that the airport provide enough apron and tiedown space for 80% of “peak day” transient operations.

	Base Year 2017	Short Term Forecast 2022	Intermediate Term Forecast 2027	Long Term Forecast 2037
Annual Transient Operations	6,338	1,361*	1,466	1,701
Peak Month Transient Operations	938	201	216	252
Peak Day Transient Operations	31	7	7	8
Tie-downs Required	24	6	6	6
Total Aircraft Operations Forecast	7,778	8,349	9,027	10,476

Table 4-27: Aircraft Tie-down Needs

* The drop in transient operations is due to the expected basing of a crop spraying business at TKC. The number of local operations would increase by the same number for the same period. If the spray business does not base at TKC, more tie-downs would be required.

TKC’s airport manager has stated that the busiest time of year is during agricultural spraying season, when he has often seen 3 spray planes on the apron at once, as well as Sanford Hospital’s King Air at the same time.

It is possible that due to the nature of crop spraying operations, with the sense of urgency that accompanies it, there will be periods where the apron is overly congested due to local operations, such as during the spraying season. **With this in mind, it is recommended that extra space and tie downs be planned to relieve this periodic congestion, bringing the recommended number of tie-downs to 8 for the short, intermediate, and long-term forecasts.**

The preceding discussions have identified the total demand for apron tie-down positions for the planning period. Table 4-29 presents the apron parking area requirements for the planning period, taking into consideration the expected demand for both based and transient tie down spaces. The analysis indicates that the existing general aviation apron parking area does not meet current TOFA design standards and is not adequate for demand throughout the planning period.

As illustrated in the table below, the tie down area needed to meet forecasted demand is underserved by the available apron space on which to park aircraft. For planning purposes, apron parking planning space allocations for the footprint of typical transient aircraft at TKC are estimated at 250 square yards (SY) for single engine piston and small multi-engine piston aircraft (ADG I), 500 SY for large multi-engine piston and turbo-prop aircraft (ADG II), 900 SY for jet aircraft, and 250 SY for other aircraft, such as rotorcraft. These allocations do not include circulation space.

Minnesota’s SASP *Minimum System Objectives by Airport Class* (Table 5-2) states that Intermediate airports such as TKC should provide adequate tie down space for all based aircraft not in hangars plus peak hour itinerant operations. At this time, there are no based aircraft stored on the apron, nor has there been demand for this. While Peak Hour Itinerant Operations have not been calculated, TKC’s airport manager has stated that the busiest time of year is during agricultural spraying season, when he has often seen multiple planes (ADG II) on the apron at once.

Total Needed Tiedown Spaces vs. Existing Space Available by Year	2017	2022	2027	2037
Total Operations Forecast	7,778	8,379	9,027	10,476
A/B-I Spaces needed (250 SY ea.)	6	6	6	6
B-II Spaces needed (500 SY ea.)	2	2	2	2
Tie Down Requirement (SY)	250 x 6 500 x 2	250 x 6 500 x 2	250 x 6 500 x 2	250 x 6 500 x 2
Total Required Area for Tie Down Spaces (SY)	2,500	2,500	2,500	2,500
Existing Apron Parking Area (SY)	600	600	600	600
Parking Area Deficiency (SY)	-1,900	-1,900	-1,900	-1,900

Table 4-29: General Aviation Apron Parking Area Requirements

4.5.3.3 Apron Pavement

The existing apron pavement is in Excellent condition as it was reconstructed in 2019. ***It is recommended that the pavement be maintained throughout the planning period using routine maintenance practices.***

The current PCN number for the apron is 12/F/D/Y/T, calculated using the FAA’s current COMFAA software with the Technical Evaluation Method in April 2020.

4.5.5 Instrument Approach Procedures

TKC currently has two published instrument approaches as listed in the table below.

Approach	MSL (mean sea level)	AGL	Visibility
RNAV (GPS) RWY 11	1340	1000'	1 mile
RNAV (GPS) RWY 29	1340	1000'	1 mile

Table 4-30: Published Instrument Approach Procedures

The approach procedures in place at TKC are adequate and appropriate for a runway serving B-II (Small) aircraft. If the runway is lengthened to the recommended Ultimate length, enhanced approach procedures to serve a larger category of aircraft should be considered.

It is recommended that the existing procedures be maintained during the planning period, but that no further approaches be developed during the planning period.

4.5.6 NAVAIDs

Navigational Aids (NAVAIDs) are a system of electronic and visual aids that assist pilots with navigating their aircraft in a safe and orderly manner during take-off, approach, and landings. The Minnesota SASP’s Minimum Objectives for Intermediate Airports (See Table 4-1) are all met by the existing NAVAIDs at Tracy.

Federal Aviation Regulations Part 91.175 indicates that an aircraft attempting to land under IFR conditions on a published instrument approach procedure may not descend below the established Decision Altitude (DA) or Minimum Descent Altitude (MDA) unless at least one of the following are distinctly visible to the pilot:

- The runway threshold
- Threshold markings or lights
- Runway End Indicator Lights (REILs)
- Approach Slope Indicator Lights, such as VASI or PAPIs
- The runway lights
- Touchdown zone lights or markings, or
- Approach lighting (MALSF, MALSR, ODALs).

Note that many of the NAVAIDs described below are recommended to be switched to LED source lighting at some time in the future. It is not permissible, per Section 1.4 of AC 150/5340-30H, Airport Visual Aids, to “mix and match” light sources within a single system, due to the differences in perceived brightness or color from LED to incandescent light sources. If, for instance, a runway is lengthened, it is not permissible to leave the existing incandescent sources in place and add LED fixtures along the new portion of the work. Instead, the whole runway edge lighting system must be of only one source – either incandescent or LED. Similarly, LED lighting sources cannot be used to replace individual fixtures in a system on a maintenance basis. Light sources changes must be comprehensive within any giving NAVAID system to maintain a uniform appearance.

If the runway is lengthened to an Ultimate length of 3,855 feet, enhanced approach procedures to serve a larger category of aircraft should be evaluated.

The following are recommendations related to NAVAIDs at TKC.

