

CVL Job No. 8.13.292103  
**AURORA, COLORADO**

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**TRANSPORT COLORADO**  
**PUBLIC IMPROVEMENT PLAN**  
**SUB-AREA 1**

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E1 - Public Improvement Plan



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**1. Introduction**

**1.1.2 General Description**

TransPort Colorado (TransPort) contains approximately 5,400 acres of planned industrial and mixed-use commercial development in eastern Aurora, CO. The site is divided into six separate sub-areas which will be treated as individual projects. Sub-Area 1 is located in the eastern portion of the site and contains approximately 1,154 acres of planned industrial development. The majority of the property surrounding the proposed site is undeveloped farm/ranching land with intermittent residential communities. Colorado Air and Space Port (Space Port), formerly known as Front Range Airport, is located immediately north and east of Sub-Area 1.

The TransPort Project proposes medium to heavy industrial uses within Sub-Area 1. The improvements necessary for the build-out of Sub-Area 1 will include the construction of arterial, collector and local (not shown) roads; water, sanitary, and stormwater infrastructure; as well as the development of parks/open space.

**1.1.3 Scope of Work**

The purpose of this Sub-Area 1 Public Improvement Plan (PIP) is to identify the infrastructure necessary for the development of the planning areas (PAs) within Sub-Area 1. This report will serve as a companion document to the Framework Development Plan (FDP) for Sub-Area 1 developed by LAI Design Group (Ref. 1). The improvements discussed herein have been coordinated with those described in the PIP Amendment for the overall development (Ref. 2). Historic land uses have not changed from those shown in the FDP prepared by N.E.S. Inc. in 2005 (Ref. 3).

**1.1.4 Project Location**

TransPort is located at the eastern edge of Aurora within Adams County, Colorado. It is approximately 20 miles east of downtown Denver, 6 miles southeast of DIA and is located directly adjacent to Spaceport and a Union Pacific Railroad Track. Sub-Area 1 is located in the southeastern portion of the main project area and includes the east half of Section 22, Section 27 north of the Union Pacific Railroad (UPRR) ROW, the east half of Section 28 north of the UPRR ROW, and small portion of Section 33 north of the UPRR, in Township 3 South, Range 64 West of the 6<sup>th</sup> Principal Meridian. Refer to Figure 1 below for a vicinity map of the project and surrounding areas.



**Figure 1 - Vicinity Map**

**2. Public Improvements**

**2.1. Sub-Area 1 Build-Out (Exhibit 1 of 9)**

**2.1.2 General**

The infrastructure necessary for the build-out of Sub-Area 1 includes the construction of roadways, watermains, sanitary and storm sewer mains, drainage channels and detention ponds. The alignments and locations of these improvements are preliminary and subject to change as development progresses. They will be finalized in future Site Plan and Construction Drawing (CD) submittals. All utilities and roads within the city ROW will be designed in accordance with the City of Aurora (COA) standards and specifications including necessary transitions. Exhibit 1 shows a color-coded view of the proposed improvements for Sub-Area 1. The exhibit shows how Sub-Area 1 and its respective utilities and roadways would be constructed if developed independently of the other sub-areas.

**2.1.3 Roadway Improvements**

A Traffic Impact Analysis (TIA) has been conducted by Felsburg Holt & Ullevig (FHU) (Ref. 4). Per the TIA, the following roadway improvements will be required for the build-out of Sub-Area 1.

- Construct the south half of a 4-lane minor arterial for E. 48th Avenue along the northern sub-area boundary in Section 22.
- Construct the full width of a 3-lane collector for E. 42<sup>nd</sup> Avenue from the western boundary of Sub-Area 1 in Section 22 to Manila Road.

- Construct the full section of a 3-lane collector for E. 32<sup>nd</sup> Avenue within the sub-area boundary and connect to Manila Road.
- Construct an interim two-lane section of E. 32<sup>nd</sup> Avenue through Sub-Area 3 and connect to Imboden Road.
  - If this is not possible due to the timing of the annexation, construct an interim section of Quail Run Drive from E. 32<sup>nd</sup> Ave to E. 48<sup>th</sup> Ave.
- Construct the full width of a 3-lane collector for Cavanaugh Road from E. 32<sup>nd</sup> Avenue, north to boundary of Sub-Area 1.
- Construct the west half of a 4-lane minor arterial for Manila Road from E. 48<sup>th</sup> Avenue to I-70.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans. Additionally, the existing roadways along the perimeter of the site will have core samples taken to ensure the pavement sections can meet traffic demands and loading. This analysis will be performed during the Site Plan process and the improvements will be shown on the construction documents.

All roadways within existing and proposed city ROW will be constructed per COA standards and specifications. Improvements to E. Colfax (SH 36) and I-70 will be per CDOT M&S Standards. Half-section roads will be constructed along the periphery. The remaining half-sections will be constructed when the adjacent property or sub-area is developed unless traffic demands require additional lanes. Per discussions with COA, additional improvements outside the project limits may be required. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site. Interior roads will be constructed to their full widths as planning areas are developed. In general, improvements will be required when the Average Daily Trips exceed the thresholds for a Level of Service D as shown in Table 1 from the NEATS refresh below.

**Table 1 - Recommended Traffic Volume Thresholds**

Roadway classification	Number of lanes each direction	Recommended daily traffic volume LOS thresholds (vehicles per day)		
		C	D	E
Collector	1	> 9,500 to 10,500	> 10,500 to 12,000	> 12,000 to 13,500
Minor Arterial	2	> 22,500 to 25,500	> 25,500 to 28,500	> 28,500 to 32,000
Minor Arterial <sup>(1)</sup>	3	>30,000 to 34,500	>34,500 to 38,500	>38,500 to 43,000
Major Arterial	2	> 30,000 to 36,000	> 36,000 to 40,000	> 40,000 to 45,000
Major Arterial	3	> 46,000 to 53,000	> 53,000 to 60,000	> 60,000 to 67,000
Major Arterial <sup>(1)</sup>	4	> 56,000 to 64,000	> 64,000 to 72,000	> 72,000 to 80,000
Expressway	2	> 38,000 to 44,000	> 44,000 to 49,000	> 49,000 to 55,000
Expressway	3	> 56,000 to 64,000	> 64,000 to 72,000	> 72,000 to 80,000

<sup>(1)</sup> System performance evaluation only.

<sup>(2)</sup> LOS D threshold volumes used for development roadway planning consistent with traffic impact study guidelines.

The full build-out of Sub-Area 1 will also require improvements at UPRR, E. Colfax, I-70, and various intersections. These improvements and their triggers are listed in Table 2 below.

**Table 2 – Crossing/Interchange**

Intersection	Improvement	Trigger
Manila/I-70	Potential interim roundabouts at I-70 on/off-ramps	At approximately 200 acres of development
Manila Road	Widening and other improvements to the existing at-grade rail crossing	At approximately 680-700 acres of development
Manila/E. Colfax	Intersection signalization	At approximately 800-820 acres of development
Manila/I-70	Ramp terminal signalization / Interchange reconstruction	At approximately 800-820 acres of development
Manila/E. 32 <sup>nd</sup> Ave	Intersection signalization	At approximately 910-930 acres of development

The improvements listed in Table 2 are based on assumed land uses. In the future, as actual users purchase and develop their property, these improvements may be reevaluated. Temporary improvements and new interchanges on I-70 will need to be approved through CDOT’s 1601 process while the improvements along E. Colfax Ave. (SH 36) will require CDOT approval by permit and coordination with UPRR, the Public Utility Commission (PUC), and other associated regulatory agencies. It is understood that the 1601 process must be initiated by the City and not the developer. It is also understood that access permits will be required for connections to a state highway and that these permits have a 1-year time limit.

The PUC will be approached with updated models as each planning area is developed to reassess the improvement triggers outlined in Table 2 above.

Traffic signal locations have been identified in the TIA. Funding for these signals and any signals identified in the future shall conform to the City’s traffic signal ordinance. It is anticipated that the costs will be shared throughout the development on a “per acre per planning area” basis. The following intersections will require traffic signals at full build-out:

- E. Colfax Ave. and Manila Road
- E. 32<sup>nd</sup> Ave. and Manila Road

All signals on Colfax Ave. (SH 36) are by warrant, require a permit separate from the Access Permit, and are to be designed and built to CDOT standards. Due to the proximity to the railroad tracks and anticipated crossing signals, the signals warrant study is more involved. Before signalized improvements can be made to Colfax Ave. (SH 36) coordination and clearances with CDOT’s headquarters railroad office will be required.

**2.1.4 Water Distribution System**

It is anticipated that the initial 100-300 acres of development will be served by a well and tank system located at the high point of the site in Planning Area 15. This would require approximately 2-5 wells drilled in the Arapahoe aquifers with the construction of a storage tank and pump system. Early estimates indicate that a 1.0-1.5 MG tank would be adequate to meet

the average day demands. Refer to the Master Utility Report (Ref. 5) included as part of this FDP submittal for a more detailed discussion on the initial water system.

As Sub-Area 1 develops beyond 100-300 acres, a connection to a city source will be needed to supply additional users. Once this connection is made, the wells will be abandoned, and the tank, pumps, and mains will be flushed. Discussions with city staff indicate that a connection in E. 56th Avenue to the existing system near the Porteos site approximately 5 miles west would be allowed. Preliminary calculations estimate that a 16" waterline would provide adequate flows to fill a 1.0-1.5-million-gallon tank. The pump(s) will provide for the average day, maximum day, maximum hour and fire flow demands. The development of the remaining sub-areas would be dependent on additional connections to city planned infrastructure along E. 48th Avenue and I-70. The system will be maintained by the metro district until a second city connection is made. Further discussions with the city will be needed to determine lines sizes, timing, and potential cost sharing/reimbursement opportunities. Water quality will be an important consideration as these connections are made. The developer may enter into agreements with surrounding landowners to fund such improvements.

The waterlines required for the build-out of Sub-Area 1 are shown on Exhibit 1 in the appendix. The layout shown is preliminary and may be revised as development progresses. The Sub-Area 1 system will be designed to integrate with the network that will be installed for the buildout of the overall development. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the sub-area and planning areas will be provided to minimize disruption in service due to water main breaks. The waterline loop for Sub-Area 1 will be established with the following improvements:

- A 16" line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue,
- A 16" line running east in E. 32<sup>nd</sup> Avenue between Quail Run Drive and Manila Road,
- A 16" line running north in Manila Road to E. 42<sup>nd</sup> Avenue,
- A 12" line running west in E. 42<sup>nd</sup> Avenue to Cavanaugh Road, and
- A 12" and 16" line running south in Cavanaugh Road to E. 32<sup>nd</sup> Avenue.

Additionally, a temporary 8" waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56<sup>th</sup> Avenue via a 16" line running north in Quail Run Drive from E. 32<sup>nd</sup> Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

### 2.1.5 Sanitary Distribution System

It is anticipated that Sub-Area 1 will initially be served by On-Site Wastewater Treatment Systems (OWTS). It is understood that systems generating 2,000 gpd or less will be permitted by the Tri-County Health Department, and systems generating more than 2,000 gpd will be regulated by the Colorado Department of Public Health and Environment (CDPHE).

