AMERICAN FORK CITY

AMENDED PLANNING COMMISSION AGENDA

Regular Session

August 06, 2025

Wednesday 6:00 PM

American Fork City Hall

31 North Church Street

American Fork City, UT 84003

https://www.americanfork.gov/AgendaCenter

Planning Commission Members

Christine Anderson, Chair	**Rod Martin**
Chris Christiansen, Vice Chair	**David Bird**
Geoff Dupaix	**Harold Dudley**
Bruce Frandsen	**Claire Oldham**

Notice is hereby given that the American Fork City Planning Commission will meet in regular session on August 6, 2025, at the American Fork City Hall, 31 North Church Street commencing at 6:00 PM. The amended agenda shall be as follows:

1. **Regular Session**
    a. Pledge of Allegiance
    b. Roll Call

2. **Common Consent Agenda** (Common Consent is that class of Commission action that requires no further discussion or which is routine in nature. All items on the Common Consent Agenda are adopted by a single motion unless removed from the Common Consent Agenda).
    a. Approval of the July 16, 2025, Planning Commission minutes

3. **Action Items** (Action Items is that class of Commission action that requires further discussion on Site Plans and proposed zoning designation for annexing areas. The Planning Commission will have authority to approve Site Plans for final action and provide recommendations for the zone of annexing property.)
    a. Review and action on a request for reasonable accommodations for the property located at 1088 E 390 S, American Fork City. The request includes a residential use model that supports individuals in recovery; a use that is not explicitly permitted in the zone. The property for this request will be on approximately .17 acres and will be in the Professional Office (PO-1) Zone.
    b. *Review and action on an application for a Commercial Site Plan, known as AT&T Tower Upgrade UTL04060 (1175 E 50 S), located at 1175 E 50 S, American Fork City. The Commercial Site Plan will be on approximately 2.14 acres and will be in the Profession Office (PO-1) Zone.

4. **Other Business**
    a. Upcoming Projects

5. **Adjournment**

Dated this 23rd day of July 2025

Patrick O'Brien - Development Services Director

**Indicates an amended agenda item*

***The order of agenda items may change at the discretion of the Planning Commission Chair*

AMERICAN FORK CITY

PLANNING COMMISSION REGULAR SESSION

July 16th, 2025

The American Fork City Planning Commission met in a regular session on July 16th, 2025 at the American Fork City Hall, 31 North Church Street, commencing at 6:00 p.m.

Commissioners Present: Christine Anderson, Chris Christiansen, Bruce Frandsen, Rodney Martin, Harold Dudley

Commissioners Absent: David Bird, Geoff Dupaix

Staff Present:

Ben Hunter	City Engineer
Cody Opperman	Planner II
Annalisa Reed	Planner

Others Present: Pharis Blackhurst, Gary Maxwell, Camille Maxwell, Meghan Chachra, Michael Villarreal, Janice Sedita, Allison Galleyho, Tyler Horan, Nathan Horan, Dee Long, Diana Long, Kobe Freeman

REGULAR SESSION

Christine Anderson led the "Pledge of Allegiance"

Roll Call

COMMON CONSENT AGENDA

1. **Minutes of the June 16th, 2025 Planning Commission Regular Session.**

Rodney Martin motioned to approve the Common Consent agenda.

Harold Dudley seconded the motion.

Voting was as follows:

Christine Anderson	**Abstain**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**AYE**

The motion passed

PUBLIC HEARINGS

a. **Public hearing, review, and recommendation on a proposed Land Use Map Amendment, known as Meadow View Ranch (App #2), located at approximately 7058 N 5750 W, American Fork City. On approximately 25.37 acres, the property proposes to change from the Residential Low Density to the Residential Medium Density land use designation.**

Cody Opperman noted that the application had previously been reviewed by the commission. The revised proposal continues to seek a residential medium density designation, though the overall acreage has been reduced. Cody presented architectural elevations and a conceptual site design featuring townhomes on the northeastern portion and single-family homes elsewhere on the property. The applicant is exceeding required parking minimums. Cody clarified that the presented design is conceptual and not subject to approval at this stage, but is intended to inform the Planning Commission's decision. The proposed layout includes approximately five to six dwelling units per acre.

Tyler Horan with White Horse Land provided further details. In response to earlier feedback, the applicant aimed to clarify their interpretation of "medium density" and offer a clearer picture of the proposed development. They anticipate completing most surrounding road and infrastructure work before beginning construction, which they hope will mitigate traffic concerns.

Rodney Martin inquired about the number of access points for the property.

Commissioner Bruce Frandsen asked about parking dimensions for both single-family homes and townhomes. Tyler responded that the single-family residences would feature 25-foot driveways and may include three-car garages. He also stated that visitor parking would exceed city requirements, and lot configurations were designed to provide comfortable parking for residents.

Bruce then requested clarification on how the current application differs from the prior submission and whether the applicant intends to maintain a density of five to six units per acre. Tyler confirmed they are satisfied with the current plan and likely to adhere to the proposed density, while seeking flexibility through the medium density land use designation.

Commissioner Christine Anderson asked about a letter included in the applicant's packet. Tyler explained that his goal is to promote home ownership and provide opportunities for individuals and families to reside long-term in American Fork.

Public Hearing Open

Pharis Blackhurst, a resident living directly across from the proposed development, expressed concern about potential changes to the area, specifically increased traffic. He noted that access to the eastern side of the city is limited to only two or three arterial roads, which are also heavily used by employees and delivery vehicles. He believes the roads are undersized and pose potential public safety risks. While acknowledging that development may be inevitable, he indicated that further expansion is not desirable. He asked whether traffic studies had been conducted and encouraged the Planning Commission to visit the area to see the issues firsthand. Commissioner Christine Anderson stated that Ben Hunter would address traffic-related questions following public comment.

Dee Long shared similar concerns, supporting the proposal only if it remains at five units per acre. He acknowledged the need for housing and accepted that change is unavoidable but felt that higher density is unnecessary. He also mentioned that businesses currently park along roadways, compounding traffic issues.