4.5.6.1 Airport Beacon

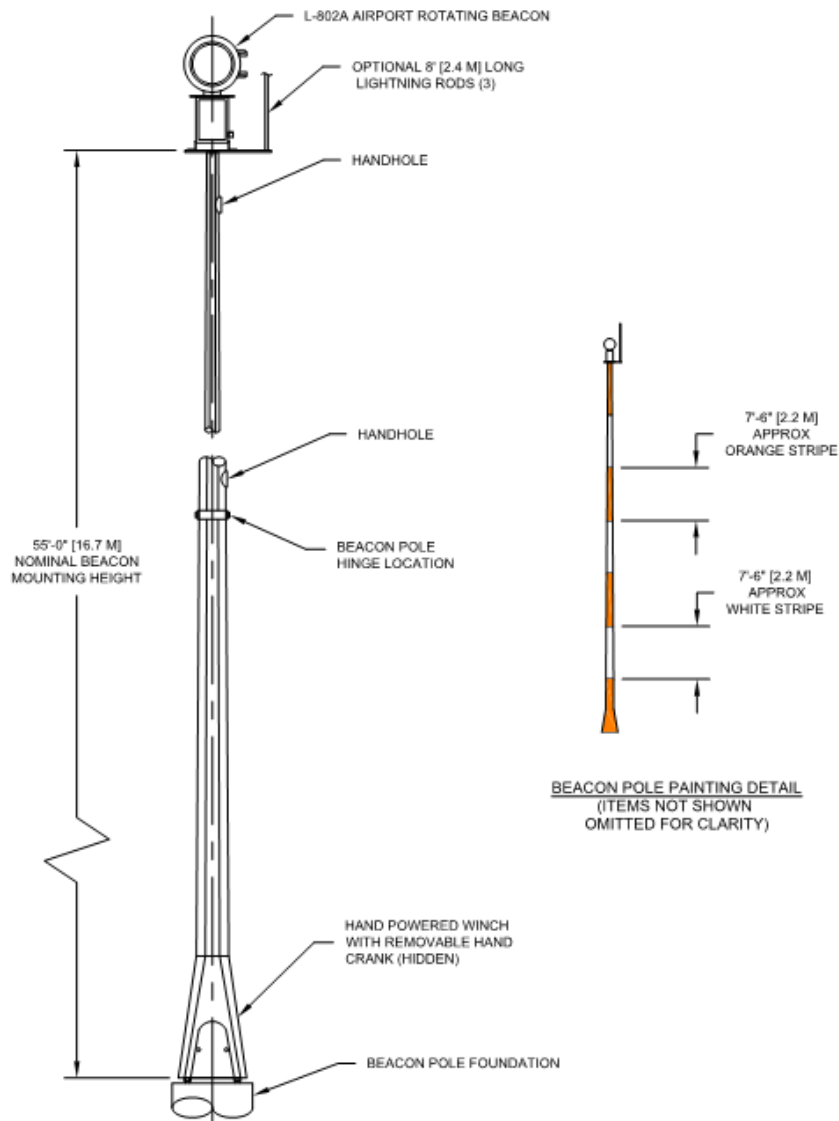


Figure 4-31: Beacon tip-down pole; Source: AC 150/5340-30H, Fig. 73

The airport’s rotating beacon is located on a tower adjacent to the visitor parking. The appropriateness of its location should be evaluated in regard to future hangar development. A tip-down pole with lightning protection is recommended for ease of maintenance of the beacon lighting and mechanisms when the beacon is eventually replaced.

It is recommended that the beacon be evaluated for compliance with AC 150/5345-12F, Specification for Airport and Heliport Beacons, and then be brought up to these standards as needed.

4.5.6.2 Wind cone

The airport’s lighted primary wind cone is in good condition and is visible from both approaches to Runway 11/29. The obstruction analysis, as part of this Master Plan, indicates that the wind cone does not penetrate any FAR Part 77 surfaces and does not require obstruction lighting. ***It is recommended that the wind cone be maintained during the planning period using routine maintenance practices.***



4.5.6.3 Segmented Circle

The airport does not currently have a segmented circle. The addition of a segmented circle is not recommended.

4.5.6.5 Threshold Lighting

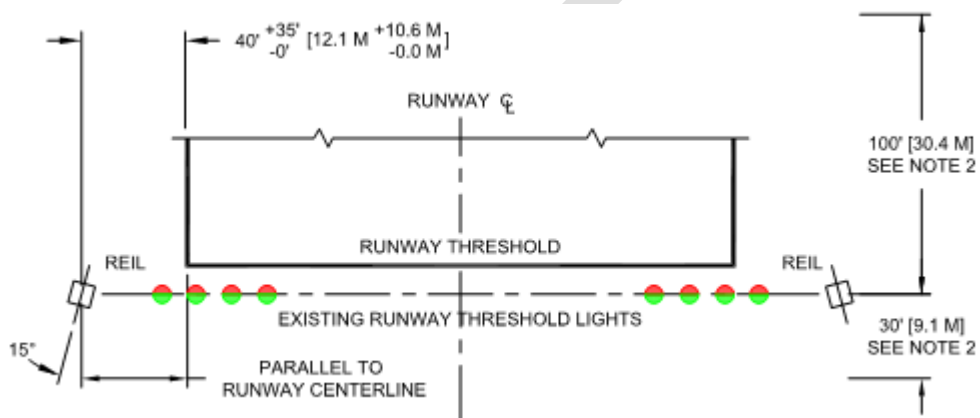


Figure 4-32: REILs; Source: AC 150/5340-30H, Fig. 78

The red/green runway threshold lights at each approach were installed in 2015 and are currently in good condition. The groups of four, as required for non-precision instrument runways, are located 10 feet from the end of the pavement and are spaced at 10-foot centers, within the guidelines of AC 150/5340-30H.

It is recommended that TKC’s threshold lighting be maintained throughout the planning period using routine maintenance practices. When funding allows and at the end of their useful lives, it is recommended that the fixtures be converted to LED light sources. At the reconfiguration of runway length or width, threshold lighting locations will need to be re-evaluated.

4.5.6.7 Taxiway Edge Lighting

AC 150/5340-30G, *Design and Installation Details for Airport Visual Aids*, recommends Medium Intensity Taxiway Lights (MITL) at all taxiways for airports where a runway lighting system is installed. MITL improve the visibility of the taxiway during night and low-visibility weather conditions. The Minnesota SASP also recommends MITLs for Intermediate airports.

The blue MITL, provided only at the junction of the taxiway to Runway 11/29, were installed in 2015 and are in good condition. The required distance from the edge of the taxiway paving to the lights should be no more than 10 feet from the taxiway pavement edge but are 13 feet or more away. During the next runway/taxiway lighting project, this condition should be corrected.

There is no additional taxiway lighting or reflectors, per paragraph 2.1.4.c of AC 150/5340-30H, along the remainder of the taxiway.

The AC's Table 2-1 shall be referenced for spacing on straight sections of the taxiway, while Figure 17 is used to describe the requirements for curved taxiway sections.

It is recommended that the MITLs be maintained throughout the planning period using routine maintenance practices. When funding allows, it is recommended that the fixtures be converted to LED light sources. When a taxiway reconfiguration project is initiated, MITL lighting should be re-evaluated and a full taxiway lighting system planned.



Figure 4-34: Runway Signage

4.5.6.8 Airfield Signage

Tracy is equipped with standard airfield signage, providing guidance information used to identify locations on the airport and airfield. FAA-required signage including location, direction, destination, and information signs meet the standards given in AC 150/5340-1J, *Standards for Airport Sign Systems*.

The airfield signage, such as taxiway and runway signs, were installed in 2015 and are in good condition. ***It is recommended that the airfield signs be maintained throughout the planning period using routine maintenance practices. When runways or taxiways are reconfigured in the future, signage should be evaluated and revised/relocated as necessary to correspond to new designations and the fixtures be modified to employ LED light sources.***

4.5.6.9 Pavement Markings

Runway 11/29 is marked with Non-Precision Runway Markings which include centerline, threshold, and runway designator markings. Taxiway A is marked with a holding position and yellow centerline. Taxilane A on the apron includes a centerline, but the other portions of the taxilane are not marked. The FAA's AC 150/5340-1M, *Standards for Airport Markings*, recommends that all airports have surface painted holding position markings where a taxiway meets a runway.