Aurora Water and the Metro Wastewater Reclamation District are collaborating on a feasibility study to determine a regional wastewater treatment solution for the Box Elder Basin. If a regional wastewater treatment solution is not in place when needed by the development, a new wastewater treatment plant (WWTP) will be constructed at E. 64th Ave and Bear Gulch. This scenario will need to be assessed periodically and if required, a detailed study should begin when 70% of the predicted Sub-Area 1 OWTS loading is reached to ensure the WWTP is in service by the time Sub-Area 1 is fully developed.

To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and lateral stubs will be installed as the south or west sides of adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report for this FDP submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Sub-Area 1 will include the following sanitary improvements:

- An 8" line running west in E. 32<sup>nd</sup> Avenue from the northwest corner of PA-15A to the western boundary of Sub-Area 1,
- A combination of 8", 12", and 15" lines running east in E. 32<sup>nd</sup> Avenue to Manila Road,
- A 30" line in Manila Road from the UPRR right-of-way to E. 48<sup>th</sup> Avenue,
- A 30" line in E. 48<sup>th</sup> Avenue from Manila Road west to the approximate midpoint of PA-10,
- An 18" line in E. 48<sup>th</sup> Avenue from the midpoint of PA-10 to the western planning area boundary,
- A 12" line running north through PA-11 to E. 42<sup>nd</sup> Avenue,
- A combination of 10" and 15" lines in E. 42<sup>nd</sup> Avenue running east from the western boundary of Sub-Area 1 to Manila Road, and
- A lift station and force main in E. 48<sup>th</sup> Avenue.

### 2.1.6 Storm Drainage System

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). From there flows will be conveyed to detention ponds that will release to proposed outfall swales and channels to be discharged into their respective drainage basins. Only major channels and ponds are shown at this time. There are five stormwater ponds planned for Sub-Area 1 that will be designed to collect and discharge run-off at historic rates. One of these ponds is a full-spectrum pond. The remaining four ponds are in-line regional facilities designed to provide flood control detention for the 100-yr storm event with water quality and excess urban runoff volume (EURV) storage being provided off-line by individual users when they develop their property at a later date. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7) and the FDP Drainage Letter for Sub-Area 1 (Ref. 8).

Off-site flows from the south will be conveyed through the site via open channels and a bridge with reinforced concrete box culverts (RCBC) crossing under Manila Road and E. 32<sup>nd</sup> Avenue

where it will discharge off-site. These channel improvements are designated as Planning Areas 36 and 37 and will be constructed with development of adjacent Planning Areas 14, 16, and 17. The timing of these improvements are discussed in more detail below. Any upstream detention required will be provided by the developers of those properties. Development of significant areas may trigger the construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are developed.

Open channel stream corridors will be evaluated in greater detail for stability as they are incorporated into the land use changes. Improvements will be informed by geomorphic principals. Structural stability will be provided through natural materials like vegetation and imported rock that works cohesively with other regional infrastructure. Any deviation from this will be considered on a case-by-case basis at a later time based on a more detailed analysis of the channel and other site-specific factors. These improvements are discussed in more detail in the TransPort Master Drainage Report (Ref. 5) included in the FDP Amendment.

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards. Any deviations will be considered on a case-by-case basis. These improvements and their timing are discussed in more detail in the planning area sections below..

### 2.1.7 Parks and Open Space

Sub-area 1 will contain common open space and landscape buffers. Open space will also be provided along the channel outside the floodplain in Planning Areas 36 and 37. A trail/maintenance path with trail amenities such as landscaping, benches and trash cans will be constructed with the development of the channel. These improvements will be constructed when the drainage channel improvements are completed with development of Planning Areas 14, 16, and 17. The construction of the channel and open space improvements may be phased depending on how lots are sold and the site is developed. Refer to Exhibit 1 in the appendix for the location of the channel. The location is preliminary and subject to change as development progresses.

## 3. Planning Area Improvements

### 3.1. Overview

Sub-Area 1 of the TransPort site has been divided into 10 planning areas, 2 of which have been set aside for open space and storm drainage improvements. This report identifies the infrastructure required for each planning area. As such, it is written as if each planning area were to be developed independently of the others. Actual development of the site will occur sequentially and be driven by market demand.

Generally, any planning area can be constructed at any time if the following improvements are provided:

- Two points of access for life safety,
- A looped water system capable of supplying adequate fire flow and domestic service,
- An approved sanitary sewer system, including OWTS or connection to the COA sewer system, and
- Stormwater storage and conveyance to downstream facilities.

### 3.2. Planning Area 10 (Exhibit 2 of 9)

#### 3.2.2 General

Planning Area 10 contains approximately 156.8 acres of planned medium industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 2 is preliminary and subject to change as the planning area is developed.

#### 3.2.3 Roadway System

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 10 are described in more detail below.

- Construct the west half of a 4-lane minor arterial for Manila Road from E. 42<sup>nd</sup> Avenue to E. 48<sup>th</sup> Avenue.
- Construct the south half of a 4-lane minor arterial for E. 48<sup>th</sup> Avenue north of PA-10 from the western sub-area boundary to Manila Road.
- Construct the north half of a 3-lane collector for E. 42<sup>nd</sup> Avenue south of PA-10 from the western sub-area boundary to Manila Road.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

The PUC will be approached with updated models as each planning area is developed to reassess the improvement triggers outlined in Table 2.

#### 3.2.4 Water Distribution System

If Planning Area 10 is to be developed first, it will be served by the well and tank system described above with a possible connection to the city system near Jackson Gap Way via a 16" line in E. 56<sup>th</sup> Avenue. The waterlines required for the build-out of Planning Area 10 are shown on Exhibit 2 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-10 are described below.

- A 16" line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue,
- A 16" line in E. 32<sup>nd</sup> Avenue from Quail Run Drive to Cavanaugh Road,
- A 12" and 16" line running north in Cavanaugh Road to E. 42<sup>nd</sup> Avenue,
- A 12" line running east in E. 42<sup>nd</sup> Avenue to Manila Road,

- A 16” line running north in Manila Road to E. 48<sup>th</sup> Avenue, and
- A 24” line running west in E. 48<sup>th</sup> Avenue to the western boundary of Sub-Area 1.

Additionally, a temporary 8” waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56<sup>th</sup> Avenue via a 16” line running north in Quail Run Drive from E. 32<sup>nd</sup> Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

### 3.2.5 Sanitary Sewer System

Planning Area 10 will initially be served by On-Site Wastewater Treatment Systems (OWTS). To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and laterals stubs will be installed as adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report for this Master Plan submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Planning Area 10 will include the following sanitary improvements:

- A 30” line in Manila Road from E. 42<sup>nd</sup> Avenue to E. 48<sup>th</sup> Avenue,
- A 30” line in E. 48<sup>th</sup> Avenue from Manila Road west to the approximate midpoint of PA-10,
- An 18” line in E. 48<sup>th</sup> Avenue from the midpoint of PA-10 to the western planning area boundary

A lift station and force main are anticipated in E. 48<sup>th</sup> Ave at the build-out of Sub-Area 1 but are not needed for the development of this planning area.

### 3.2.6 Storm Drainage System

On-site runoff will be routed through street flow, piped systems, and open channels to water quality/EURV ponds (not shown). From there flows will be conveyed to a detention pond at the northwest corner of the site. This pond is designed to provide flood control detention for the 100-yr storm with off-line water quality and EURV being provided by individual users. This pond will release under E. 48<sup>th</sup> Avenue.

Upstream flows from the south will be conveyed through a crossing under E. 42<sup>nd</sup> Avenue and an open channel running through the planning area. Any upstream detention required will be provided when that planning area is developed. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the

City of Aurora and MHFD when the preliminary drainage report and site plans are being developed. .

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards. Any deviations will be considered on a case-by-case basis. .

### 3.3. Planning Area 11 (Exhibit 3 of 9)

#### 3.3.2 General

Planning Area 11 contains approximately 117.2 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 3 is preliminary and subject to change as the planning area is developed.

#### 3.3.3 Roadway System

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 11 are described in more detail below.

- Construct the west half of a 4-lane minor arterial for Manila Road from the storm crossing in PA-36 to E. 42<sup>nd</sup> Avenue.
- Construct the south half of a 3-lane collector for E. 42<sup>nd</sup> Avenue north of PA-11 from the western planning area boundary to Manila Road.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

#### 3.3.4 Water Distribution System

If Planning Area 11 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 11 are shown on Exhibit 3 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-11 are described below.

- A 16” line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue,
- A 16” line running east in E. 32<sup>nd</sup> Avenue to Cavanaugh Road,
- A 16” and 12” line running north in Cavanaugh Road to E. 42<sup>nd</sup> Avenue,
- A 12” line running east in E. 42<sup>nd</sup> Avenue to the western boundary of the planning area,

- and
- A 16" line running south in Manila Road to the just south of the RCBC crossing.

Additionally, a temporary 8" waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56th Avenue via a 16" line running north in Quail Run Drive from E. 32nd Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

### 3.3.5 Sanitary Sewer System

Planning Area 11 will be served by On-Site Wastewater Treatment Systems (OWTS). To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and lateral stubs will be installed as adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report for this FDP submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Planning Area 11 will include the following sanitary improvements:

- A 30" line in Manila Road from the crossing in PA-36 to E. 42nd Avenue,
- A combination of 12" & 15" lines running east in E. 42nd Avenue from the western planning area boundary to Manila Road,
- A 12" line running north through PA-11 from the northeast corner of PA-14 to E. 42nd Avenue.

### 3.3.6 Storm Drainage System

On-site runoff will be routed through street flow, piped systems, and open channels to water quality/EURV ponds (not shown). From there flows will be conveyed through an open channel crossing PA-10 to a detention pond at the northern edge of PA-10. This pond is designed to provide detention for the 100-yr storm with water quality and EURV being provided by individual users. This pond will be under E. 42nd Avenue. A detention pond will also be constructed at Manila Road in PA-36 to capture flows from the southern portion of PA-11. Ultimately, a crossing under Manila Road will need to be constructed to accommodate the discharge flows from this pond. The configuration of the pond and outlet structure may be phased depending on the needs of the development as long as flows are released at historic rates. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Off-site flows from the south will be conveyed via the channel and bridge/RCBC crossing described above. Any upstream detention required will be provided when that planning area is developed.

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are being developed.

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis.

## 3.4. Planning Area 12 (Exhibit 4 of 9)

### 3.4.2 General

Planning Area 12 contains approximately 60.8 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 4 is preliminary and subject to change as the planning area is developed.

### 3.4.3 Roadway System

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 12 are described in more detail below.

- Construct the west half of a 4-lane minor arterial for Manila Road from E. 32nd Avenue to the culvert crossing in PA-36.
- Construct the north half of a 3-lane collector for E. 32nd Avenue south of PA-12 from the western boundary of Planning Area 12 to Manila Road.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

### 3.4.4 Water Distribution System

If Planning Area 12 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 12 are shown on Exhibit 4 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-12 are described below.

- A 16" line from the proposed water tank will run north to E. 32nd Avenue,
- A 16" line running east in E. 32nd Avenue with a stub to Manila Road,
- A 16" line running north in Manila Road to the storm crossing in PA-36.