Pharis Blackhurst requested to add another comment and emphasized that railroad activity, including the FrontRunner tracks crossing public roads, contributes to traffic problems.

Diane Long asked whether street widths are affected by zoning designation. She stated that existing roads are already narrow, and increasing residential density would exacerbate traffic concerns, which she identified as the primary issue.

Public Hearing Closed

Ben Hunter addressed public concerns regarding road traffic and current closures. He stated that current road closures are expected to reopen by the following day. A formal traffic study will not be required until a development application is officially submitted. Generally speaking, he noted

that road improvements are possible. Specifically, 100 West and 500 East, classified as minor collector roads, will be updated alongside the development. However, changes to the nearby railroad are less likely due to stringent regulations from its owners.

Cody Opperman clarified that the proposal under review is an initial step in the development process and the property in question has not yet been annexed into the city.

Tyler Horan reaffirmed Ben Hunter's remarks and added that a preliminary traffic study had been conducted. The study indicated that the city's master transportation plans could accommodate both the current proposal and a previously proposed higher-density version. He also noted the potential dedication of land for road widening to support the development, which he believes would benefit the broader community.

Commissioner Bruce Frandsen commented that traffic in the southern part of the city is an ongoing issue that the city should continue to evaluate. He disclosed personal interest in the project and announced his intention to abstain from voting.

Christine Anderson acknowledged that, given the extensive construction in the area this week, traffic is a sensitive topic. She identified two pressing citywide challenges: the need for improved roads and affordable housing. She commended the developer for their commitment to providing housing that contributes to affordability and triggers needed road expansions. In her view, this development could help address both problems.

Commissioner Chris Christiansen expressed his appreciation for the proposed concept, understanding that it is not formally approved at this time. He praised the developer's responsiveness to feedback and their willingness to adjust, and he voiced hope that the project would help alleviate some community concerns regarding traffic.

Rodney Martin reflected on the difficulty of balancing infrastructure needs with development. He noted that cities often rely on developers to build out supporting infrastructure and expressed gratitude for the cooperative approach taken by the applicant.

Christine Anderson emphasized the value of compromise in this proposal, where a slightly increased density may result in significantly improved roads for the community.

Christine also questioned whether Bruce Frandsen could vote on the item. Cody Opperman responded that, since Frandsen neither owns the property nor represents the developer, he may decide for himself whether to participate in the vote.

Commissioner Harold Dudley supported prior comments and added that state and other governmental regulations complicate the development process. He shared that having children entering the housing market has given him a greater understanding of the demand for additional housing.

Ben Hunter concluded by discussing development impact fees and the legal requirements for road improvements under state and local regulations.

Chris Christiansen moved to recommend approval for the proposed Land Use Map Amendment, located at approximately 7058 N 5750 W, American Fork City, from the Residential Low-Density designation to the Residential Medium Density land use designation, subject to any conditions found in the staff report

Harold Dudley seconded the motion.

Harold clarified that this is a recommendation for approval and that this property is not annexed, as this is the first step that would need to be done upon annexation.

Voting was as follows:

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**Abstain**
Harold Dudley	**AYE**
Rodney Martin	**NAY**

There were not enough votes or accordance to pass the motion.

Christine asked if they could add any conditions. Cody explained that as this is a land use map amendment and conditions could not be placed. The city council will be the determining factor, but the planning commission can make suggestions in their recommendation.

Bruce Frandsen mentioned that the proposed units to the acre are only about 20 homes more than the current zoning.

Chris Christiansen wanted to be on record saying that he thinks the development should stay under 6 units on the acre.

Commissioner Rodney Martin moved to recommend approval for the proposed Land Use Map Amendment, located at approximately 7058 N 5750 W, American Fork City, from the Residential Low-Density designation to the Residential Medium Density land use

designation, subject to any conditions found in the staff report, with the recommendation that the developer limits the density to the proposed 5.87 units to the acre.

Commissioner Chris Christiansen seconded the motion.

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**NAY**

The motion passed

b. **Public hearing, review, and recommendation on a proposed Code Text Amendment, known as Off-Street Parking Standards, of the American Fork City Municipal Code. Amending Section 17.5.133, the Code Text Amendment plans to clarify the requirements for the surfacing of off-street parking by requiring a hard surface as recommended by a geotechnical engineer.**

Ben Hunter introduced a proposed code text amendment aimed at clarifying development requirements for parking lots. The amendment is intended to improve the durability of parking areas and enhance accessibility for emergency vehicles.

Commissioner Harold Dudley asked whether the new standards would apply to city-owned parks and whether storage spaces and storage lots would be included under the amendment.

Ben clarified that the amendment specifically applies to off-street parking, drive aisles, and maneuvering space. He further explained that any updates or changes to existing unpaved parking lots would be required to conform to the current code.

Public Hearing Open

Public Hearing Closed

Harold Dudley moved to recommend approval for the proposed Code Text Amendment, amending Section 17.5.133, titled Off-Street Parking Standards, relating to clarifying the requirements for the surfacing of off-street parking, and providing an effective date for the ordinance. seconded the motion.

Chris Christiansen seconded the motion

Voting was as follows:

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**AYE**

The motion passed

ACTION ITEMS

a. **Review and action on an application for a Commercial Site Plan, known as Freeman Golf Simulator, located at approximately 19 N 900 W, American Fork City, UT**

84003. The Commercial Site Plan will be on approximately 1.24 acres and will be in the Planned Commercial (GC-2) Zone.

Cody Opperman noted that this application had previously been reviewed by the Planning Commission, but a new use—specifically, a Golf Simulator—was added to the property without formal review. This revised application includes the new use and is subject to certain conditions pending resolution of outstanding staff comments.

Commissioner Christine Anderson sought clarification regarding the approving authority. Cody confirmed that the Planning Commission serves as the approving body, and that city staff will conduct a follow-up review to ensure that all comments are adequately addressed.

Rodney Martin moved to approve the proposed Commercial Site Plan, located at 19 N 900 W, American Fork City, in the Planned Commercial (GC-2) Zone, subject to any conditions found in the staff report seconded the motion.