It is recommended that the pavement markings be maintained on a regular schedule to keep them in good condition. Holding positions should be added during the next scheduled painting to reflect the new FAA standard.

4.5.6.10 Weather Equipment

The Automatic Weather Observation System (AWOS), owned by MnDOT, was installed in 2003 and has a recent history of malfunctioning.

According to FAA Order 6560.20b, *Siting Criteria for Automated Weather Observing Systems*, for airports with only visual and/or non-precision instrument runways, the minimum distance for the AWOS from the primary runway centerline is 500 feet. The current location is approximately 490 feet from the centerline. According to the Order, "Since desired locations are not always available due to excessive physical or economic reasons, compromises may have to be considered and less than desired locations may have to be selected. If this occurs, it must be understood that the alternative location must still allow the system to provide accurate information."

FAA recommends a 500' radius around the AWOS location, called the "Critical Area," in which no development occurs in order to protect the functionality of the sensors. The Critical Area of the AWOS in its current location includes all the hangars, A/D building, and fueling area, possibly impacting the reliability of its readings. The AWOS' presence in the terminal area affects the ability of the Sponsor to develop more hangars in the area where utility infrastructure is already present.



In addition, flexibility in the exact location of the AWOS equipment is determined by the owner of the equipment, which in this case is MnDOT. Any future development within a 500' radius of the AWOS must be coordinated with MnDOT.

It is recommended that the AWOS be relocated to a location that meets the guidelines of FAA Order 6560.20b and allows future hangar development in the terminal area. If future development of taxiways, apron, or buildings is planned within a 500-foot radius of the AWOS, coordination with MnDOT is required.

4 | Section 6 – Landside Facility Requirements

Landside facilities include the A/D building, hangars, automobile parking, and fencing. The landside facility requirements were developed from a review of the Inventory and Forecast chapters of this study, consistent with FAA and industry guidelines.

4.6.1 Arrival/Departure Building

The A/D building, remodeled in 2010, contains a restroom, a pilot's lounge with countertop and sink, the airport electrical equipment, and an office. While it is adequate in size and amenities for a local GA airport, it is in need of rehabilitation. The airport board may meet here or at City Hall for its board meetings. ***It is recommended that the buildings' vinyl siding be replaced with a more durable material, as it is brittle and cracking. Loose floor tiles should be re-adhered or replaced. Minor revisions are needed to bring the restroom in to compliance with the Minnesota Accessibility Code. Improved amenities to pilots are recommended to include a small kitchenette with adequate refrigerator, microwave, and kitchen workspace. It is recommended that the remainder of the building be maintained throughout the planning period using routine maintenance practices.***

4.6.2 Hangar Facilities

There are two existing hangars at TKC. While the box hangar is in good condition, the T-hangar is in extremely poor shape, and is sized to accommodate only A-I sized aircraft.

Hangar space requirements include demand generated by based aircraft and corporate aircraft use. Due to the severe weather often experienced in Minnesota, it is assumed that most based aircraft owners prefer to hangar their aircraft, and all based aircraft at Tracy are in hangars. TKC currently has one 8-unit T-hangar (ADG I), and one conventional hangar (currently housing two ADG I aircraft) for a total of 10,480 SF of hangar space. ***The City Administrator has provided letters of intent from local businesses and community members which show that 19 hangars are desired at the Tracy airport, for both ADG I and ADG II aircraft. These letters represent the ten based aircraft currently at TKC, whose owners wish for a better-quality hangar, as well as owners of nine new aircraft who are interested in basing there.*** Five letters request a T-hangar space; the remainder are interested in conventional box hangars of either a 45' x 45' or 65' x 65' size. Olsem Aerial

Application Services, LLC, Premium Plant Services, a locally-owned Flight Training business, and other businesses have expressed a desire to own or lease a hangar for their business aircraft. These letters of intent were received after the completion of the Aviation Demand Forecast, so the information is not accounted for in that chapter of this report. Reviewing the forecast found in Chapter 3 and the letters of intent, the demand for based aircraft hangar space is expected to grow significantly in the planning period, and the provision of leasable hangar units will be a high priority.

Total hangar requirements are highlighted in Table 4-35, based on the based aircraft forecast, the letters of intent, and the existing facilities available at TKC. The planning model used for this analysis indicates the airport does not have adequate T-Hangar and conventional hangar space for the planning period. ***The years 2022-2037 include the current ten based aircraft plus 8 additional aircraft per the Letters of Intent submitted to the City Administrator in February 2018. This is a slightly higher number than was identified in the Forecast chapter. See Appendix.***

Total Needed Hangar Spaces vs. Existing Space Available by Year	2017	2022	2027	2037
Total Based Aircraft Demand Forecast	12	18	19	20
T-Hangar Demand (ADG I)	10	11	12	13
Existing T-Hangar Units (ADG I)	8	8	8	8
T-Hangar Deficiency (-)	-2	-3	-4	-5
Conventional/Private Hangar Demand (ADG I)	2	4	4	4
Existing Conventional/Private Hangar Units (ADG I)	2	2	2	2
Conventional Hangar Deficiency ADG I (-)	0	-2	-2	-2
Conventional/Private Hangar Demand (ADG II)	0	3	3	3
Existing Conventional/Private Hangar Units (ADG II)	0	0	0	0
Conventional Hangar Deficiency ADG II (-)	0	-3	-3	-3

Table 4-35: Hangar Requirement Summary

4 | Section 7 – Support Facilities

The sizing, location, and phasing of the support facilities must provide flexibility to accommodate the dynamically growing aviation environment at TKC.

Support facilities play a vital role in the operation of the Airport. The sizing, location, and phasing of these facilities must provide flexibility to accommodate the dynamically growing aviation environment at TKC. Support facilities that will be discussed in this section include the following:

- Fuel Storage and Dispensing
- Aircraft Maintenance
- Maintenance and Snow Removal Equipment and Storage

- Ground Support Equipment and Storage
- Airport Security, Wildlife Hazards and Perimeter Fencing
- Airport Access, Parking, and Wayfinding
- Utilities

4.7.1 Fuel Storage and Dispensing

The Airport maintains one above-ground 3,000-gallon storage tank for 100LL fuel, installed in 2013 adjacent to the A/D building. 100LL fuel, or AvGas, contains lead, a toxic substance that can be inhaled or absorbed in the blood stream. This gas is the only remaining lead-containing transportation fuel in the United States. According to the FAA's website regarding Aviation Gasoline (faa.gov/about/initiatives/avgas/), more than 167,000 piston-engine aircraft still use AvGas to power their aircraft, whose emissions have become the largest contributor to the low levels of lead emissions produced in the US. The FAA and the Environmental Protection Agency (EPA), along with industry partners, are working to remove lead from AvGas. The goal is to phase out lead in aviation fuels completely, but to smoothly transition from leaded to lead-free AvGas. Until the time that the transition is complete, a tank for AvGas will be needed at TKC. ***It is recommended that TKC monitor the FAA and EPA's progress for updated regulations and replacements for AvGas and comply with new regulations as they are enacted.***



Other aircraft use Jet A fuel, such as King Airs and Air Tractors, but at this time there is not enough demand to justify adding a jet fuel tank to their existing fueling system. ***It is recommended that space be reserved on the ALP for a Jet A fuel tank and fueling system. The City should continue to monitor and evaluate the need for a Jet A fuel tank in the future and install it when it is warranted by demand.***