Additionally, a temporary 8" waterline will be installed to connect the groundwater wells to the tank and pump system.

### 3.4.5 Sanitary Sewer System

Planning Area 12 will be served by On-Site Wastewater Treatment Systems (OWTS). To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and laterals stubs will be installed as adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report (Ref. 5) for this FDP submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Planning Area 12 will include the following sanitary improvements:

- A 30" line in Manila Road from E. 32<sup>nd</sup> Avenue to the culvert crossing in PA-36.

### 3.4.6 Storm Drainage System

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). From there flows will be conveyed to a detention pond at the north end of the site. This pond is designed to provide detention for the 100-yr storm with water quality and EURV detention being provided by individual users. Ultimately, a crossing under Manila Road will need to be constructed to accommodate the discharge flows from this pond. The configuration of the pond and outlet structure may be phased depending on the needs of the development as long as flows are released at historic rates. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Off-site flows from the west and south will be directed to the same bridge and RCBCs crossing under Manila Road. Any upstream detention required will be provided when that planning area is developed.

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are being developed.

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis.

## 3.5. Planning Area 13 (Exhibit 5 of 9)

### 3.5.2 General

Planning Area 13 contains approximately 160.2 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 5 is preliminary and subject to change as the planning area is developed.

### 3.5.3 Roadway System

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 13 are described in more detail below.

- Construct the west half of a 3-lane collector for Cavanaugh Road from E. 32<sup>nd</sup> Avenue to the northern boundary of PA-13.
- Construct the north half of a 3-lane collector for E. 32<sup>nd</sup> Avenue from the western boundary of PA-13 to Cavanaugh Road.
- Construct an interim 2-lane section of E. 32<sup>nd</sup> Avenue from Cavanaugh Road to Manila Road.
- Construct an interim 2-lane section of E. 32<sup>nd</sup> Avenue from the western boundary of PA-13, through Sub-Area 3 and connect to Imboden Road.
  - If this is not possible due to the timing of the annexation, construct an interim section of Quail Run Drive from E. 32<sup>nd</sup> Ave to E. 48<sup>th</sup> Ave.

Refer to the roadway sections shown on Exhibit 5, for section details. Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

### 3.5.4 Water Distribution System

If Planning Area 13 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 13 are shown on Exhibit 5 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-13 are described below.

- A 16" line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue,
- A 16" line running east in E. 32<sup>nd</sup> Avenue with a stub to Manila Road, and
- A 16" line running north in Cavanaugh Road to the north boundary of Planning Area 13.

Additionally, a temporary 8" waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56<sup>th</sup> Avenue via a 16" line running north in Quail Run Drive from E. 32<sup>nd</sup> Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

**3.5.5 Sanitary Sewer System**

Planning Area 13 will be served by On-Site Wastewater Treatment Systems (OWTS). No sanitary mains will need to be constructed in the roadways for the development of PA-14 as only the north half of E. 32<sup>nd</sup> Ave is being constructed.

**3.5.6 Storm Drainage System**

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). From there flows will be conveyed to a full-spectrum pond in PA-13 and an in-line regional detention pond in PA-14 that will be designed to provide detention for the 100-yr storm with water quality and EURV detention being provided by individual users. Additionally, there are several storm water crossings in E. 32<sup>nd</sup> Ave, Quail Run Road and Quail Run Drive. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHPD when the preliminary drainage report and site plans are being developed..

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis.

**3.6. Planning Area 14 (Exhibit 6 of 9)**

**3.6.2 General**

Planning Area 14 contains approximately 251.1 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 6 is preliminary and subject to change as the planning area is developed.

**3.6.3 Roadway System**

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 14 are described in more detail below.

- Construct the east half of a 3-lane collector for Cavanaugh Road from E. 32<sup>nd</sup> Avenue to the northern boundary of PA-14.
- Construct the north half of a 3-lane collector for E. 32<sup>nd</sup> Avenue from Cavanaugh Road to the eastern boundary of PA-14.
- Construct an interim 2-lane section of E. 32<sup>nd</sup> Avenue from the eastern boundary of PA-14 to Manila Road.

- Construct an interim 2-lane section of E. 32<sup>nd</sup> Avenue from Cavanaugh Road, west through Sub-Area 3 and connect to Imboden Road.
- If this is not possible due to the timing of the annexation, construct an interim section of Quail Run Drive from E. 32<sup>nd</sup> Ave to E. 48<sup>th</sup> Ave.

Per the TIA, roundabouts may improve traffic flow at some locations, specifically for large trucks. Roundabouts could also delay major improvements required for the I-70 interchange, even if they are implemented on a temporary basis. Therefore, temporary roundabouts are shown to be constructed at the I-70 ramp terminals when development has exceeded 200 acres. Once the threshold of 800 acres is surpassed, the roundabouts will be demolished, and the interchange will be reconstructed with signalized ramp terminals. The temporary roundabouts are shown on Exhibit 6.

Additional roadway improvements within the planning area may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

**3.6.4 Water Distribution System**

If Planning Area 14 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 14 are shown on Exhibit 6 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-14 are described below.

- A 16” line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue,
- A 16” line running east in E. 32<sup>nd</sup> Avenue with a stub to Manila Road, and
- A 16” line running north in Cavanaugh Road to the north boundary of Planning Area 14.

Additionally, a temporary 8” waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56<sup>th</sup> Avenue via a 16” line running north in Quail Run Drive from E. 32<sup>nd</sup> Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

**3.6.5 Sanitary Sewer System**

Planning Area 14 will be served by On-Site Wastewater Treatment Systems (OWTS). No sanitary mains will need to be constructed in the roadways for the development of PA-14.

**3.6.6 Storm Drainage System**

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). From there flows will be conveyed to two detention ponds. One pond is at the northern edge of PA-14 and the other is in PA-36. Both ponds are designed to

provide flood control detention for the 100-yr storm event with water quality and EURV being provided by individual users. The channel in PA-36 will need to be constructed to accommodate construction adjacent to the channel. Additionally, there are several storm water crossings in E. 32<sup>nd</sup> Ave. Quail Run Road, Quail Run Drive and Manila Road. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are being developed.

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis.

### 3.7. Planning Area 15 (Exhibit 7 of 9)

#### 3.7.2 General

Planning Area 15 consists of 3 sub-planning areas: PA-15A, PA-15B and PA-15T. PA-15B consists of 2.5 acres dedicated for public land use for a permanent fire station. PA-15T consists of 1.75 acres dedicated for public land use for a temporary fire station. The fire stations are discussed in more detail in Section 4. Life Safety. The infrastructure for PA-15A will also serve PA-15B and PA-15T.

PA-15A contains approximately 150.6 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 7 is preliminary and subject to change as the planning area is developed.

#### 3.7.3 Roadway System

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 15 are described in more detail below.

- Construct the south half of a 3-lane collector for E. 32<sup>nd</sup> Avenue from the western boundary of PA-15 to Cavanaugh Road.
- Construct an interim 2-lane section of E. 32<sup>nd</sup> Avenue from Cavanaugh Road to Manila Road.
- Construct an interim 2-lane section of E. 32<sup>nd</sup> Avenue from the western boundary of PA-15, through Sub-Area 3 and connect to Imboden Road.

- If this is not possible due to the timing of the annexation, construct an interim section of Quail Run Drive from E. 32<sup>nd</sup> Ave to E. 48<sup>th</sup> Ave.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

#### 3.7.4 Water Distribution System

If Planning Area 15 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 15 are shown on Exhibit 7 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-15 are described below.

- A 16" line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue, and
- A 16" line running east in E. 32<sup>nd</sup> Avenue from the western boundary of PA-15 to Cavanaugh Road.

Additionally, a temporary 8" waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56<sup>th</sup> Avenue via a 16" line running north in Quail Run Drive from E. 32<sup>nd</sup> Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

#### 3.7.5 Sanitary Sewer System

Planning Area 15 will be served by On-Site Wastewater Treatment Systems (OWTS). To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and laterals stubs will be installed as adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report for this FDP submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Planning Area 15 will include the following sanitary improvements:

- An 8" line in E. 32<sup>nd</sup> Avenue at the northwestern corner of PA-15 to the western boundary of PA-15.
- A combination of 8", 12", and 15" lines running east in E. 32<sup>nd</sup> Avenue with a stub to Manila Road.

**3.7.6 Storm Drainage System**

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). From there flows will be conveyed to one detention pond near the northwest corner of Planning Area 16. This pond is designed to provide flood control detention for the 100-yr storm with water quality and EURV provided by individual sites. Additionally, there are several storm water crossings in E. 32<sup>nd</sup> Ave. Quail Run Road and Quail Run Drive. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are being developed..

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis.

**3.8. Planning Area 16 (Exhibit 8 of 9)**

**3.8.2 General**

Planning Area 16 contains approximately 174.5 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial and collector roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 8 is preliminary and subject to change as the planning area is developed.

**3.8.3 Roadway System**

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 16 are described in more detail below.

- Construct an interim 2-lane section of 32nd Avenue through Sub-Area 3 and connect to Imboden Road.
  - If this is not possible due to the timing of the annexation, construct an interim section of Quail Run Drive from E. 32nd Ave to E. 48th Ave.
- Construct the south half of a 3-lane collector for E. 32<sup>nd</sup> Avenue from Cavanaugh Road to the eastern boundary of PA-16.
- Construct an interim 2-lane section of E. 32nd Avenue from the eastern boundary of PA-16 to Manila Road.
- Construct an interim 2-lane section of E. 32nd Avenue from Cavanaugh Road, west through Sub-Area 3 and connect to Imboden Road.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

**3.8.4 Water Distribution System**

If Planning Area 16 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 16 are shown on Exhibit 8 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-16 are described below.

- A 16” line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue.
- A 16” line running east in E. 32<sup>nd</sup> Ave from the tank to the eastern boundary of PA-16.

Additionally, a temporary 8” waterline will be installed to connect the groundwater wells to the tank and pump system.

Also shown is a possible connection to the city system in E. 56<sup>th</sup> Avenue via a 16” line running north in Quail Run Drive from E. 32<sup>nd</sup> Avenue. This connection is anticipated at 100-300 acres of development. As such, it may or may not be made with the development of this planning area.

**3.8.5 Sanitary Sewer System**

Planning Area 16 will be served by On-Site Wastewater Treatment Systems (OWTS). To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and laterals stubs will be installed as adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report for this FDP submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Planning Area 16 will include the following sanitary improvements:

- An 8” line in E. 32<sup>nd</sup> Avenue at the northwestern corner of PA-15 to the western boundary of Sub-Area 1.
- A combination of 8”, 12”, and 15” lines running east from the mid-point of PA-15 in E. 32<sup>nd</sup> Avenue with a stub to Manila Road.

**3.8.6 Storm Drainage System**

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). Runoff from PA-15 and the western portion of the PA-16 will flow to the in-line regional pond at 32<sup>nd</sup> Ave. in PA-16. The majority of the runoff from PA-16 will be conveyed to the channel in PA-37, then cross under E. 32<sup>nd</sup> Ave. to the channel and detention pond in Planning Area 36. This pond will release and cross under Manila Road. Both ponds are

designed to provide detention for the 100-yr storm with water quality and EURV being provided by individual sites. Additionally, there are several storm water crossings in E. 32<sup>nd</sup> Ave. Quail Run Road, Quail Run Drive and Manila Road. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).  
 Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are being developed..