Chris Christiansen seconded the motion.

Voting was as follows:

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**AYE**

The motion passed

b. Review and action on an application for a Commercial Site Plan, known as Flite Banking Drive-Thru ATM (App #2), located at approximately 949 W Grassland Drive, American Fork City. The Commercial Site Plan will be on approximately .05 acres and will be in the Planned Shopping Center (SC-1) Zone.

Cody Opperman presented an application proposing the installation of an ATM on the Walmart property. As part of the plan, 12 existing parking stalls would be removed to accommodate the

new ATM. Cody confirmed that Walmart would still meet its required parking minimums even with the reduction.

Chris Christiansen moved to approve the proposed Commercial Site Plan, located at approximately 949 W Grassland Drive, American Fork City, in the Planned Shopping Center (SC-1) Zone, subject to any conditions found in the staff report.

Rodney Martin seconded the motion.

Voting was as follows:

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**AYE**

The motion passed

c. Review and action on an application for a Commercial Site Plan, known as Rock Canyon Oil, located at approximately 1669 S 580 E, American Fork City. The Commercial Site Plan will be on approximately 2.88 acres and will be in the Industrial (I-1) Zone.

Cody Opperman presented a site plan application to install new process equipment at an existing facility. The applicant has met all conditions required for site plan approval, and no further Development Review Committee (DRC) comments remain.

Cody described several components of the proposed project, including a boiler awning, processing skids, and a cooling tower located near the parking area. The cooling tower is projected to reach a height of approximately 50 feet. To mitigate visual and environmental impacts, the applicant plans to include landscaping and a concrete fence.

The applicant Gary Burns, explained that the purpose of the business is to reprocess oil for reuse in vehicles. He emphasized the environmentally sustainable nature of the company’s operations.

Rodney Martin moved to approve the proposed Commercial Site Plan, located at approximately 1669 S 580 East, American Fork City, in the I-1 Industrial Zone, subject to any conditions found in the staff report.

Harold Dudley seconded the motion.

Voting was as follows:

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**AYE**

The motion passed

d. Review and action on an application for a Commercial Site Plan, known as Amazon DUT2 AVI, located at approximately 1222 S 500 E, American Fork City. The Commercial Site Plan will be on approximately 36.62 acres and will be in the Planned Industrial (PI-1) Zone.

Cody Opperman presented an application for modifications to an existing site that currently complies with code requirements. The proposed changes include the installation of an AI-based inspection tunnel and adjustments to site parking and vehicle access.

Commissioner Harold Dudley asked about the function of the proposed tunnel.

Camille Maxwell explained that the tunnel is designed to streamline the inspection process for Amazon delivery trucks. Whereas drivers currently photograph their vehicles manually, the AI tunnel will perform digital inspections of fleet vehicles to improve efficiency and accuracy

Harold Dudley moved to approve the proposed Commercial Site Plan, located at approximately 1222 S 500 E, American Fork City, in the Planned Industrial (PI-1) Zone, subject to any conditions found in the staff report.

Chris Christiansen seconded the motion.

Voting was as follows:

Christine Anderson	**AYE**
Chris Christiansen	**AYE**
Bruce Frandsen	**AYE**
Harold Dudley	**AYE**
Rodney Martin	**AYE**

The motion passed

<u>Other Business</u>

Cody Opperman announced that the City Council will hold a work session to discuss the municipal code update at approximately 4:00 p.m. on August 18th. Members of the Planning Commission are invited to attend.

Christine Anderson expressed appreciation to the city for hosting the recent commissioner dinner and thanked Cody for providing a new presentation template. She also shared that the APA Utah Planning Conference is scheduled for the fall.

Rodney Martin highlighted the thoughtful effort the Planning Commission dedicates to its decisions, particularly when faced with challenging topics.

Harold Dudley echoed this sentiment, expressing admiration for the commissioners' dedication and their willingness to seek compromise in decision-making

Adjournment

Rodney Martin motioned to adjourn the meeting.

Chris Christiansen seconded the motion.

Meeting adjourned at 7:30 PM

Annalisa Reed

Planner I

The order of agenda items may change to accommodate the needs of the commissioners, public and staff.

Planning Commission Staff Report
Meeting Date: August 6, 2025

Agenda Topic

Review and action on a request for reasonable accommodations for the property located at 1088 E 390 S, American Fork City. The request includes a residential use model that supports individuals in recovery; a use that is not explicitly permitted in the zone. The property for this request will be on approximately .17 acres and will be in the Professional Office (PO-1) Zone.

Background

On June 9th, 2025, American Fork City Staff received an email regarding a zoning inquiry, for a proposed use at 1088 E 390 S, American Fork. The request related to language that is not within the Municipal Code, which the applicant was seeking an opinion on, to provide a substance abuse rehabilitation clinic at the aforementioned address. Upon receipt, the Development Services Director reviewed the request, and the language within the code, and could not find any suitable permitted use currently outlined under 17.4.406.B which the proposed use was seeking to fall under.

The subject property is located within the PO-1 zone. As stated in § 17.4.406 of the American Fork City Code, the intent of this zone is to accommodate health care-related uses, including hospitals (human care), medical clinics, and nursing homes, as well as office buildings for professional persons. The letter provided to staff provided a thoughtful interpretation of how the applicants proposed facility could conceptually resemble a hospital or medical clinic, the City concluded that a residential treatment facility—particularly one involving long-term housing, recovery residence operations, and transitional care—is not specifically listed or contemplated as a permitted or conditional use in the PO-1 zone.

The City is fully committed to complying with all applicable state and federal laws, including the FHA, ADA, and related statutes protecting individuals with disabilities. The applicant is seeking a reasonable accommodation, pursuant to American Fork City Code 17.15, to permit them to occupy the location with their proposed use. This request is being brought before the Planning Commission in line with the requirements of American Fork City Code 17.15, with the applicant seeking a reasonable accommodation for their proposed use.

Potential Motions – Reasonable Accommodation

Approval

I move to recommend approval on the request for reasonable accommodations for the property located at 1088 E 390 S, American Fork City, relating to the request that includes a residential use model that supports individuals in recovery; a use that is not explicitly permitted in the zone, and providing an effective date for the ordinance.