While the tank maintains sufficient capacity to meet current demand, its location in relation to adjacent taxiways means that a fueling airplane in conjunction with a few aircraft parked at the nearby tie down locations may create a bottleneck in circulation on the apron. ***It is recommended that circulation around the fuel station be reviewed in the Identification and Evaluation of Alternatives chapter to investigate ways in which this situation may be improved, whether through adjustment in taxiway locations or of the fuel system itself.***

4.7.2 Aircraft Maintenance

TKC does not have an FBO for aircraft maintenance or other services, but it is prudent to plan for a facility in the Ultimate development. An FBO business is often a driver of air traffic and activity for an airport. ***It is recommended that space be set aside for a future FBO business in the ALP.***

4.7.3 Maintenance and Snow Removal (SRE) Equipment and Storage

The City of Tracy uses the City's Street Department equipment, such as plows, graders, skid steers, brooms, and loaders to aid in the removal of snow and ice from airfield surfaces, all of which are stored in the City's Public Works shop off-site. Any

equipment funded by MnDOT or FAA is required to be stored on site and used exclusively for airport maintenance. It would also be beneficial and more efficient to have the Airport's equipment on site during the snowy season. The Airport's mower is also being stored in the City shop.

It is recommended that new grounds keeping equipment, such as a gang mower, loader, and snow removal equipment be purchased near the end of the equipment's useful life.

It is recommended that a 60' x 60' combination Maintenance and Snow Removal Equipment building be constructed to house all the Airport's grounds-keeping equipment. Any equipment paid for by FAA must be stored and used on Airport property and may not be used for any other purpose. It should be carefully located so that any future facility development, safety zones, approach or departure surfaces, or Part 77 surfaces are not negatively impacted.

4.7.4 Ground Support Equipment (GSE) Storage

Ground Support Equipment, such as carts, tugs, auxiliary power units, and mobile stairways are not currently in use at TKC.

4.7.5 Airport Security, Perimeter Fencing and Wildlife Hazards

Currently, there is minimal security fencing at TKC, either at the apron or around the perimeter of the airport. The existing fencing includes a short length of chain link fencing between the apron and the more "public" parking area. The purpose of the fence is to keep the public from accessing a position of danger and is required by MnDOT licensing standards. The fence does not keep automobiles from driving directly on to the apron.

Because Tracy is not a commercial service airport, it is not required to meet the provisions of 49 CFR Part 1542 Airport Security through the development and implementation of a TSA-approved Airport Security Program. The Minnesota SASP for Intermediate airports, such as Tracy, recommends full perimeter fencing for security.

It is recommended that the existing apron fencing, which is in good condition, be maintained throughout the planning period using routine maintenance practices. It is also recommended that additional fencing with access gates be provided to comply with MnDOT Office of Aeronautics and Aviation's airport licensing requirements. This may include a computerized security access system. As development occurs in the apron area, opportunities should be evaluated for the installation of closed-circuit television cameras and computerized controlled access points to protect the safety and security of the traveling public.

In addition, the circulation areas around the Airport buildings lack adequate security lighting. Improved lighting and security cameras would discourage break-ins of Airport buildings and would improve the overall appearance of safety and security at the airport.

The expected life of any part of a building enclosure can vary considerably depending on the component's use, abuse, weather exposure, and mechanical properties.

It is recommended that full-cutoff LED wallpack lighting be provided on buildings that are currently underlit on Airport property. Lighting locations must be carefully considered to promote safety and security for people and property on the Airport while avoiding negative impacts such as glare for aircraft operating at night. Security cameras should be strategically and obviously placed to discourage criminal activity and provide visual evidence of any crime being committed.

The **Wildlife Hazard Site Visit (WHSV) Report** and **Wildlife Hazard Master Plan (WHMP)**, prepared as part of this effort in 2017 and 2018, recommends a perimeter fence as an effective deterrent for wildlife to prevent deer or other mammals from entering the operating area which may result in aircraft strikes. The WHSV report and WHMP, which can be found in the appendix of this document, makes recommendations for fence construction and maintenance.

The FAA's guidance on perimeter wildlife fencing recommends a 10-foot chain link fence topped with three strands of barbed wire on outriggers to deter deer. In some cases, an airport may be able to use an 8-foot fence with outriggers, depending on the amount of deer activity in the area. In addition, at least four feet of chain link skirt, buried, attached to the fence base, and sloped away from the outside of the fence at a 45° angle, is recommended to prevent burrowing animals from breaching the bottom of the fence and to reduce the chance of washouts. This guidance and related alternatives can be found in FAA's *CertAlert 16-03*. Note that when installation of chain link fencing is not feasible due to cost or environmental impacts, other types of fencing may be considered.

Also recommended in the WHSV and WHMP are activities to deter birds and wildfowl, which are the most pressing concern at TKC. The wastewater ponds which were present on airport property and a significant attractant to these animals, have since been moved and the former site decommissioned, including filling in the ponds and establishing vegetation.

It is recommended that an airport perimeter fence be provided and maintained per the recommendation of the WHSV Report and Wildlife Hazard Master Plan (WHMP). The design and construction of this fencing will need to meet FAA standards to qualify for FAA funding. It is further recommended that effective deterrent practices be established to control birds and wildfowl that access airport grounds.

Please see the Wildlife Hazard Management Plan, included in the Appendix, for further recommendations regarding control of wildlife hazards.

The WHSV report and WHMP, found in the appendix, make recommendations for fence construction and maintenance.

Please see the complete Wildlife Hazard Management Plan in the appendix for a complete list of recommendations regarding items such as monitoring, habitat modifications, exclusion measures, wildlife harassment, and depredation.

4.7.6 Airport Access, Parking, and Wayfinding

4.7.6.1 Airport Access

Regional access is from US Highway 14, which travels east-west through Tracy. From there, users typically take CSAH 11 to reach the airport, though the highway system configuration allows for multiple routes. While there is no requirement for an additional access to the airport, a secondary access point is recommended for emergency situations if the main access road becomes impassable. TKC is accessible on City-owned property from three sides.

The airport driveway is currently gravel. ***It is recommended that once the Ultimate location of the driveway is determined in the master planning process, plans be made to eventually pave the driveway in its current location or in the new location.***

4.7.2.1 Automobile Parking

Existing public automobile parking for TKC consists of 6 gravel-paved spaces near the A/D building for visitors and the airport courtesy car. Pilots sometimes park near the T-hangar or in the grass along the driveway. Based on discussions with airport staff, on a general, day-to-day basis, the existing parking is adequate for parking demand.

The Minnesota SASP Minimum Objectives, noted at the beginning of this chapter, recommend that the number of parking spaces provided at Tracy be one space per based aircraft + 25%. Please see Table 4-36 below.



Total Needed Auto Parking Spaces vs. Existing Space Available by Year	Base Year 2017	Phase I 2022	Phase II 2027	Phase III 2037
1 per based aircraft	12	18	19	20
+25% of based aircraft	3	4	5	5
Total recommended parking spaces	15	22	24	25
Existing parking spaces	6	6	6	6
Automobile Parking Deficiency (-)	-9	-16	-18	-19

Table 4-36: GA Terminal and Hangar Automobile Parking Requirements

It is recommended that additional parking areas be developed to meet the expected demands and the requirements of the Minnesota SASP as paving projects are completed throughout the planning period. The number of recommended parking spaces will be studied in Chapter 5.