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis..

**3.9. Planning Area 17 (Exhibit 9 of 9)**

**3.9.2 General**

Planning Area 17 contains approximately 23.2 acres of planned heavy industrial development. The infrastructure necessary for the build-out of this area includes the construction of arterial roadways, water mains, sanitary sewer mains, storm sewers, drainage channels and detention ponds. The proposed infrastructure shown on Sheet 9 is preliminary and subject to change as the planning area is developed.

**3.9.3 Roadway System**

All roadways within city ROW will be constructed per COA standards and specifications including necessary transitions. Half-section roads will be constructed along the periphery of the planning area. The remaining half-sections will be constructed when the adjacent property is developed unless traffic demands require additional lanes. Interior roads will be constructed to their full widths. The roadway improvements required for Planning Area 17 are described in more detail below.

- Construct the west half of a 4-lane minor arterial for Manila Road from the northern boundary of PA-17 to the UPRR right-of-way.
- Construct the north half of a 3-lane collector for E. 32<sup>nd</sup> Avenue north of PA-17 from the channel to Manila Road.

Additional roads may be required per Section 4.04 of the Roadway Design and Construction Specifications. This will be addressed in subsequent Detailed Traffic Studies and Site Plans for the site.

**3.9.4 Water Distribution System**

If Planning Area 17 is to be developed first, it will be served by the well and tank system described above. The waterlines required for the build-out of Planning Area 17 are shown on Exhibit 9 in the appendix. The layout shown is preliminary and may be revised as development progresses. Waterlines will be designed and constructed per COA standards and specifications. Adequate looping within the planning area will be provided to minimize disruption in service due to water main breaks. This will be shown on future Site Plan submittals. The waterlines to be installed with the development of PA-17 are described below.

- A 16" line from the proposed water tank will run north to E. 32<sup>nd</sup> Avenue.
- A 16" line running east in E. 32<sup>nd</sup> Avenue to the northwest corner of PA-17.

Additionally, a temporary 8" waterline will be installed to connect the groundwater wells to the tank and pump system.

**3.9.5 Sanitary Sewer System**

Planning Area 17 will be served by On-Site Wastewater Treatment Systems (OWTS). To ensure the infrastructure is in place when the time comes for individual users to connect to the regional or city sewer system, sanitary mains and laterals stubs will be installed as adjacent roads are constructed. The sewer mains have been sized according to COA design criteria and account for flows from the off-site parcels that fall within the service area boundary shown in the Master Utility Report for this FDP submittal.

Per COA criteria, sanitary sewer lines are to be constructed to the south and west of roadway centerlines. The build-out of Planning Area 17 will include the following sanitary improvements:

- A 30" line in Manila Road from the UPRR right-of-way to E. 32<sup>nd</sup> Avenue.
- A 15" line in E. 32<sup>nd</sup> Avenue from the western boundary of PA-17 to Manila Road.

**3.9.6 Storm Drainage System**

On-site runoff will be routed through street flow, piped systems, and open channels to water quality ponds (not shown). From there flows will be conveyed north across 32<sup>nd</sup> Ave. and Planning area 12 to the channel in PA-36 where a detention pond and crossing at Manila will be constructed. The configuration and construction of the channel, pond and outlet structure may be phased depending on the needs of the development as long as flows are released at historic rates. These improvements are discussed in more detail in the companion Master Drainage Report for TransPort (Ref. 7).

Off-site flows from the south will be directed to the same channel and bridge with RCBCs crossing under Manila Road. Any upstream detention required will be provided when that planning area is developed.

Development of significant areas may trigger the requirement for construction of off-site channel or detention improvements. The need for off-site drainage improvements will be evaluated by the City of Aurora and MHFD when the preliminary drainage report and site plans are being developed.

In general, all drainage facilities will meet City of Aurora and Mile High Flood District Standards at the time of development. Any deviation from this will be considered on a case-by-case basis.

### 3.10. Planning Areas 36 & 37

#### 3.10.1 Parks and Open Space

As discussed above, Planning Areas 36 and 37 will include the channel for Crooked Run, a detention pond and a trail/maintenance path with trail amenities such as landscaping, benches and trash cans to encourage trail use. The trail and amenities will be built with construction of the channel, which will be required to support development of the adjacent planning areas as described above. The construction of the channel will be phased with actual development as parcels are sold. This will be detailed in future Site Plans.

#### 4. Life Safety

The developer will construct on-site, and off-site infrastructure needed to establish two points of emergency access to the overall site and each internal phase of construction. The primary point of access will be at Manila Road and the future alignment of 32<sup>nd</sup> Ave. The second point of access will be at Imboden Road and 32<sup>nd</sup> Ave. If the property in Section 29 is not annexed in to support the second connection, an alternate point of connection will be constructed at 48<sup>th</sup> Ave. and the future alignment of Quail Run Drive.

The developer will construct a looped water supply and fire hydrants as required by the adopted fire code and city ordinances. Some initial development will be supplied with single water service to promote water quality within the system.

It is anticipated that this development will initially be serviced by Bennet Fire Station #92. As the site developed, a temporary fire station may be required before a permanent location is established on-site. If required, the developer will provide a temporary fire station by means of a modular structure at the direction of the Fire Chief or his or her designee. Dedicated for public land use, the temporary fire station will be located in Planning Area 15T and the permanent fire station will be located in Planning Area 15B as shown in Appendix A, Exhibit 1.

A Whelen Warning System is anticipated for this site and will be located in Planning Area 15B with the permanent fire station.

#### 5. Conclusion

This Public Improvement Plan Report was prepared as a companion document to the FDP for Sub-Area 1. It outlines the infrastructure improvements required for development of Sub-Area 1. As detailed above, the development of Sub-Area 1 is anticipated to be broken up into 10 planning areas, 2 of which are areas for drainage and open space. These improvements are preliminary and may change as planning areas are developed. Any changes will be captured in future revisions.

### 6. References

1. TransPort Colorado Framework Development Plan, LAI Design, Inc. April 2019
2. TransPort Colorado FDP Amendment, Amendment to the Public Improvement Plan, CVL Consultants of Colorado, Inc., April 2019
3. Framework Development Plan Application, N.E.S. Inc., September 26, 2006
4. TransPort Colorado Traffic Impact Analysis, Felsburg Holt & Ullevig, April 2019
5. TransPort Colorado Sub-Area 1 Master Utility Study, CVL Consultants of Colorado, Inc., April 2019
6. TransPort Colorado Master Utility Study, CVL Consultants of Colorado, Inc., April 2019
7. TransPort Colorado Master Drainage Report, CVL Consultants of Colorado, Inc., April 2019
8. Transport/Front Range Airport Area Master Utilities Plan, Matrix Design Group, Inc. 2007

**APPENDIX A**  
**E1 - Public Improvement Plan**



# TransPort Colorado

## Logistics & Commerce Park

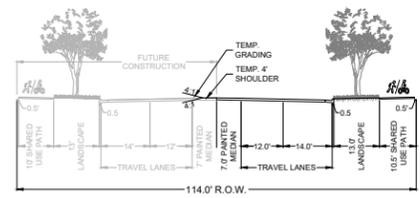
### Sub-Area 1

### Public Improvement Plan

### Tab #13

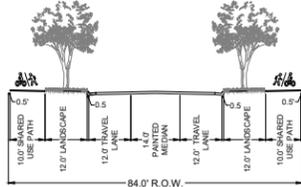
### Ultimate Build-Out

#### ROADWAY SECTIONS:

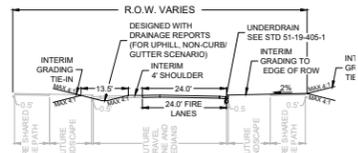


FOUR LANE MINOR ARTERIAL WITH SEPARATED SHARED USE PATH - HALF STREET IMPROVEMENT (S1.5) (MANILA ROAD, E 48TH AVENUE)

NOTE: CONSTRUCTION OF THE FULL MEDIAN MAY BE REQUIRED FOR AUXILIARY LANES AT INTERSECTIONS

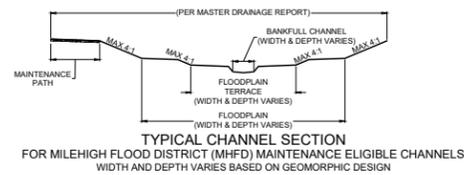


THREE LANE COLLECTOR (S1.3) (CAVANAUGH ROAD, E 42ND AVENUE, E 32ND AVENUE)



INTERIM SECTION INTERIM CONDITION FIRE LANE & PUBLIC ACCESS (E 32ND AVENUE & QUAIL RUN ROAD)