Denial

I move to recommend denial on the request for reasonable accommodations for the property located at 1088 E 390 S, American Fork City, relating to the request that includes a residential use model that supports individuals in recovery; a use that is not explicitly permitted in the zone.

Table

I move to table action on the request for reasonable accommodations for the property located at 1088 E 390 S, American Fork City, relating to the request that includes a residential use model that supports individuals in recovery; a use that is not explicitly permitted in the zone, and instruct staff/developer to……..

Received By Patrick O'Brien
at 14:05 on 9 July 2025

MCDONALD|FIELDING
ATTORNEYS AT LAW

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July 8, 2025

American Fork City Development Services
c/o Patrick O'Brien, Director
275 East 200 North
American fork, Utah 84003
Via Email: pobrien@americanfork.gov

Heather Schriever, Esq.
American Fork City Attorney
Via Email: hschriever@americanfork.gov

Re: Reasonable Accommodation Request Under the federal Fair Housing Act (42 U.S.C.A. § 3604(f)(3)(B)), Title II of the ADA (42 U.S.C. § 12132), Rehabilitation Act (29 U.S.C. § 794, and the Utah Fair Housing Act (Utah Code Ann. § 57-21-5(4)(b))

Applicant: Liberty Addiction Recovery Centers, LLC ("Liberty" / "Applicant")
Property: 1088 East 390 South, Utah County Parcel No. 46:569:0008 (the "Property")

Dear Patrick and Heather:

This firm represents the above-referenced Applicant. Per your emails to me dated June 18, 2025, and July 1, 2025, Liberty hereby requests a reasonable accommodation pursuant to the federal Fair Housing Act (42 U.S.C.A. § 3604(f)(3)(B)), Title II of the ADA (42 U.S.C. § 12132), Rehabilitation Act (29 U.S.C. § 794), and the Utah Fair Housing Act (Utah Code Ann. § 57-21-5(4)(b)). *See also* City Code § 17.15.050.

Liberty is under contract to purchase the Property described above. The Property has historically (and most recently) been used for a 61-resident "Type II" assisted living facility known as Bel Aire Senior Living. Liberty wants to use the Property primarily for a residential treatment facility licensed by the Utah Department of Health and Human Services ("**UDHHS**") to assist adults suffering from debilitating disabilities and handicaps. Liberty's residents suffer primarily from various low level mental health handicaps and disabilities with the comorbidity of drug and/or alcohol abuse and addiction and/or substance use disorders ("**SUDs**"). In other words, it's a dual diagnosis facility where residents will have an underlying mental health disability (i.e., anxiety, depression, etc.) with the comorbidity of addiction or SUDs. Liberty may also potentially use the Property for and seek licensure from UDHHS for social and/or medical detoxification as well as having a certain portion of the Property used as a licensed recovery residence to provide transitional housing for those stepping down to a lower level of care after residential treatment. Although the desired resident census would be determined by UDHHS regulations, our preliminary assessment suggests the Property will accommodate approximately 118+/- residents (10 for detoxification, 70 for treatment, and 38 for recovery residence services).

The Property is in the City's PO-1 professional office zone. According to the City Code, that zone "is established to provide an area which will accommodate the community's hospital and related buildings housing various health care uses; nursing homes and similar structures providing assisted care residential facilities; and a mixture of offices and related facilities for professional persons." City Code § 17.4.406(A).

I. Information required by City Code § 17.15.050:

A. Applicant information:

Name: Liberty Addiction Recovery Centers, LLC
Mailing Address: 837 East 1200 South, Orem, UT, 84097, USA
Phone Number: 801-577-3086

B. Action for which reasonable accommodation is being sought:

1. On June 9, 2025, Liberty asked the planning and development staff to have Liberty be treated as a permitted use in the PO-1 zone. *See* **Exhibit A** attached hereto. Liberty believes it should be considered a type of human care hospital and/or medical clinic with office buildings and professional space within the meaning of City Code § 17.4.406(B). *See id.* City staff denied Liberty's request on June 18, 2025. *See* **Exhibit B.** Liberty asked City staff to reconsider its determination for the detailed legal reasons explained in its June 19, 2025, letter to City staff attached as **Exhibit C.** The City Attorney denied Liberty's request for reconsideration on July 1, 2025. *See* **Exhibit D** attached hereto.

2. If City staff is correct, and Liberty is not a type of human care hospital and/or medical clinic with office buildings and professional space within the meaning of City Code § 17.4.406(B), then the City has effectively banned medical and clinical services for persons with the disability of addiction from the PO-1 while allowing it for similarly situated uses such as hospitals and medical clinics with office space and residential facilities for elderly persons such as Bel Aire. Liberty requests that the City waive that ban, which is necessary and reasonable to give Liberty's residents an equal housing opportunity under the federal and state Fair Housing Acts and to avoid discrimination based on the residents' disabilities under Title II of the ADA and Section 504 of the Rehabilitaiton Act.

3. Although Liberty does not agree with staff's determination that it meets the City definition of a "residential facility for persons with a disability"

("**RFPD**") under Chapter 17.15 of the City Code,[1] City staff is treating Liberty as if it is (or should be) an 8-person RFPD under City Code § 17.15.010(G), which is a conditional use in all residential zones under City Code § 17.15.030(A). Liberty seeks a reasonable accommodation from this staff determination and/or the 8-person census cap under City Code § 17.15.010(G) and -17.15.030(D).

4. Although Liberty does not agree with City staff's determination that it is an RFPD under City Code § 17.15.010(G), Liberty seeks a reasonable accommodation from this staff determination and/or the ban on RFPDs in all but residential zones found in City Code § 17.15.010(J).

C. Exact ordinance or policy from which a reasonable accommodation is needed.

The staff determinations, policies and relevant ordinances from which Liberty needs accommodations are discussed in Section I.B., above.