4.7.6.3 Wayfinding

There is little to no wayfinding signage associated with the airport. The only signage for the airport’s access on CSAH 11 is a sign on US Highway 14, which is small and easy to miss. There is a sign honoring Homer Dobson at the airport driveway, but no signage specifically identifying the airport.



It is recommended that a wayfinding study and improvement project be completed in the near future.

4.7.7 Utilities

The utilities at TKC include electric power, city water and communications. Natural gas is not available at the site, requiring on-site storage tanks for propane. Sewer service is not available, so a septic tank with drain field is used for the A/D building restroom and sink. There are no drains, sinks, or restrooms in the hangars.

An appropriate volume of water must be provided for fire sprinkling of future buildings, which can be very difficult and expensive. This issue could create challenges meeting fire protection needs and a roadblock for constructing buildings and any hangars larger than 12,000 square feet.

It is recommended that a water service evaluation study be completed to ensure that when new facilities are proposed, adequate services are available.

The single-phase electrical service is provided by Xcel Energy, and there have been no reports of problems with this service. The airport does not have a dedicated backup generator to ensure that critical safety equipment and lighting is operable during a power outage.

The ADO may find a secondary power supply allowable if the primary power supply is extremely unreliable due to:

- An extensive documented history of cable cuts
- Extraordinary meteorological conditions
- An extensive documented record of commercial utility interruptions

The secondary power supply must be in the form of an electrical service provided by a power company. Generators are not considered secondary electrical power supplies.

Table C-3 of the AIP Handbook lists portable emergency generators as an example of a prohibited project/cost for equipment. Table M-1, “Other Equipment Project Requirements,” states that Emergency Generators can be justified if necessary to support lighting on Cat II/III runways and taxiways if the airport is designated as a continuous power airport eligible for fixed generators. TKC is not designated as such. According to Simon Schmitz, Program Manager, the FAA would need special justification to fund a backup generator for a Non-Primary Airport in Minnesota. Based on TKC’s operations and runway category, it is unlikely to meet the requirements for special justification.

It is recommended that an electrical power evaluation be completed to identify the feasibility of bringing more reliable three-phase power to the site vs. providing a backup generator for emergency use. These studies are to be used to identify capacity and service deficiencies.

The existing airfield electrical equipment was updated in 2015 and is in good condition inside a room in the A/D building. ***It is recommended that the electrical equipment be maintained throughout the planning period using routine maintenance practices.***

4.7.8 Solid Waste

As a City of Tracy facility, the Airport is responsible to comply with Minnesota Statute Section 115A.02. This Chapter’s goal is to “protect the State’s land, air, water, and other natural resources and the public health by improving waste management in the state...” by:

- Reducing the amount and toxicity of waste generated
- Separating and recovering materials and energy from waste
- Reducing the indiscriminate dependence on land waste disposal
- Coordinating solid waste management among political subdivisions (state, county, and city)
- The orderly and deliberate development and financial security of waste facilities, including disposal facilities.

These goals will be achieved through the following methods, in order of preference: waste reduction and reuse, recycling, composting, resource recovery through composting or incineration, and land disposal with or without the creation and retrieval of methane gas.

At this time, TKC does not have a sustainability plan. Such a plan can help bring the airport into compliance with the statute and yields long-term benefits such as reduced energy consumption, reduced noise impacts, reduced hazardous and solid

As a City of Tracy facility, the Airport is responsible to comply with Minnesota Statute Section 115A.02.

waste generation, reduced greenhouse gas emissions, improved water quality, improved community relations and cost savings.

As noted in Section 2.4.7.6 *Solid Waste and Recycling*, the airport's waste generation is small, and their recycling and waste disposal processes are simple. Airport staff and all tenants do not have access to solid waste and recycling opportunities, except to dispose of solid waste at the A/D building trash cans. Solid waste is removed by city staff to a city dumpster on an as-needed basis. Hazardous waste, such as waste oil and filters are provided to Hoffman Recycling or a local company that uses a waste oil burner for heat. Fluorescent light tubes are taken to the County Hazardous Waste facility.

The airport's waste generation is small, and their recycling and waste disposal processes are simple.

4.7.8.1 Waste Reduction and Reuse

Minnesota's Waste Management Hierarchy, outlined in the statute, gives preference to waste reduction and reuse. Reducing waste generation, such as by packaging reduction, office paper reduction, composting, and material reuse, reduces the volume of waste requiring land disposal.

Ideas that would benefit waste reductions efforts might be:

- Promoting the use of reusable beverage containers, mugs, and bottles. Provide reusable glass or plastic drinking glasses or coffee mugs for use in the pilot's lounge kitchenette rather than providing disposable cups.
- Provide reusable mugs for Airport and FBO staff.
- Utilize the Lyon County Coordinator office to identify potential reuse or proper disposal of site materials and equipment. Options should be explored to reduce solid waste generation through logistical changes, purchasing policies, or recycling efforts for any unique waste materials generated routinely or as part of special construction projects.
- Develop a delivery system for notifications to airport users that employs electronic media, mail, or website notifications rather than paper. Make it easy to submit required forms online on the Airport's website.

Any waste reduction and reuse programs should be evaluated annually with the Lyon County Coordinator, who is responsible for solid waste and recycling, to determine if the efforts are adequate, if there have been changes to relevant regulations, and whether changes are needed.

4.7.8.2 Waste Education

Waste Education helps the public to understand why waste reduction and recycling is important and how to accomplish it. The County Coordinator's website (<http://www.co.grant.mn.us/474/Coordinator>) has several resources available to inform the public about the County's waste reduction and recycling programs.

Ideas to establish and meet waste education goals for the airport might be:

- Prominently display Lyon County education resources to promote waste management and recycling activities in airport facilities. Areas of emphasis might be the management and disposal of environmentally dangerous or toxic substances such as antifreeze, tires, vehicle batteries, used oil and filters.
- Establish goals for airport waste abatement and create signs or notifications that identify the goals and how airport users can assist the airport in achieving those goals.

Any waste education programs should be evaluated annually with the Lyon County Coordinator, who is responsible for solid waste and recycling, to determine if the efforts are adequate, if there have been changes to relevant regulations, and whether changes are needed.

4.7.8.3 Waste Recycling

The success of any waste management or recycling program rests firmly in the convenience and availability of disposal and recycling facilities for the general public to use. Waste education, described above, outlines the *value* of these efforts.

At this time, TKC does not provide recycling opportunities for cardboard, metal, batteries, tires, and flammable wastes such as oils and oil filters to the public, but city staff facilitates recycling from the airport on an as-needed basis. When bituminous paving of aprons or taxiways are due to be replaced, it can be taken up and recycled as part of the new surface. Existing concrete can be crushed and reused as a substrate for new layers of concrete.