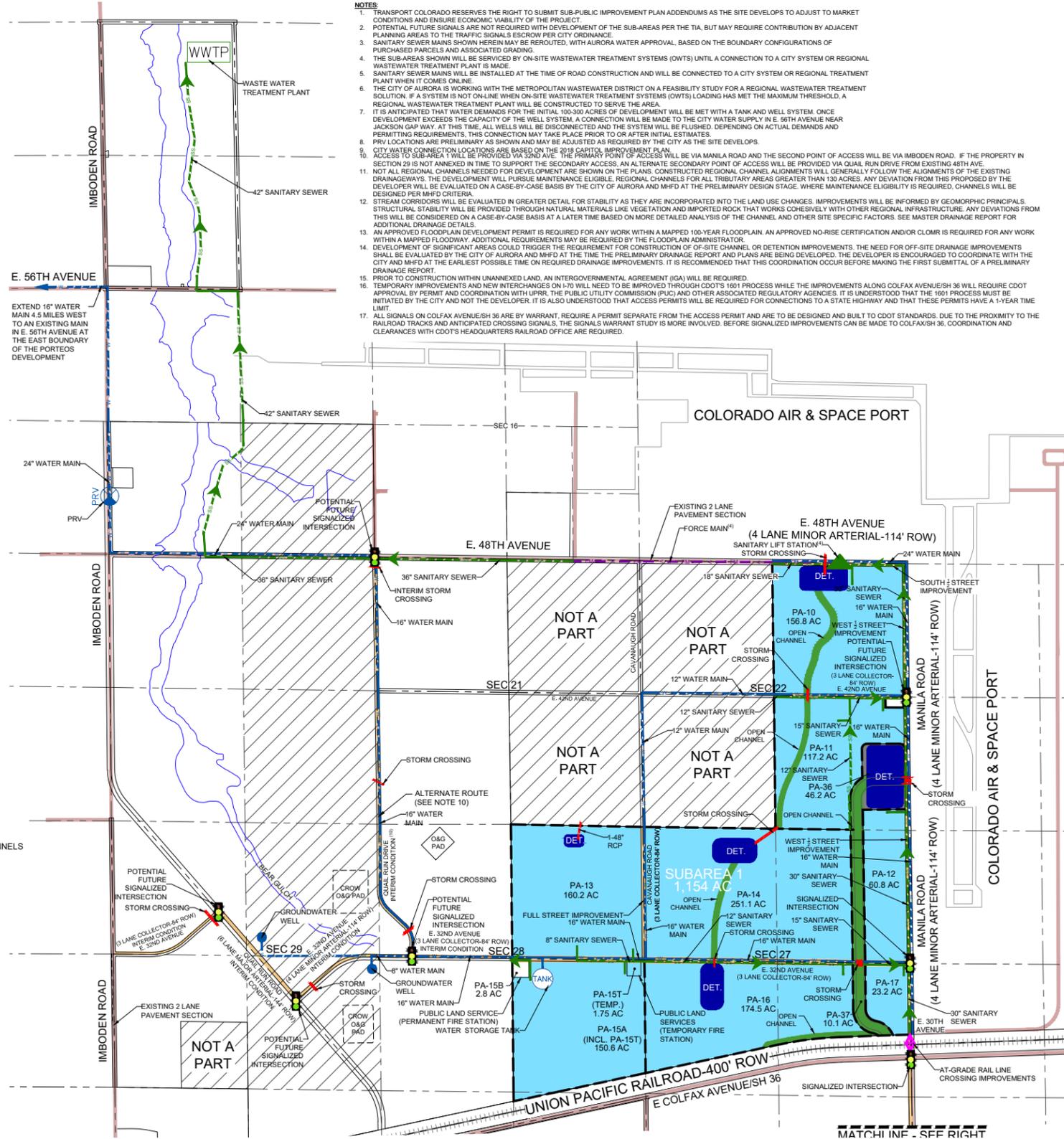
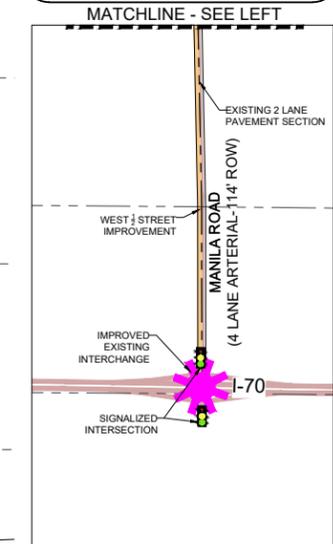
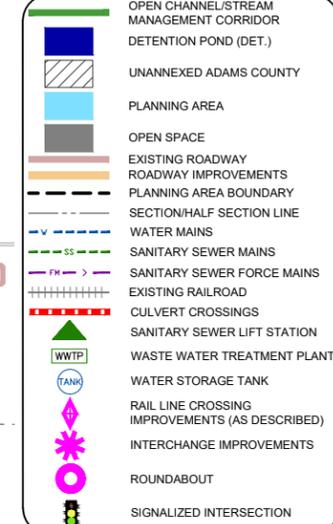
#### DRAINAGE CHANNEL SECTIONS:



#### NOTES:

- TRANSPORT COLORADO RESERVES THE RIGHT TO SUBMIT SUB-PUBLIC IMPROVEMENT PLAN ADDENDUMS AS THE SITE DEVELOPS TO ADJUST TO MARKET CONDITIONS AND ENSURE ECONOMIC VIABILITY OF THE PROJECT.
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- PRV LOCATIONS ARE PRELIMINARY AS SHOWN AND MAY BE ADJUSTED AS REQUIRED BY THE CITY AS THE SITE DEVELOPS.
- CITY WATER CONNECTION LOCATIONS ARE BASED ON THE 2018 CAPITOL IMPROVEMENT PLAN.
- ACCESS TO SUB-AREA 1 WILL BE PROVIDED VIA 32ND AVE. THE PRIMARY POINT OF ACCESS WILL BE VIA MANILA ROAD AND THE SECOND POINT OF ACCESS WILL BE VIA IMBODEN ROAD. IF THE PROPERTY IN SECTION 29 IS NOT ANNEXED IN TIME TO SUPPORT THE SECONDARY ACCESS, AN ALTERNATE SECONDARY POINT OF ACCESS WILL BE PROVIDED VIA QUAIL RUN DRIVE FROM EXISTING 48TH AVE.
- NOT ALL REGIONAL CHANNELS NEEDED FOR DEVELOPMENT ARE SHOWN ON THE PLANS. CONSTRUCTED REGIONAL CHANNEL ALIGNMENTS WILL GENERALLY FOLLOW THE ALIGNMENTS OF THE EXISTING DRAINAGEWAYS. THE DEVELOPMENT WILL PURSUE MAINTENANCE ELIGIBLE REGIONAL CHANNELS FOR ALL TRIBUTARY AREAS GREATER THAN 130 ACRES. ANY DEVIATION FROM THIS PROPOSED BY THE DEVELOPER WILL BE EVALUATED ON A CASE-BY-CASE BASIS BY THE CITY OF AURORA AND MHFD AT THE PRELIMINARY DESIGN STAGE. WHERE MAINTENANCE ELIGIBILITY IS REQUIRED, CHANNELS WILL BE DESIGNED PER MHFD CRITERIA.
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- PRIOR TO CONSTRUCTION WITHIN UNANNEXED LAND, AN INTERGOVERNMENTAL AGREEMENT (IGA) WILL BE REQUIRED.
- TEMPORARY IMPROVEMENTS AND NEW INTERCHANGES ON I-70 WILL NEED TO BE IMPROVED THROUGH CDOT'S 1601 PROCESS WHILE THE IMPROVEMENTS ALONG COLFAX AVENUE/SH 36 WILL REQUIRE CDOT APPROVAL BY PERMIT AND COORDINATION WITH UPRR. THE PUBLIC UTILITY COMMISSION (PUC) AND OTHER ASSOCIATED REGULATORY AGENCIES. IT IS UNDERSTOOD THAT THE 1601 PROCESS MUST BE INITIATED BY THE CITY AND NOT THE DEVELOPER. IT IS ALSO UNDERSTOOD THAT ACCESS PERMITS WILL BE REQUIRED FOR CONNECTION TO A STATE HIGHWAY AND THAT THESE PERMITS HAVE A 1-YEAR TIME LIMIT.
- ALL SIGNALS ON COLFAX AVENUE/SH 36 ARE BY WARRANT. REQUIRE A PERMIT SEPARATE FROM THE ACCESS PERMIT AND ARE TO BE DESIGNED AND BUILT TO CDOT STANDARDS. DUE TO THE PROXIMITY TO THE RAILROAD TRACKS AND ANTICIPATED CROSSING SIGNALS, THE SIGNALS WARRANT STUDY IS MORE INVOLVED. BEFORE SIGNALIZED IMPROVEMENTS CAN BE MADE TO COLFAX/SH 36, COORDINATION AND CLEARANCES WITH CDOT'S HEADQUARTERS RAILROAD OFFICE ARE REQUIRED.

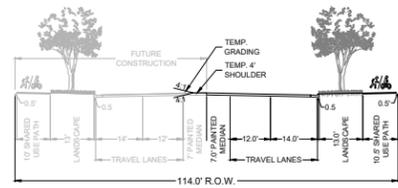
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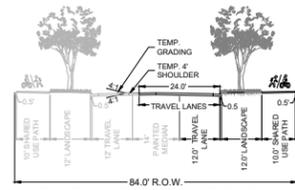
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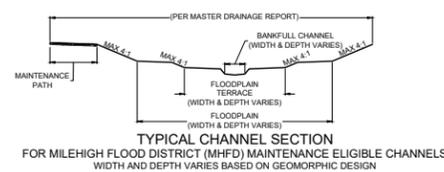


**FOUR LANE MINOR ARTERIAL WITH SEPARATED SHARED USE PATH - HALF STREET IMPROVEMENT (S1.5) (MANILA ROAD & E 48TH AVENUE)**  
NOTE: CONSTRUCTION OF THE FULL MEDIAN MAY BE REQUIRED FOR AUXILIARY LANES AT INTERSECTIONS



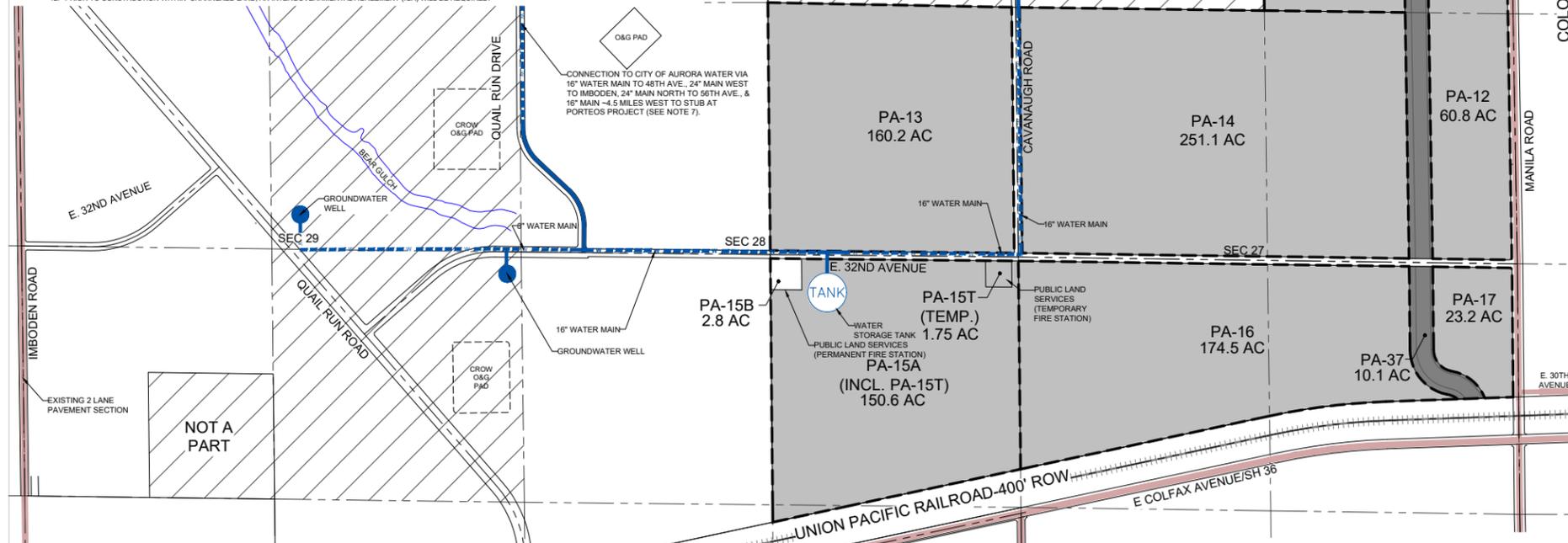
**THREE LANE COLLECTOR (S1.3) HALF STREET IMPROVEMENT (E 42ND AVENUE)**

## DRAINAGE CHANNEL SECTIONS:



**TYPICAL CHANNEL SECTION FOR MILEHIGH FLOOD DISTRICT (MHFD) MAINTENANCE ELIGIBLE CHANNELS**  
WIDTH AND DEPTH VARIES BASED ON GEOMORPHIC DESIGN

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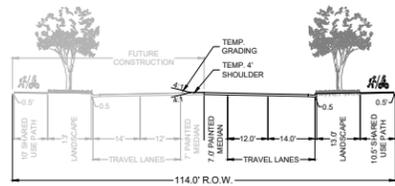
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**TRANSPORT COLORADO**  
LOGISTICS & COMMERCE PARK