D. The proposed reasonable accommodation.

While the exact contours of Liberty's requested accommodation are set forth in more detail below, Liberty seeks to operate a UDHHS-licensed facility for approximately 118+/- residents (10 for detoxification, 70 for treatment, and 38 for recovery residence services).

The Utah Health and Human Services Code defines "social detoxification" as "short-term residential services for persons who are experiencing or have recently experienced drug or alcohol intoxication, that are provided outside of a health care facility licensed under Part 2, Health Care Facility Licensing and Inspection, and that include: (a) room and board for persons who are unrelated to the owner or manager of the facility; (b) specialized rehabilitation to acquire sobriety; and (c) aftercare services." *Id.* § 26B-2-101(54).

The Utah Health and Human Services Code defines "residential treatment" as "a 24-hour group living environment for four or more individuals unrelated to the owner or provider that offers room or board and specialized treatment, behavior modification, rehabilitation, discipline, emotional growth, or habilitation services for persons with emotional, psychological, developmental, or behavioral dysfunctions, impairments, or chemical dependencies." Utah Code Ann. § 26B-2-101(50)(a) (effective 7/1/2025). Liberty will operate a "mental health treatment program", "substance abuse treatment program", and/or "substance use disorder treatment program" as those terms are defined by the health and human services code. *See id.* §§ 26B-2-101(36), & -(56). These programs provide structured intervention to improve mental health, prevent mental disorders, and treat mental health conditions, and also specialized drug or alcohol

[1] Among other reasons for this is the fact that Liberty will have more than 8 residents and an RFPD, by definition, has only 8 or fewer residents under City Code § 17.15.010(G).

treatment, rehabilitation, and/or habilitation services to persons with a diagnosed SUD or chemical dependency disorder. *Id.*

A "recovery residence" is a home, residence, or facility that meets at least two of the following requirements:

(i) provides a supervised living environment for individuals recovering from a substance use disorder;
(ii) provides a living environment in which more than half of the individuals in the residence are recovering from a substance use disorder;
(iii) provides or arranges for residents to receive services related to the resident's recovery from a substance use disorder, either on or off site;
(iv) is held out as a living environment in which individuals recovering from substance abuse disorders live together to encourage continued sobriety; or
(v)
  (A) receives public funding; or
  (B) is run as a business venture, either for-profit or not-for-profit.

Id. § 47(a).

Under UDHHS regulations "[a] provider wishing to provide medically monitored inpatient withdrawal management under a social detoxification license may only do so" if, among other things, "medical and nursing professionals provide 24-hour medically monitored evaluation and withdrawal management under physician-approved policies and physician-monitored procedures and protocols[.]" Utah Admin. Code R501-11-6(2)(a). In short, social detoxification is a medically-managed level of clinical care. So is residential treatment for mental health and SUDs.

For example, under UDHHS regulations Liberty will be offering "clinical" treatment. "'Clinical' means treatment or service delivered by a mental health or medical professional that is licensed by the Division of Professional Licensing." Utah Admin. Code R501-1-3(5). Amy Parry DNP, APRN, PMHNP-BC, (Psychiatric Mental Health Nurse Practitioner with a license to prescribe psychiatric and controlled medications) will be Liberty's medical director. Further, "[e]ach residential treatment provider providing services to a substance use disorder client shall[] … only admit a substance use disorder client with a level of care that falls within American Society of Addiction Medicine levels 3.1 through 3.5[.]" Utah Admin. Code R501-19-3(9)(a). In other words, treatment for substance use disorders is a medical intervention governed by medical criteria. UDHHS regulations mandate that "[a] clinical professional shall oversee any therapeutic services conducted in the therapeutic environment[.]" *Id.* R501-19-3(12).

UDHHS regulations essentially make inpatient treatment a type of medical clinic that delivers clinical care and medical interventions.

Recovery residences are another type of medical intervention. The UDHHS requires each recovery residence provider to "contract with, or otherwise provide as needed, referral information for client access to" a physician, psychiatrist, mental health therapist, or substance use disorder

counselor. *Id.* R501-18-6(1). Each recovery residence must be overseen by a qualified clinical director. *See id.* R501-18-6(2)-(5). Courtney Baker, L.C.S.W. , who has a master's degree and is state-licensed by UDHHS, will be the recovery residence's qualified clinical director.

E. Why the accommodation is necessary.

1. Strict application of the City Code would result in unlawful disparate treatment housing discrimination.

The federal Fair Housing Act ("**FHA**" or "**FHAA**") makes it illegal "[t]o discriminate in the sale or rental, or to otherwise make unavailable or deny, a dwelling to any buyer or renter because of a handicap of … (A) that buyer or renter, (B) a person residing in or intending to reside in that dwelling after it is so sold, rented, or made available; or (C) any person associated with that buyer or renter." 42 U.S.C. § 3604(f)(1). The Utah Fair Housing Act mirrors this prohibition. *See* Utah Code Ann. § 57-21-5(1). Section 504 of the Rehabilitation Act provides "n]o otherwise qualified individual with a disability in the United States . . . shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance ...." 29 U.S.C. § 794(a). And title II of the ADA provides "no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity". 42 U.S.C. § 12132/

Liberty's residents are handicapped and/or have disabilities, which include drug and alcohol addiction. *See, e.g.,* 42 U.S.C. § 3602(h) (federal Fair Housing Act definition of handicap); 24 C.F.R. § 100.201(a)(2) (same). *See also* 29 U.S.C. § 705(9) (definition of disability under the federal Rehabilitation Act); 42 U.S.C. § 12102 (definition of disability under the federal Americans with Disabilities Act or "ADA"). *See also* Utah Code Ann. § 57-21-5(1).