Ideas to establish and meet the convenience and availability goals for waste management facilities at the airport might be:

- Provide prominent and easy access to recycling facilities, especially in the areas where the materials are used. In the A/D building's pilot's lounge, provide recycling bins for metal, plastic, newspaper, glass, and magazines. Be sure that metal and cardboard recycling bins are easily found where they are most likely needed.
- Provide separate waste and recycling bins in areas where people gather or linger, such as outside the A/D building or near the fueling station.
- Provide a centralized storage area for the collection of materials such as fluorescent lamps, electronics, household hazardous waste, used oil and oil filters, tires, vehicle batteries, and household batteries. Provide information to alert airport users to this area, its purpose, and make it accessible to them.
- Arrange for regular removal of all recyclables on a scheduled basis by airport staff to the County's recycling center.

Any waste recycling programs should be evaluated annually with the Lyon County Coordinator, who is responsible for solid waste and recycling, to determine if the

efforts are adequate, if there have been changes to relevant regulations, and whether changes are needed.

4 | Section 8 – Airport Property, Acquisition, and Easements

TKC currently encompasses over 380 acres. Of these areas, approximately 36.5 additional acres are held in aviation easements, which is the right a public or private agency acquires to use the airspace above a specific height for the flight of aircraft and keep the property clear of obstructions. For further information, see the property descriptions in the Appendix and the Exhibit A Property Map contained in the ALP (also included in the Appendix).

Adequate property should be acquired to provide for the construction of the Ultimate Runway 11/29. *This area must include the limits of the Building Restriction Line (BRL) as well as the RSAs, RPZs and Clear Zones, to protect these areas and control obstructions.*

The FAA requires that the airport have sufficient control of the runway approach, which is usually accomplished through purchase of the entire RPZ.

MnDOT's Policy Statement No. 1, *Clear Zone Requirements*, includes diagrams which illustrate the required clear area for airports depending on aircraft served, landing aids available, and approach minimums which are planned or established. These dimensions are described in Section 4.5.1.11 of this Chapter. The Policy also states: "The actual property interests to be acquired will be determined upon consideration of land lines, availability of the property, severance, and other factors affecting compatible land use of the area surrounding the airport.... Exceptions to this policy may be made in the case of routine maintenance projects, emergency, terrain limitations, unusual cost, or other consideration for the safety and convenience of the public as determined by the Commissioner of Transportation."

MnDOT's requirements for land use zoning, applicable to all public use airports, are found in the MnDOT Aeronautical Rules, Chapter 8800.

Airport property, as described in a grant or the Exhibit A Property Map, is considered "dedicated" property for airport purposes only, and subject to FAA Airport Sponsor Grant Assurances. These Assurances require Sponsors to hold good title to the property, preserve all rights and powers, ensure compatible land uses of the property, and to keep an updated ALP showing airport boundaries, existing and proposed airport facilities, and the location of existing and proposed non-aeronautical use areas. Any non-aeronautical uses on the property are considered encumbrances. Some of these encumbrances are recorded and official; others may be "unrecorded," akin to a handshake between individuals for the use of the property, such as providing access to another person's property or for recreational use. Research of Airport property records revealed a number of both recorded and unrecorded encumbrances, which are others' rights to use airport property, which are described below.

Please note that a boundary survey was not performed as part of this research and is typically not eligible for federal funding. All parcel lines and airport boundaries shown in the Master Plan and ALP are taken from Lyon County GIS information. They are not guaranteed to exact but are shown for reference only.

It is recommended that the Airport conduct a boundary survey to determine actual property lines. If additional encumbrances are found, it is recommended the Airport prepare and file the necessary easement documents for these and the other items listed below.

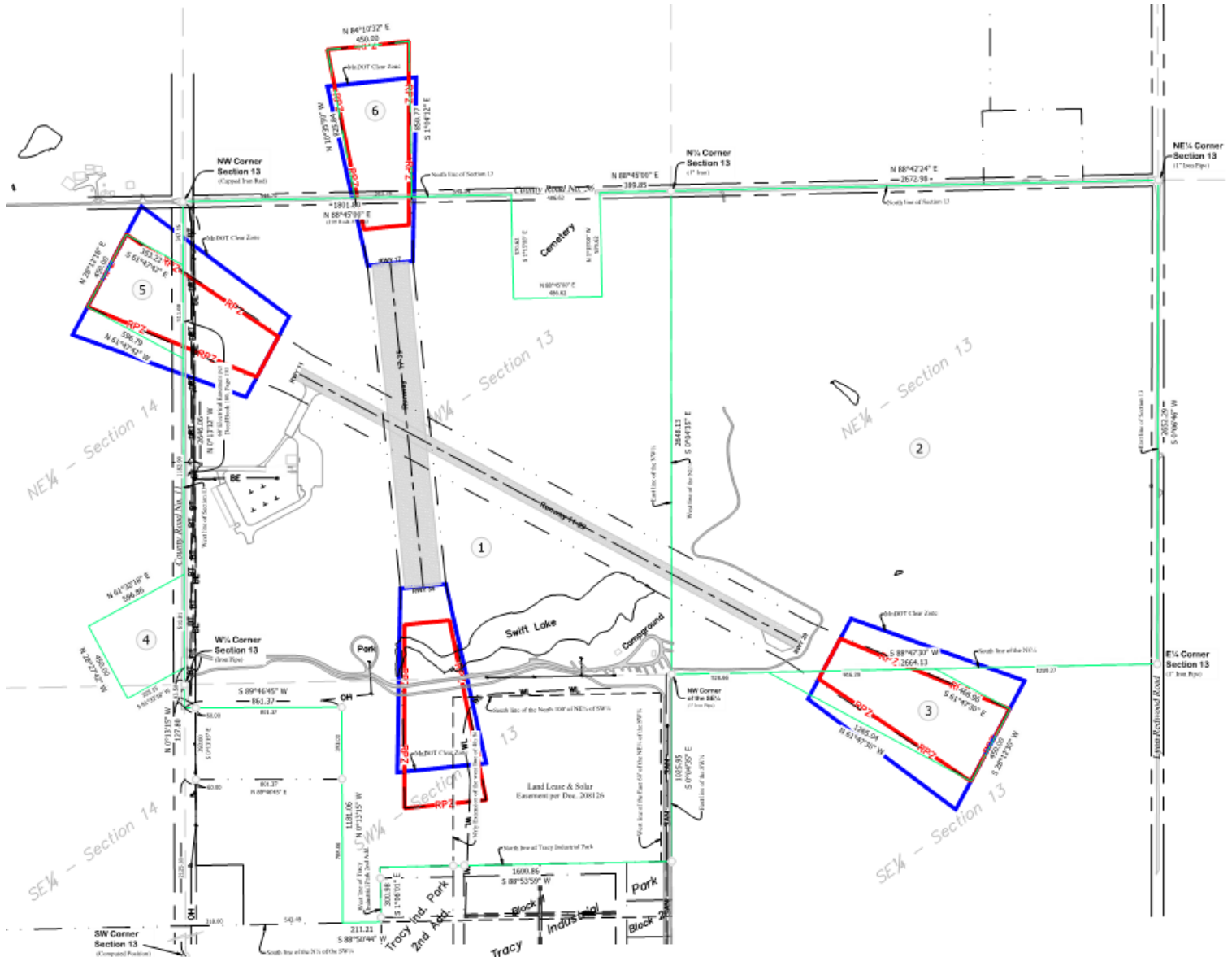


Figure 4-37: Airport Parcels

4.8.1 Recorded Encumbrances

Airport Parcel #1: 60' Electrical Easement. An easement for electrical service along CSAH 11, authorized by Lyon County, along the west edge of Parcel 1, was found in the property search, with Northern States Power Company as the Encumbrance Holder. The easement crosses the existing RPZ and Clear Zone for Runway 11 and is not currently subordinate to the airport. ***As the electrical easement is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use.*** Although Northern States Power may maintain its easement, TKC has buried the exposed transmission line and poles within the RPZ and Clear Zone of Runway 11 in the Spring of 2020 to remove the obstruction to the runway's departure surface. The land will then continue to serve its aeronautical purpose (aviation development) while also allowing the non-aeronautical use (electrical easement).