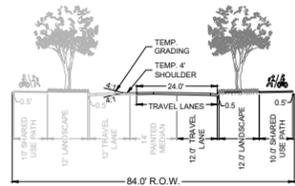
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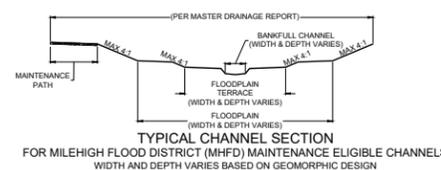
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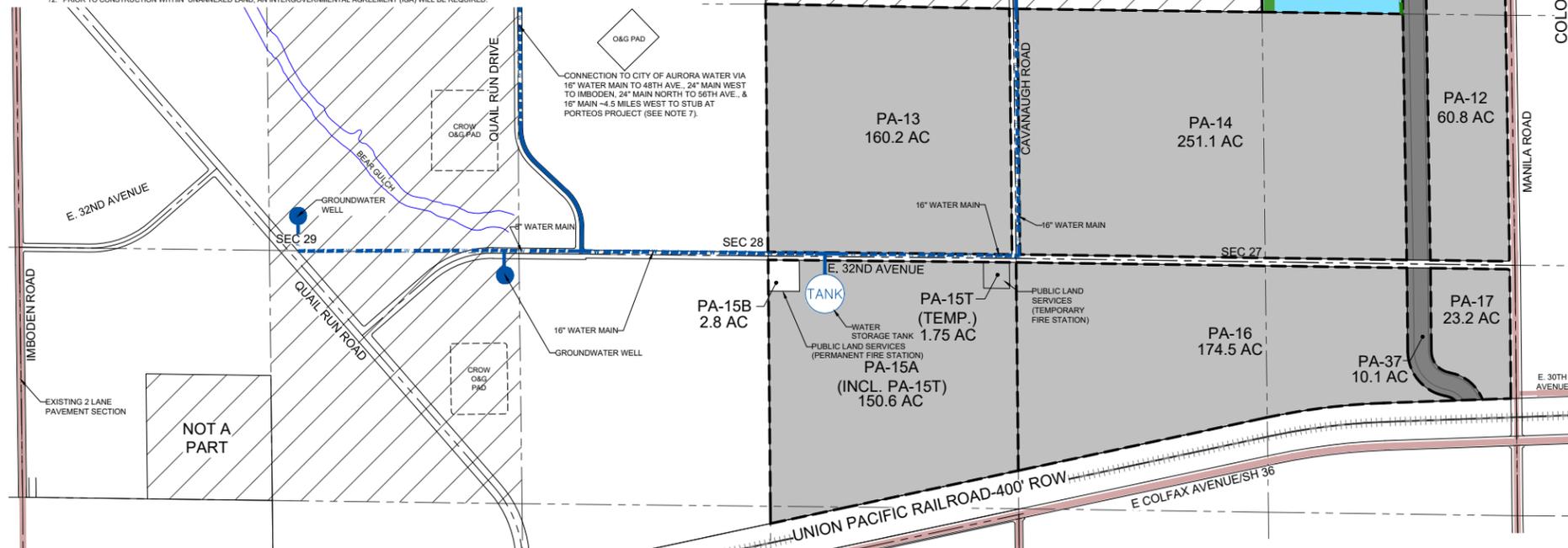
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No.	Date	Appr.	Date	Init.

1688 E. 17th Street, Suite 404 Englewood, CO 80150 Tel: 727-442-9888 www.civil.com www.transportcolorado.com
<b>CIVIL</b> CONSULTANTS
TRANSPORT COLORADO, LLC 1500 17th Street, Suite 404 DENVER, COLORADO 80111
TRANSPORT COLORADO SUB-AREA 1 PUBLIC IMPROVEMENT PLAN PA-11
SCALE: AS SHOWN
DRAWN BY: CA
CHECKED BY: CA
DATE: SEPTEMBER 2020
FILE NO: 8130292103
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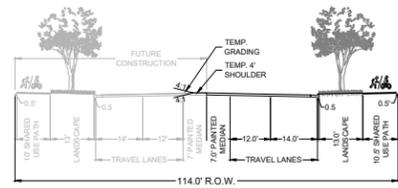


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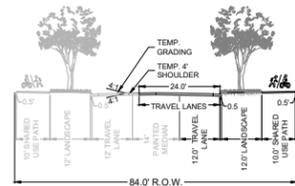
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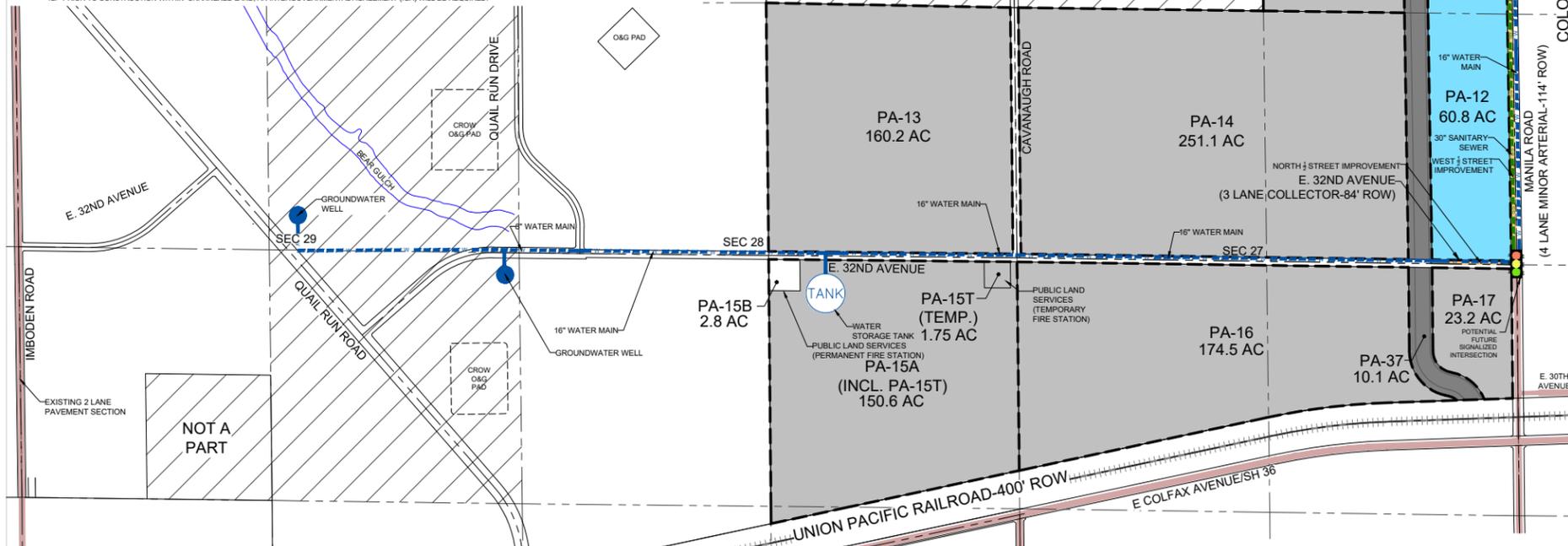
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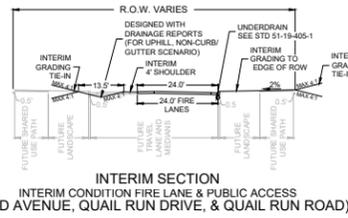
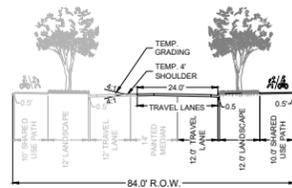
- OPEN CHANNEL/STREAM MANAGEMENT CORRIDOR
- DETENTION POND (DET.)
- UNANNEXED ADAMS COUNTY
- PLANNING AREA
- OPEN SPACE
- EXISTING ROADWAY
- ROADWAY IMPROVEMENTS
- PLANNING AREA BOUNDARY
- SECTION/HALF SECTION LINE
- WATER MAINS
- SANITARY SEWER MAINS
- SANITARY SEWER FORCE MAINS
- EXISTING RAILROAD
- CULVERT CROSSINGS
- SANITARY SEWER LIFT STATION
- WASTE WATER TREATMENT PLANT
- WATER STORAGE TANK
- RAIL LINE CROSSING
- IMPROVEMENTS (AS DESCRIBED)
- INTERCHANGE IMPROVEMENTS
- ROUNDABOUT
- SIGNALIZED INTERSECTION