Discrimination occurs when similarly situated persons are treated differently. *See Courage to Change Ranches Holding Co. v. El Paso Cnty.*, 73 F.4th 1175, 1191-92, 1201-03 (10th Cir. 2023) (discussing facial and as-applied discrimination). Like the Orem City ordinance at issue in *Bangerter v. Orem City Corp.*, 46 F.3d 1491, 1498 (10th Cir. 1995), American Fork City's zoning ordinances "facially single out the handicapped and apply different rules to them[,]" which is illegal under federal law. *Bangerter,* 46 F.3d at 1500. If Liberty is not a type of medical clinic or human services hospital, then the City's zoning scheme gives an approved use for those types of facilities and for the elderly but expressly denies that same use to persons with disabilities. "[A] plaintiff makes out a prima facie case of intentional discrimination under the FHAA merely by showing that a protected group has been subjected to explicitly differential—i.e. discriminatory—treatment." *Id.* at 1501. Thus, under the authority of *Bangerter*, if the City refuses to consider Liberty a type of permitted medical clinic or human services hospital, Liberty could "state[] a direct claim of facially discriminatory treatment of handicapped persons[,]" *id.* at 1502, because the City Code facially discriminates against disabled persons.

Under the most recent decisions of the United States Court of Appeals for the Tenth Circuit, which is the federal appellate court with jurisdiction over Utah, there can be no doubt that assisted living residential facilities for elderly persons ("**RFEPs**") are *the* relevant comparator group for purposes of anti-discrimination analysis. In *Courage to Change*, Soaring Hope Recovery Center sought to provide treatment and housing for people recovering from drug and alcohol addictions in a zone where group homes and assisted living facilities for the elderly were permitted. The county code in that case treated Soaring Hope differently from group homes and assisted-living for the elderly. Specifically, there were different occupancy caps with elderly living having higher occupancy than was allowed for addiction treatment facilities such as Soaring Hope. *See Courage to Change*,, 73 F.4th at 1193.

In determining that assisted-living facilities for the elderly were the relevant comparator group for residential facilities for the disabled such as Soaring Hope, the Tenth Circuit held:

> ***As a matter of law***, we agree with Soaring Hope that the other structured group-living arrangements governed by the Code, ***especially group homes for the aged***, are the relevant comparators to group homes for disabled persons.

Id. (emphasis added). The court based its reasoning on *Cinnamon Hills Youth Crisis Ctr., Inc. v. Saint George City*, 685 F.3d 917 (10th Cir. 2012), a case that I won for my client, the City of St. George., in 2012. It held:

> … our reasoning in *Cinnamon Hills* … supports that in identifying relevant comparators for group homes for disabled persons, we look to other structured group-living arrangements in the zoning scheme.
>
> After examining the Code, Colorado's statutes, and our precedent, we hold that the relevant comparators for group homes for disabled persons are other structured group-living arrangements in the Code, including group homes for the aged.
>
> This being so, we conclude that the Code's occupancy caps for disabled persons are facially discriminatory. Like the ordinance in *Bangerter*, the Code "facially single[s] out" disabled persons by applying five-person occupancy limits to group homes for disabled persons while allowing eight or more occupants in all other structured group-living arrangements. *Id.* at 1500. We find evidence of discriminatory intent and purpose on the face of the Code.

Courage to Change, 73 F.4th at 1196.

If American Fork City persists in not treating Liberty as a permitted use (i.e., a type of human services hospital or medical clinic) your situation is even worse than it was for the guilty county in *Courage to Change*. Instead of just imposing different census caps on the elderly vs. the disabled, American Fork City will have ***altogether excluded*** a similarly situated use in the PO-

1 zone on the basis that Liberty's residents have disabilities. In short, ***the City cannot legally allow assisted living facilities while prohibiting Liberty's proposed use in the same zone***. This is clear from the face of the code *if* the City refuses to treat Liberty as a permitted use (and treats it as an RFPD).

Additionally, *Courage to Change* recognized a "zoning out" theory of disparate treatment discrimination that is applicable here. *See id.* at 1201 ("We find Soaring Hope's 'zoning-out' argument persuasive."). Under this theory of discrimination, because Bel Aire provides similar therapy, treatment, and longer-term living opportunities to the elderly that Liberty provides to its disabled residents the City cannot lawfully permit the former and prohibit the latter in the same zone. *See id.* at 1201-1204. The Tenth Circuit concluded that "[t]he record supports a conclusion that the County treated nondisabled residents more favorably than it did Soaring Hope" when it "allowed other structured group-living arrangements to engage in medical and mental-health therapies … while prohibiting the same activities" for Soaring Hope's residents. *Id.* at 1203.

Similarly, the staff's determination states: "the City concludes that a residential treatment facility—particularly one involving long-term housing, recovery residence operations, and transitional care—is not specifically listed or contemplated as a permitted or conditional use in the PO-1 zone." Ex. B. But assisted living facilities like Bel Aire do just that—they provide long-term housing and care for the elderly. What Liberty proposes to do for the disabled is substantially similar to what Bel Aire provided for the elderly. Of course, there are *some* differences but they are not substantial enough to remove Bel Aire as a relevant comparator for purposes of federal and state anti-discrimination laws. The *Courage to Change* and *Cinnamon Hills* cases make this clear. Hospitals and medical clinics are, for that matter, *also* relevant comparators for purposes of Title II of the ADA and the Rehabilitation Act. The city cannot allow those while excluding treatment for disabled persons.

Indeed, if the City prohibits Liberty's desired use it will have unlawfully "denied to it zoning relief granted to similarly situated applicants without disabilities" or available to similarly situated non-disabled persons under the City Code. *Cinnamon Hills*, 685 F.3d at 920. It will have unlawfully "subjected [Liberty] to conditions not imposed on other group homes in [American Fork] that were permitted in areas zoned [PO-1] …." *Bangerter*, 46 F.3d at 1502. *See also* 42 U.S.C. 3604(4)(1) and –(2); 42 U.S.C. § 12132 ("no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity"); 29 U.S.C. § 794(a) ("[n]o otherwise qualified individual with a disability in the United States . . . shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance ....").

Section 3613(a)(1)(A) of the Fair Housing Act authorizes private parties to bring a civil action for such discriminatory housing practices. 42 U.S.C. § 3613(a)(1)(A). The relief available to Liberty in such an action would be as follows:

> (1) In a civil action under subsection (a), if the court finds that a discriminatory housing practice has occurred or is about to occur, the court may award to the plaintiff actual and punitive damages, and subject to subsection (d), may grant as relief, as the court deems appropriate, any permanent or temporary injunction, temporary restraining order, or other order (including an order enjoining the defendant from engaging in such practice or ordering such affirmative action as may be appropriate).
>
> (2) In a civil action under subsection (a), the court, in its discretion, may allow the prevailing party, other than the United States, a reasonable attorney's fee and costs. The United States shall be liable for such fees and costs to the same extent as a private person.