Airport Parcel #1: Blanket Electrical Easement. A blanket electrical easement, authorized by Lyon County, for the south ½ of the northwest quarter of the parcel was found in the property search, with Northern States Power Company as the Encumbrance Holder. The easement serves the power needs of the airport itself and is not subordinate to the airport. ***As the easement is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use. Blanket easements may need to be refined to corridors and subordinate to the airport prior to further AIP investment.*** The easement does not interfere with aeronautical use, and the land continues to serve its aeronautical purpose (aviation development).

Airport Parcel #1: Land Lease and Solar Easement. A 924' x 1140' easement to Antares Community Solar Gardens, LLC, authorized by the City of Tracy, in the northeast ¼ of the southwest ¼ for the development of a solar panel facility. The property is leased from the City of Tracy for this purpose. A portion of this leased area falls within the RPZ of Runway 35. ***As the easement is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use.*** The easement is not subordinate to the airport, but it does not interfere with the aeronautical use, as the land continues to serve its aeronautical purpose (aviation development) while also allowing the non-aeronautical use (solar power generation). According to an email from Simon Schmitz (FAA) in August 2017, Geronimo Energy, the solar panels array's owner, received Airspace approval for the installation. The panels have also been arranged to avoid placement within the RPZ and Clear Zone of Runway 35. If in the future Runway 17/35 were extended to the south, this easement will need to be moved outside of the Ultimate RPZ or eliminated.

Airport Parcel #3: Avigation Easement. An avigation easement on privately owned property for the benefit of the City of Tracy, the easement is to ensure that restricted land uses are not developed in the RPZ of Runway 29. The Airport's rights to the parcel are "... for use and benefit of the public, a right of free and unobstructed flight for aircraft landing upon, taking off from, or maneuvering about

the airport.... To keep the air space above the documented heights clear and free from any and all fences, crops, trees, poles, buildings, and other obstructions of any kind or nature whatsoever which now extend, or which may at any time in the future extend, above the aforesaid heights of land, together with the right of ingress to, and egress from, and passage over the easement land for the purpose of effecting and maintaining such clearances and of removing any and all obstructions which now or may hereafter extend above the said heights.”

This easement is in favor of the airport, and no rights are documented for the grantor. ***The easement is not currently on airport property, and therefore the establishment of concurrent use is not required.*** If this property is purchased in fee by the city of Tracy for the purpose of an RSA improvement and future runway extension to the southeast, the easement could be vacated, but another aviation easement to protect the new RPZ may need to be secured. It is preferred that all RPZs are owned by the airport.

Airport Parcel #3: Blanket Tile Drain Easement. A blanket easement on privately owned property for drainage, for the benefit of the City of Tracy, the easement is to construct and maintain a drain tile along the bottom of the ravine and creek bed on the property. The City is uncertain if a drain tile was actually installed in this location. This easement is in favor of the City. ***The easement is not currently on airport property, and therefore the establishment of concurrent use is not required.*** If this property is purchased in fee by the city of Tracy for the purpose of an RSA improvement and future runway extension to the southeast, the easement could be vacated or refined to a corridor, if drainage is actually needed.

Airport Parcel #4: Aviation Easement. An aviation easement on privately owned property for the benefit of the City of Tracy, the easement is to ensure that restricted land uses are not developed in the RPZ of former Runway 06. The Airport’s rights to the parcel are “... for use and benefit of the public, a right of free and unobstructed flight for aircraft landing upon, taking off from, or maneuvering about the airport.... To keep the air space above the documented heights clear and free from any and all fences, crops, trees, poles, buildings, and other obstructions of any kind or nature whatsoever which now extend, or which may at any time in the future extend, above the aforesaid heights of land, together with the right of ingress to, and egress from, and passage over the easement land for the purpose of effecting and maintaining such clearances and of removing any and all obstructions which now or may hereafter extend above the said heights.”

This easement is in favor of the airport, and no rights are documented for the grantor. ***The easement is no longer required as Runway 06/24 has been decommissioned and the easement may be vacated.***

Airport Parcel #5: Aviation Easement. An aviation easement on privately owned property for the benefit of the City of Tracy, the easement is to ensure that restricted land uses are not developed in the RPZ of Runway 11. The Airport’s rights to the parcel are “... for use and benefit of the public, a right of free and

unobstructed flight for aircraft landing upon, taking off from, or maneuvering about the airport.... To keep the air space above the documented heights clear and free from any and all fences, crops, trees, poles, buildings, and other obstructions of any kind or nature whatsoever which now extend, or which may at any time in the future extend, above the aforesaid heights of land, together with the right of ingress to, and egress from, and passage over the easement land for the purpose of effecting and maintaining such clearances and of removing any and all obstructions which now or may hereafter extend above the said heights.”

This easement is in favor of the airport, and no rights are documented for the grantor. ***The easement is not currently on airport property, and therefore the establishment of concurrent use is not required.*** If the threshold of Runway 11 is shifted to the southeast in the Ultimate development, all RPZ and Clear Zone Areas will be on City of Tracy property, therefore, the easement will no longer be needed and can be vacated if desired.

Airport Parcel #6: Avigation Easement. An avigation easement on privately owned property should be secured for the benefit of the City of Tracy, to ensure that restricted land uses are not developed in the RPZ of Runway 17, similar to the avigation easements the airport now has on Parcels 3, 4, and 5. ***The acquisition of an avigation easement for Parcel 6 is recommended.***

4.8.2 Unrecorded Encumbrances

Airport Parcels #1, #4, and #5: Assumed 120’ ROW Easement for CSAH 11. A Right of Way (ROW) easement for CSAH 11, on the west side of airport property, was not found in the property search. Lyon County Public Works has stated that it assumes it has a 120’ ROW centered on the centerline of the road. If no recorded easement exists, it is likely a ROW easement exists by prescription for this road. ***As a road ROW is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use.*** The roadway easement does not interfere with aeronautical use, and the land continues to serve its aeronautical purpose (aviation development) while also allowing the non-aeronautical use (ROW easement). In addition, this road benefits TKC by providing access to the airport. While there are no documents that specifically state the ROW in this area, the assumed width is based on adjacent property’s deeds on either side of the road and the current occupation/use line of the right-of-way.