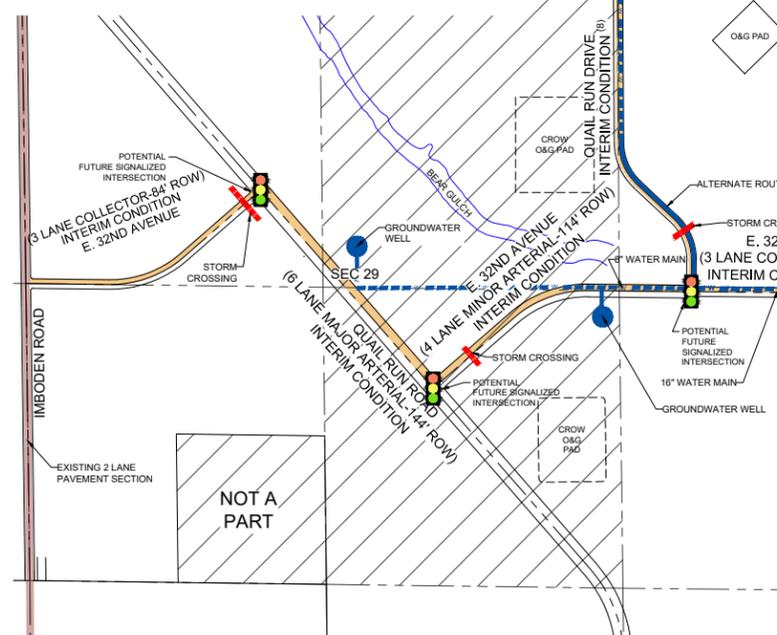
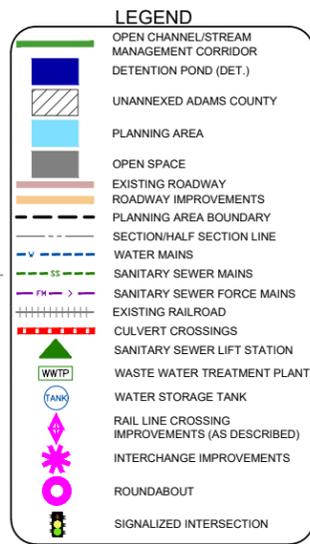
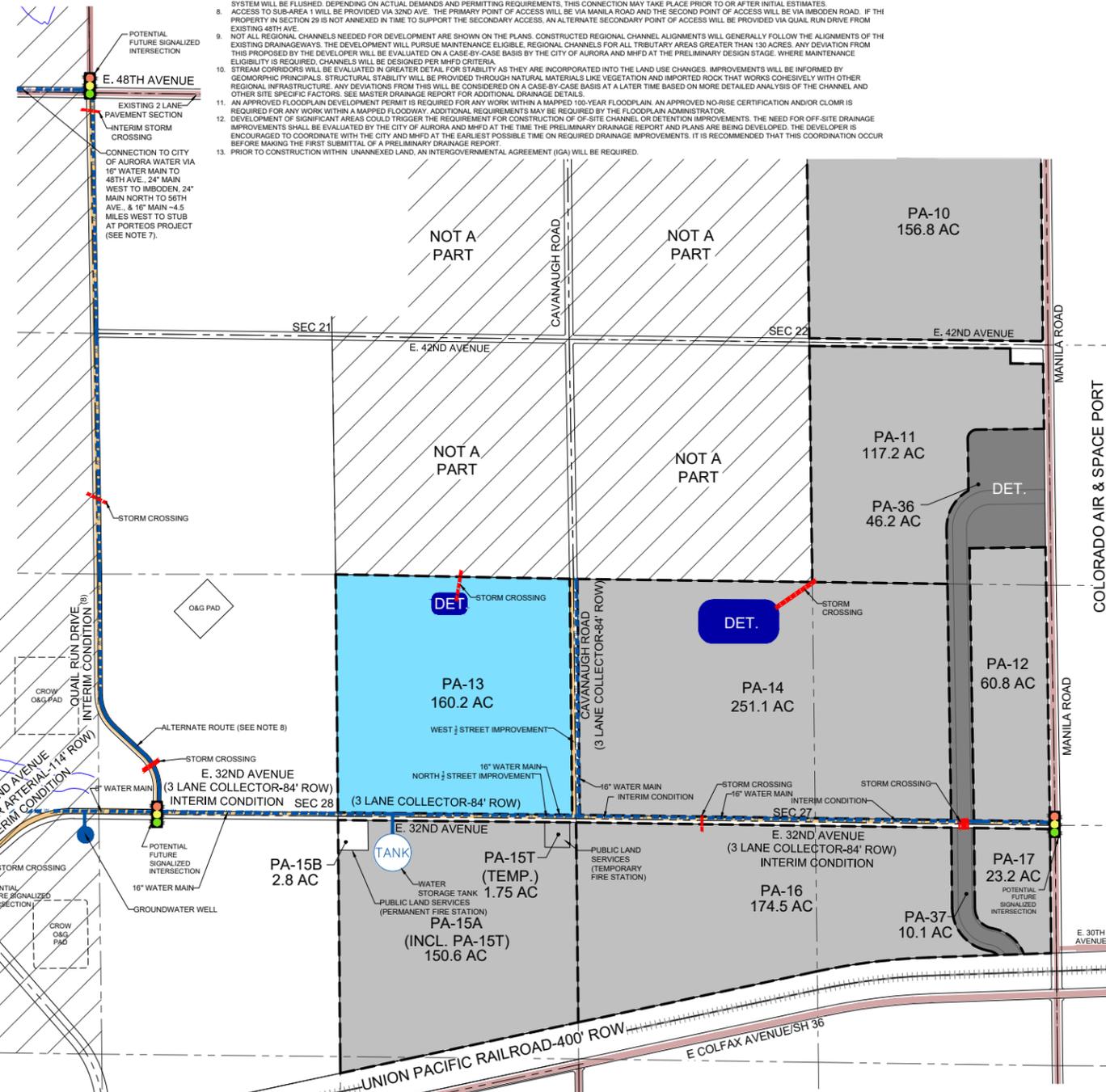
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# TransPort Colorado Logistics & Commerce Park Sub-Area 1 Public Improvement Plan Tab #13

### ROADWAY SECTIONS:



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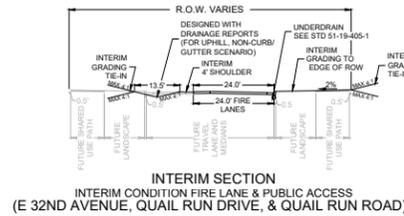
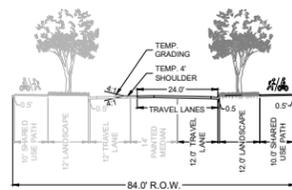
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**TRANSPORT COLORADO**  
LOGISTICS & COMMERCE PARK

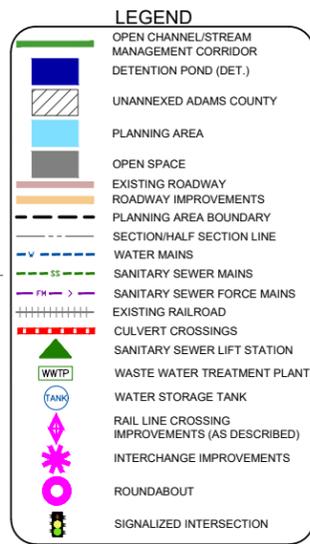
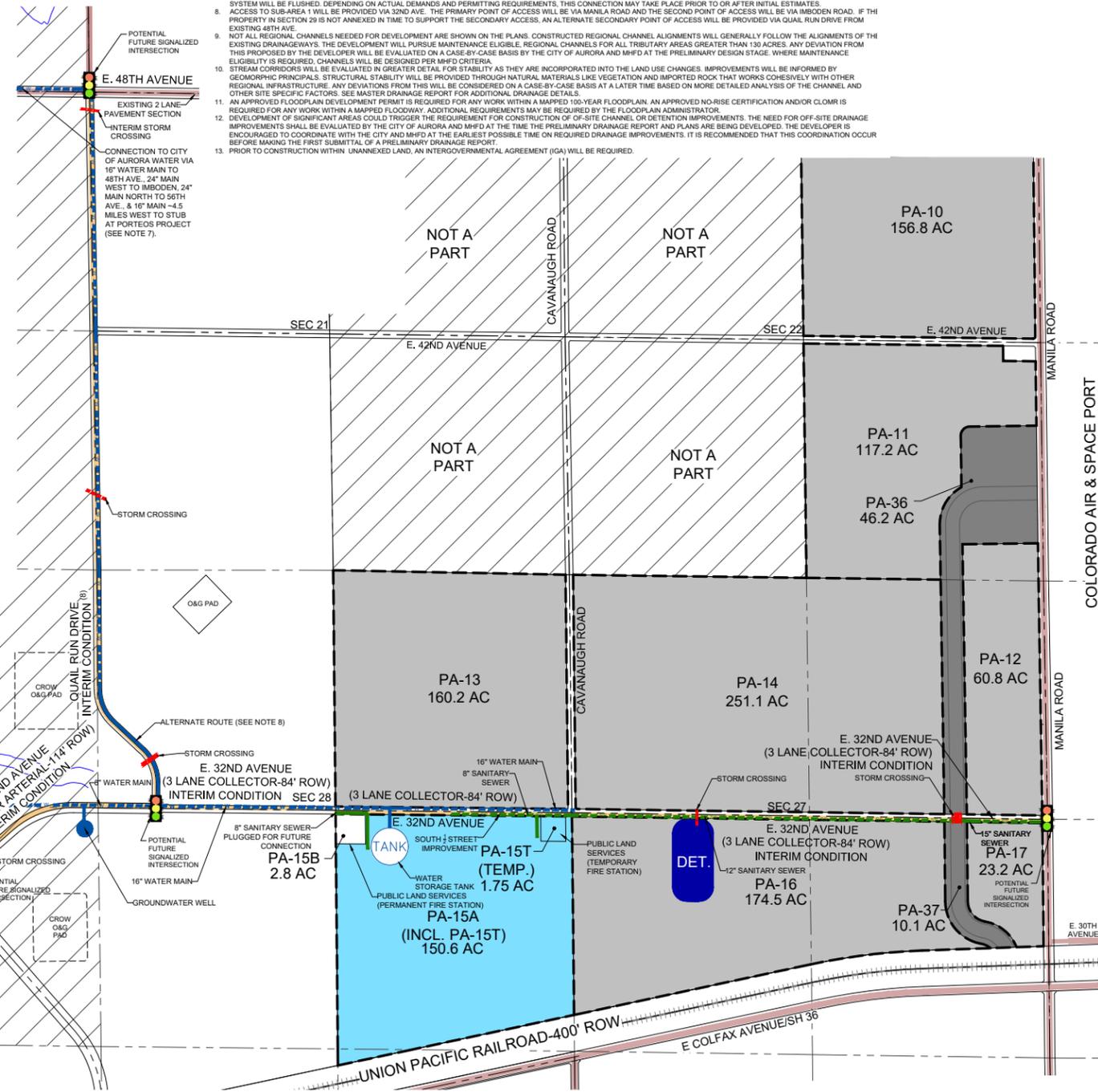


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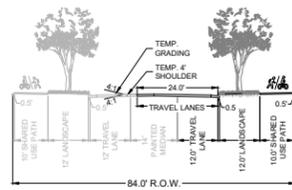
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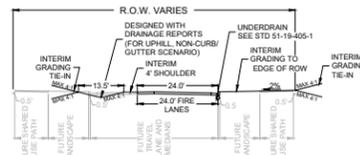
**TRANSPORT COLORADO**  
LOGISTICS & COMMERCE PARK

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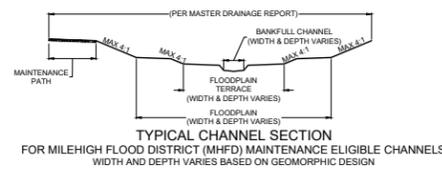


THREE LANE COLLECTOR (S1.3)  
HALF STREET IMPROVEMENT  
(E. 32ND AVENUE)