42 U.S.C. § 3613(c). The ADA, RA, and Utah Fair Housing Act all provide similar relief.

2. Federal and state law require a reasonable accommodation.

Federal law provides that discrimination against the handicapped or disabled includes "a refusal to make ***reasonable*** accommodations … when such accommodations may be ***necessary*** to afford such person equal opportunity to use and enjoy a dwelling," 42 U.S.C.A. § 3604(f)(3)(B) (emphasis added). *See also Olmstead v. L.C.*, 527 U.S 581, 592 (1999) (Title II of the ADA "requires public entities to 'make reasonable modifications' to avoid 'discrimination on the basis of disability,' unless those modifications would entail a 'fundamenta[l] alter[ation]'[.]") (quoting 28 C.F.R. § 35.130(b)(7)(i)). The Utah Fair Housing Act has similar requirements. *See* Utah Code Ann. § 57-21-5(4)(b).

As the Tenth Circuit explained in *Bangerter*, 46 F.3d at 1502, "the thrust of a reasonable accommodation claim is that a defendant must make an affirmative change in an otherwise valid law or policy." *Id.* at 1502. By definition, "a 'reasonable accommodation' involves 'changing some rule that is generally applicable so as to make its burden less onerous on the handicapped individual.'" *Id.* at 1502. Waiving otherwise enforceable code provisions is precisely what a reasonable accommodation contemplates. *Cinnamon Hills*, 685 F.3d at 923. ("And that is precisely the point of the reasonable accommodation mandate: to require changes in otherwise neutral policies that preclude the disabled from obtaining 'the same ... opportunities that those without disabilities automatically enjoy.'").

The FHA's "'reasonable accommodations' provision prohibits the enforcement of 'zoning ordinances and local housing policies in a manner that denies people with disabilities access to housing on par with that of those who are not disabled.'" *Hovsons, Inc. v. Township of Brick*, 89 F.3d 1096, 1104 (3d Cir. 1996) (quoting Laurie C. Malkin, *Troublès at the Doorstep: The Fair Housing Amendments Act of 1988 and Group Homes for Recovering Substance Abusers*, 144 U. Pa. L.Rev. 757, 804 (1995)).

If a local government's laws, ordinances or practices would otherwise prohibit the type of housing proposed, then the FHA imposes "'an affirmative duty' to make reasonable accommodations on behalf of handicapped persons." *Id.* Hence, courts interpreting the reasonable accommodation provisions of the FHA, ADA and/or Rehabilitation Act have ruled that municipalities "must change, waive, or make exceptions in their zoning rules to afford people with disabilities the same opportunity to housing as those who are without disabilities." *Horizon House Developmental Servs., Inc. v. Township of Upper Southampton*, 804 F. Supp. 683, 699-700 (E.D. Pa. 1992).

As the following subsections show, the City is required to grant Liberty's highlighted requests for accommodation above as they are both necessary and reasonable as those terms are used in the law.

a. The meaning of "necessary" under federal law.

Liberty's residents are a protected class and protected from unlawful housing discrimination under federal and state law for two reasons.

First, due to a special relationship between the Ute Indian Tribe and Liberty a substantial portion of Liberty's residents will be Native American. The federal Fair Housing Act ("**FHA**" or "**FHAA**") makes it illegal "[t]o discriminate against any person in the terms, conditions, or privileges of sale or rental of a dwelling, or in the provision of services or facilities in connection therewith, because of race, color, religion, sex, familial status, or national origin." 42 U.S.C. § 3604(b). The Utah Fair Housing Act mirrors this prohibition. *See* Utah Code Ann. § 57-21-5(1).

Second, as previously mentioned, all of Liberty's residents are handicapped and/or have disabilities, which include drug and alcohol addiction. *See, e.g.,* 42 U.S.C. § 3602(h) (federal Fair Housing Act definition of handicap); 24 C.F.R. § 100.201(a)(2) (same). *See also* 29 U.S.C. § 705(9) (definition of disability under the federal Rehabilitation Act); 42 U.S.C. § 12102 (definition of disability under the federal Americans with Disabilities Act or "ADA"). *See also* Utah Code Ann. § 57-21-5(1). Indeed, the the Tenth Circuit has held that "treatment homes for drug and alcohol addiction are covered dwellings under the FHAA." *Courage to Change*, 73 F.4th at 1200.

The Tenth Circuit has made it clear "that the object of the statute's necessity requirement is a level playing field in housing for the disabled." *Cinnamon* Hills, 685 F.3d at 923. Put simply, the statute requires accommodations that are necessary (or indispensable or essential) to achieving the objective of equal housing opportunities between those with disabilities and those without." *Id.*

Under the *Cinnamon Hills* reasonable accommodation analysis, accommodations can only be granted to the handicapped "*because of* conditions created by their disabilities." *Id.* (emphasis in original). There must be "evidence that the disabled, *because of* their disabilities, are … less able to take advantage of [housing opportunities] than the non-disabled." *Id.* at 924 (emphasis in

original). Decisionmakers must consider "barriers, imposed by the disability, that prevent the disabled from obtaining a housing opportunity others can access." *Id.* (emphasis added).

An application seeking an accommodation is required to show the residents' disabilities require them to live and receive treatment in a group living arrangement and with the group census size requested. *See, e.g., Recovery Land Holdings, LLC v. City of South Ogden*, 2019 U.S. Dist. LEXIS 58499 ,*15 (D. Utah April 4, 2019) ("Brighton has not pointed to any evidence that all of these individuals require treatment in residential group settings, nor has it provided evidence that such treatment must occur in groups of thirty-two as opposed to twenty.").