Airport Parcels #1 and #2: Assumed 66’ ROW Easement for Lyon County Road 56. A Right of Way (ROW) easement for County Road 56, on the north side of airport property, was not found in the property search. Lyon County Public Works has stated that it assumes it has a 66’ ROW centered on the centerline of the road. If no recorded easement exists, it is likely a ROW easement exists by prescription for this road. ***As a road ROW is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use.*** The roadway easement does not interfere with aeronautical use, and the land continues to serve its aeronautical purpose (aviation development) while also allowing the non-

aeronautical use (ROW easement). In addition, this road benefits TKC by providing access to the airport. While there are no documents that specifically state the ROW in this area, the assumed width is based on adjacent property's deeds on either side of the road and the current occupation/use line of the right-of-way.

Airport Parcel #2: Assumed 66' ROW Easement for Lyon-Redwood Road. A Right of Way (ROW) easement for Lyon-Redwood Road, on the east side of airport property, and which is the border between Lyon and Redwood Counties, was not found in the property search. It appears there is a 66' ROW centered on the centerline of the road. If no recorded easement exists, it is likely a ROW easement exists by prescription for this road. ***As a road ROW is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use.*** The roadway easement does not interfere with aeronautical use, and the land continues to serve its aeronautical purpose (aviation development) while also allowing the non-aeronautical use (ROW easement). In addition, this road benefits TKC by providing access to the airport. While there are no documents that specifically state the ROW in this area, the assumed width is based on adjacent property's deeds on either side of the road and the current occupation/use line of the right-of-way.

Airport Parcels #1 and #2: Swift Lake Campground and Park. The existing city campground and park is located on the south portion of Airport property and lies within the RPZ and Clear Zone of Runway 35. It has also been identified in the Wildlife Hazard Site Visit report as a wildlife attractant. The campground is an asset to the city and is used by local people, tourists, and pilots at times, and is desirable to retain. ***It is recommended that the campground be studied for alternative access routes so that the current access can be eliminated from the RPZ and Clear Zone. As a campground is a non-aeronautical use of airport land, it is recommended that TKC seek approval from FAA for a concurrent land use.*** The campground does not interfere with aeronautical use, and the land continues to serve its aeronautical purpose (aviation development) while also allowing the non-aeronautical use. In addition, it benefits the City by providing a public amenity.

Airport Parcel #1: St. Mary's Catholic Cemetery. The existing cemetery is located in the north portion of Airport property and is owned by St. Mary's Catholic Church. However, it appears that the cemetery parcel is using more land than described in the exception parcel in the property search. ***While the current cemetery does not interfere with the functional use of the airport, nor its approach or departure surfaces, it is recommended that the discrepancy between the cemetery property as described in the deed and the actual use of the property be reconciled and recorded.***

Airport Parcels #1 and #2: Sewer Ponds. The City's sanitary sewer ponds were once located on airport property, lying in the RPZ of former Runway 24. However, the sanitary ponds have been relocated off airport property, north of County Road 56. ***The easement is no longer required and can be dismissed.***

4.8.3 Concurrent Use Agreements

FAA approval is required to allow a non-aeronautical use of airport property. Some of the recommendations above suggest the Airport seek approval from FAA for a Concurrent Use. This designation can identify a compatible land use, meeting Grant Assurance #21, specifying that the land is to remain in use for its primary aeronautical purpose but also used for a revenue-producing non-aeronautical reason. For instance, land needed for approach surfaces might also be used for agricultural purposes that generate revenue for the airport. Any revenue received by the airport for a concurrent use should be based on fair market rent, per Grant Assurance #25.

A Concurrent Use Agreement means that a piece of airport property can be used for more than one purpose at a time, both aeronautical and non-aeronautical. Concurrent Use requires FAA approval, but the land is not required to be formally released – it still belongs to the airport.

Any release, modification, reformation or amendment of an airport agreement between the airport owner and the United States must be based on a request made in writing and signed by a duly authorized official of the public agency that owns the airport with full concurrence of the airport owner. Evidence of such authorization must accompany the request. The FAA is not required to grant a land release or approve concurrent use. As described in Chapter 22 of Order 5190.6B, *FAA Airport Compliance Manual*, for a concurrent use request to the FAA, the Airport Sponsor will need:

- A cover letter describing the purpose for which the land was originally purchased, that the proposed use will not interfere with the original use, and explain the benefits of the proposed concurrent use;
- Plat of the lease with a boundary description;
- Summary Appraisal that includes a statement of fair market rent;
- Draft copy of the lease agreement;
- Copy of letter approving the airspace study; and
- National Environmental Policy Act (NEPA) Clearance.

4 | Section 9 – Facility Requirements Summary

This chapter presents the necessary facility requirements for the continued development of TKC predicated on the existing and forecasted aviation demand developed in Chapter 3, Standards presented in FAA Advisory Circular 150/5300-13A, *Airport Design*, Fundamental Airfield Development Criteria, determination of the existing and future design aircraft for TKC, and the goals and objectives of the Airport Board. These requirements are needed to satisfy the short- and long-range aviation needs of the Tracy area. Recommendations contained herein are intended to optimize the operational efficiency, effectiveness, flexibility, and safety of TKC throughout the planning period. Chapter 5, *Identification and Evaluation of Alternatives*, will discuss and illustrate the optimum size and timing of the facility development that is most appropriate to accommodate the facility requirements. Prior to construction, projects will require an environmental evaluation per the National Environmental Policy Act (NEPA) regulations. Recommended projects, including demand-based development, are presented in Table 4-38. Each item will be presented and discussed further in Chapter 5.

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Airside Facility Improvements	Need
Obstruction Removal	MnDOT Requirement
Update Zoning	MnDOT Requirement
Construct Medivac base for aircraft/helicopter	To meet demand and serve as income source
Construct Runway to Ultimate Length	Expected Aviation Demand – to accommodate regular use of more demanding aircraft than the current runway can serve
Add PAPI and REILS	MnDOT Minimum Standards Requirement
Update all Runway and Taxiway Lighting to LED	At End of Useful Life or During Runway Extension
Establish LPV approaches for 11/29	Lower Approach Minimums
Updated Fuel System with Jet A	Expected Maintenance/Demand
Partial or Full Parallel Taxiway	Recommended by Section 405 of AC 150/5300-13A
Replace siding/roofing on City Box Hangar	Required Maintenance
Private Hangars	As demand warrants
Relocate AWOS	Make location compliant with FAA guidance for siting
Address Incompatible Uses on Airport Property (such as campground)	FAA Requirement
Reconstruct Runway 11/29, Correct Non-Compliant RSA, Displace Threshold of Runway 11	Regular Maintenance, Airfield Safety, RPZ Compliance
Improve Apron/Hangar lighting/security cameras	Improved airfield security
Expand Apron and Construct Additional Tie-downs	MnDOT Minimum Standards Requirement
Group II Conventional Hangars	Meet Demand for Aircraft Storage
Group II T-Hangar	Meet Demand for Aircraft Storage
Landside Facility Improvements	
Improve Apron Fencing Security	MnDOT Requirement
Pave Parking Lot and increase number of spaces	MnDOT Minimum Standards Requirement
Construct New Group I T-Hangar and Demo Existing Hangar	Replace hangar at the end of its useful life
Support Facility Improvements	
Maintenance/SRE Building	Allow airport equipment to be kept on site
Improved Wayfinding Signage	Marketing and Access for Airport
A/D Building Improvements	Expected Maintenance and Upgrade
Airport Perimeter Wildlife Fencing	Wildlife Site Visit recommendation

Table 4-38: Project Priorities