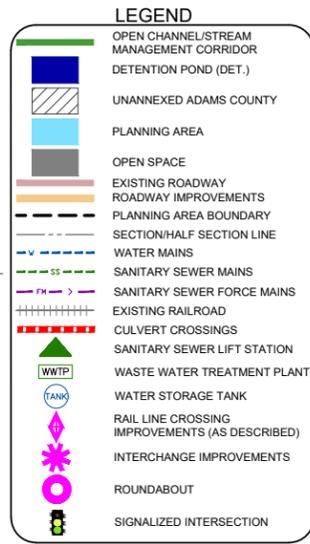
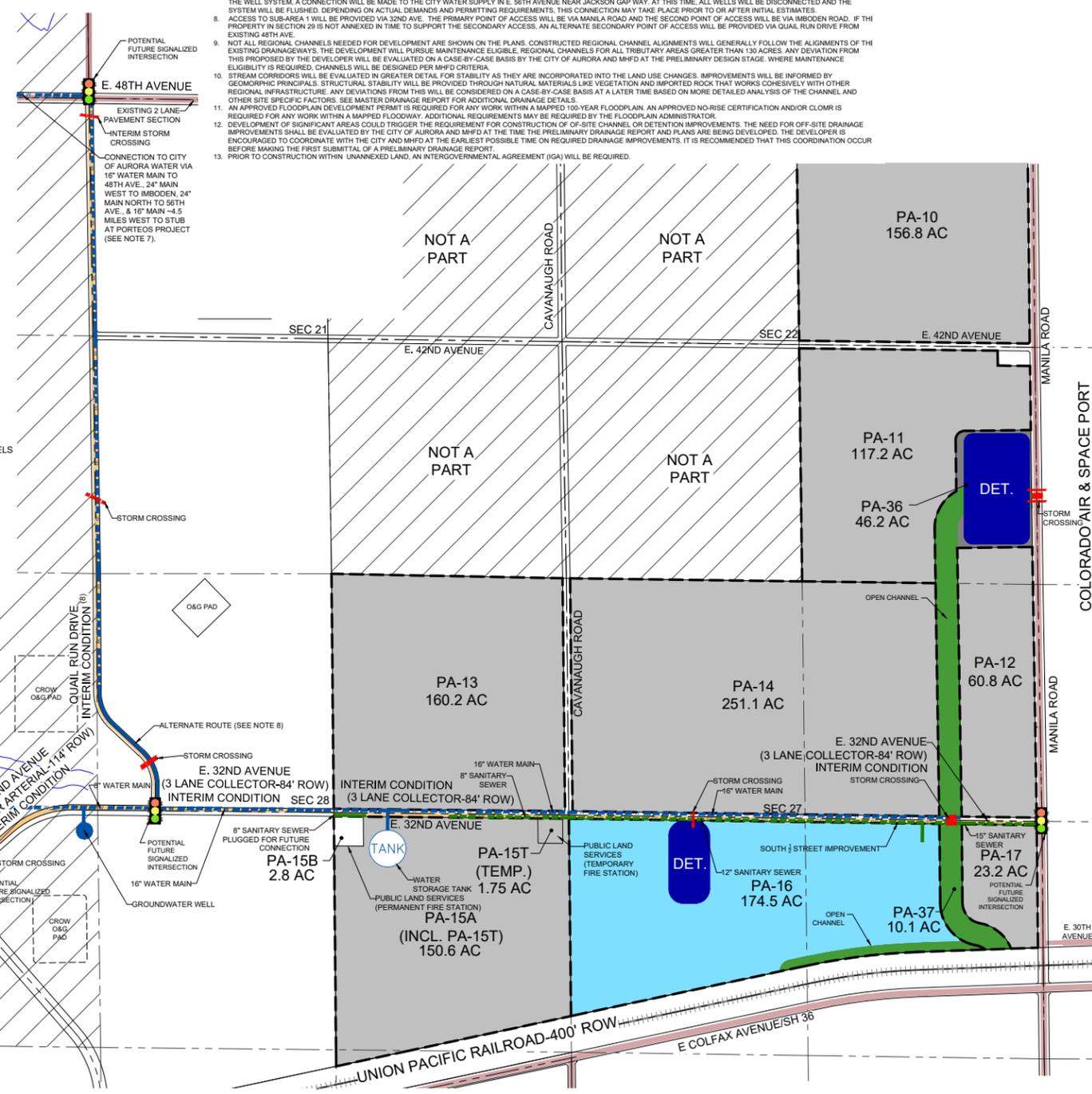
INTERIM SECTION  
INTERIM CONDITION FIRE LANE & PUBLIC ACCESS  
(E. 32ND AVENUE, QUAIL RUN DRIVE, & QUAIL RUN ROAD)

### DRAINAGE CHANNEL SECTIONS:



TYPICAL CHANNEL SECTION  
FOR MILEHIGH FLOOD DISTRICT (MHFD) MAINTENANCE ELIGIBLE CHANNELS  
WIDTH AND DEPTH VARIES BASED ON GEOMORPHIC DESIGN

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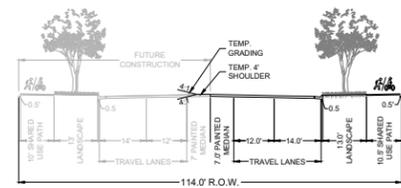


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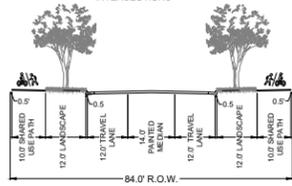
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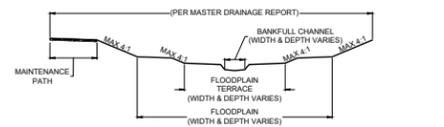
**FOUR LANE MINOR ARTERIAL WITH SEPARATED SHARED USE PATH - HALF STREET IMPROVEMENT (S1.5) (MANILA ROAD)**

NOTE: CONSTRUCTION OF THE FULL MEDIAN MAY BE REQUIRED FOR AUXILIARY LANES AT INTERSECTIONS



**THREE LANE COLLECTOR (S1.3) (E. 32ND AVENUE)**

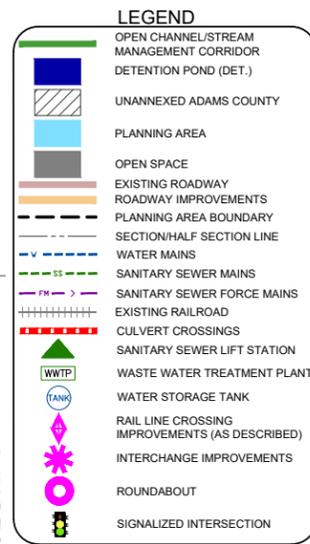
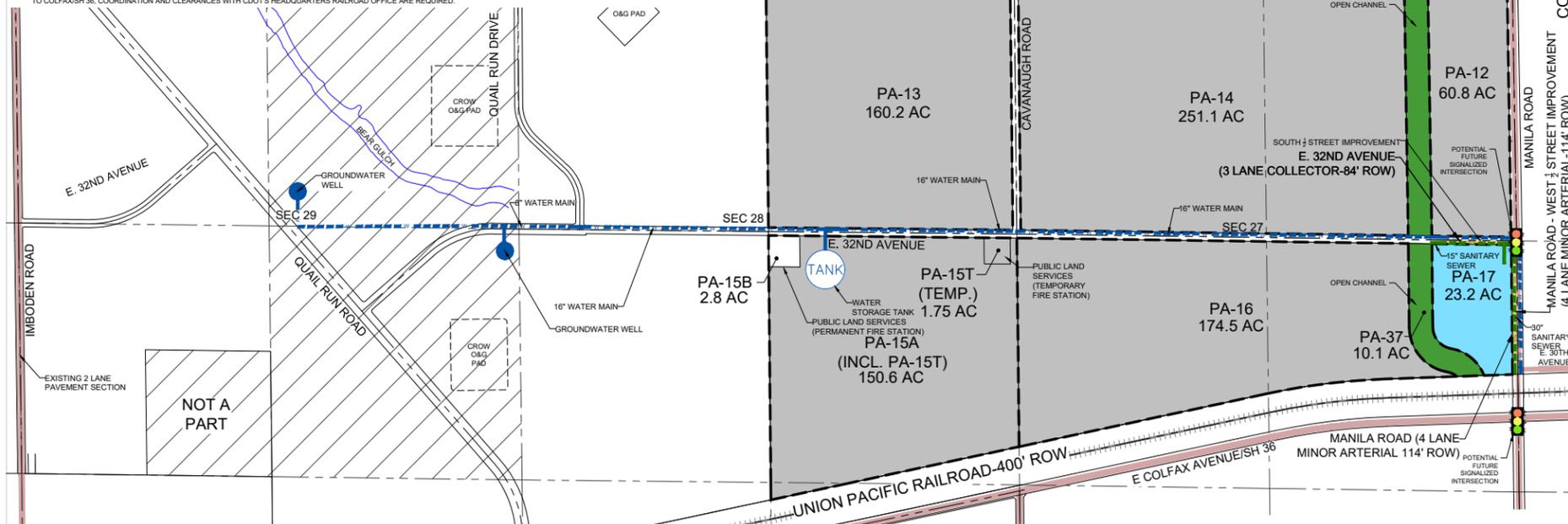
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9. STREAM CORRIDORS WILL BE EVALUATED IN GREATER DETAIL FOR STABILITY AS THEY ARE INCORPORATED INTO THE LAND USE CHANGES. IMPROVEMENTS WILL BE INFORMED BY GEOMORPHIC PRINCIPALS. STRUCTURAL STABILITY WILL BE PROVIDED THROUGH NATURAL MATERIALS LIKE VEGETATION AND IMPORTED ROCK THAT WORKS COHESIVELY WITH OTHER REGIONAL INFRASTRUCTURE. ANY DEVIATIONS FROM THIS WILL BE CONSIDERED ON A CASE-BY-CASE BASIS AT A LATER TIME BASED ON MORE DETAILED ANALYSIS OF THE CHANNEL AND OTHER SITE SPECIFIC FACTORS. SEE MASTER DRAINAGE REPORT FOR ADDITIONAL DRAINAGE DETAILS.
10. AN APPROVED FLOODPLAIN DEVELOPMENT PERMIT IS REQUIRED FOR ANY WORK WITHIN A MAPPED 100-YEAR FLOODPLAIN. AN APPROVED NO-RISE CERTIFICATION AND/OR CLOMR IS REQUIRED FOR ANY WORK WITHIN A MAPPED FLOODWAY. ADDITIONAL REQUIREMENTS MAY BE REQUIRED BY THE FLOODPLAIN ADMINISTRATOR.
11. DEVELOPMENT OF SIGNIFICANT AREAS COULD TRIGGER THE REQUIREMENT FOR CONSTRUCTION OF OFF-SITE CHANNEL OR DETENTION IMPROVEMENTS. THE NEED FOR OFF-SITE DRAINAGE IMPROVEMENTS SHALL BE EVALUATED BY THE CITY OF AURORA AND MHFD AT THE EARLIEST POSSIBLE TIME ON REQUIRED DRAINAGE IMPROVEMENTS. IT IS RECOMMENDED THAT THIS COORDINATION OCCUR BEFORE MAKING THE FIRST SUBMITTAL OF A PRELIMINARY DRAINAGE REPORT.
12. PRIOR TO CONSTRUCTION WITHIN UNANNEXED LAND, AN INTERGOVERNMENTAL AGREEMENT (IGA) WILL BE REQUIRED.
13. TEMPORARY IMPROVEMENTS AND NEW INTERCHANGES ON I-70 WILL NEED TO BE IMPROVED THROUGH CDOT'S 1601 PROCESS WHILE THE IMPROVEMENTS ALONG COLFAX AVENUE/SH 36 WILL REQUIRE CDOT APPROVAL BY PERMIT AND COORDINATION WITH UPRR, THE PUBLIC UTILITY COMMISSION AND OTHER ASSOCIATED REGULATORY AGENCIES. IT IS UNDERSTOOD THAT THE 1601 PROCESS MUST BE INITIATED BY THE CITY AND NOT THE DEVELOPER. IT IS ALSO UNDERSTOOD THAT ACCESS PERMITS WILL BE REQUIRED FOR CONNECTIONS TO A STATE HIGHWAY AND THAT THESE PERMITS HAVE A 1-YEAR TIME LIMIT.
14. ALL SIGNALS ON COLFAX AVENUE/SH 36 ARE BY WARRANT. REQUIRE A PERMIT SEPARATE FROM THE ACCESS PERMIT AND ARE TO BE DESIGNED AND BUILT TO CDOT STANDARDS. DUE TO THE PROXIMITY TO THE RAILROAD TRACKS AND ANTICIPATED CROSSING SIGNALS, THE SIGNALS WARRANT STUDY IS MORE INVOLVED. BEFORE SIGNALIZED IMPROVEMENTS CAN BE MADE TO COLFAX/SH 36, COORDINATION AND CLEARANCES WITH CDOT'S HEADQUARTERS RAILROAD OFFICE ARE REQUIRED.



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