When an applicant comes forward with "substantial evidence" of "their need to live in a group home setting … in order to facilitate their continued recovery" or for other reasons necessary to address their handicaps, then such ordinances must yield to the reasonable requirements of the disabled. *Tsombanidis v. West Haven Fire Dept.*, 352 F.3d 565, 577-78 (2d Cir. 2003). When the disabled persons have not choice but to live in such a setting as that provided by a provider such as Liberty, the City Code must yield to the reasonable needs of the disabled. *Lewis v. Draper City*, No. 2:09-CV-589 (September 21, 2010). Liberty has substantial evidence of its need for this accommodation and/or why this accommodation is "necessary" as that term is used in federal law.

To begin, it is well established in the scholarly literature that group living with other addicts is medically and therapeutically necessary for persons recovering from drug and alcohol addictions. "Individuals recovering from addiction should be surrounded by a community in which they feel they belong and are able to obtain sobriety goals (Jason & Kobayashi, 1995)." *Counteracting "Not in My Backyard": The Positive Effects of Greater Occupancy with Mutual-help Recovery Homes*, J. Community Psychol., Jason, Groh et al. at p.3 (September 1, 2008) (Attached as **Exhibit E**.) Studies have shown that a sufficient number of residents is "a necessary component in the effectiveness [of the treatment model] through the mechanism of social support." *Id.*

Group living in a clean and sober environment is absolutely essential to recovery. As one scholarly study recognized:

> Research continues to document the important role of social factors in recovery outcome (Polcin, Korcha, Bond, Galloway & Lapp, in press). For example, in a study of problem and dependent drinkers Beattie and Longabaugh (1999) found that social support was associated with drinking outcome. Not surprising, the best outcomes were predicted by … social support that discouraged drinking. Similarly, Zywiak, Longabaugh and Wirtz (2002) found that clients who had social networks with a higher number of abstainers and recovering alcoholics had better outcome 3 years after treatment completion.

What Did We Learn From Our Study on Sober Living Houses and Where Do We Go From Here?, J. Psychoactive Drugs, at p. 1 (Polcin et al., 2010), attached as **Exhibit F**.

"A critically important aspect of one's social network is their living environment." *Id.* at p. 2. "Lack of a stable, alcohol and drug free living environment can be a serious obstacle to sustained abstinence." *Id.* at p. 1. "Destructive living environments can derail recovery for even highly motivated individuals." *Id.*

"An important component of relapse appears to be immediate re-exposure to risks associated with one's ongoing living situation (e.g., high substance availability, family and peers non-supportive of recovery, interpersonal conflict, poorly structured time). Drug-free housing that supports recovery, risk avoidance, and employment … heighten one's chances of recovery (Jason, Olson, Ferrari, & Davis, 2004)." *The Need for Substance Abuse After-Care: Longitudinal Analysis of Oxford House*, Addictive Behaviors 32 at p. 804 (2007), attached as **Exhibit G**.

The requested census size is necessary because, "Larger homes … offer more opportunities to exchange positive social support …." *Id.* at p. 1. Studies indicate that "larger Houses will promote recovery through their ability to promote larger (Zywiak, Longabaugh, & Wirtz, 2002), more supportive social networks (MacDonald, 1987), that include sober others in recovery (Hawkins & Fraser, 1987, Zywiak et al.), constructs linked to sober living." *Id.* at p. 3.

"[L]arger social networks" are correlated with "stronger improvement on abstinence." *Interaction of Motivation and Social Support on Abstinence among Recovery Home Residents*, J. Drug Issues at p. 9 (Korcha, Polcin & Bond, 2016) (attached as **Exhibit H**). "Given the widespread finding that social contact and social support facilitates health and well-being," the experts urge that "recovery home service providers … consider ways to increase social support for socially isolated residents through structured recreational and social activities within the home" among other things. *Id.* at pp. 9-10. *See also Social Networks Among Residents in Recovery Homes*, Adv. Psychol. Study at p. 8 (Jason et al., 2012), attached as **Exhibit I** ("studies suggest a strong relationship between an individual's social connection … and their own likelihood of remaining abstinent" and that "the overall size of the important person network was materially significant"); *see also Benefits of Peer Support Groups in the Treatment of Addiction*, Substance Abuse and Rehabilitation at p. 145 (Tracy & Wallace, 2016), attached as **Exhibit J**.

Addiction is a complex disability that requires a multi-faceted and flexible approach to treatment. For example, while larger social networks and peer support networks are generally essential to recovery, quite often addiction is accompanied by other mental illnesses that require specialized treatment in more individualized settings and groups. There are also gender and ethnic differences in the approach to treatment and the experiences that lead to the need for treatment. For example, women are more likely to present with a history of abuse, which is often associated with post-traumatic stress disorder or eating disorders. Men, on the other hand, tend to be more likely to present with anxiety and depression. Of course, both genders can suffer from the same comorbidities with alcohol or drug addiction as a common denominator. But, quite often, groups need to be separated into homogenous 12-step work groups, psycho-educational groups, meaning process groups, and dialectical behavior therapy groups.

As the declaration of Liberty's expert witness, Jason Webb LCSW, ASUDC, attached as **Exhibit K**, explains, due to the nature and variety of addictions and mental illnesses that Liberty treats, as well as the unique Native American ethnicity of residents, it will need to separate its program into at least 4 of these type of homogenous groups

- Male Native American group – minimum of 12 clients in each group
- Female Native American group – minimum of 12 clients in each group
- Female trauma group – minimum of 12 clients in each group
- Male trauma group – minimum of 12 clients in each group

(*See* Ex. 17 at ¶ 62.) What is absolutely critical for the City to understand is that census size is driven, in large part, by program design, which, in turn, is driven by the particular disabilities of the residents. "Writers recommending the number of participants in a group acknowledge that the optimal size of the group should depend on the goals of the program, the theoretical orientation of the program, the profile of the participants and the requirements of the agency." *A Review of Optimal Group Size and Modularisation or Continuous Entry Format for Program Delivery,* (Stewart et al., 2009), attached as **Exhibit L**, at p. iii.

The Substance Abuse and Mental Health Services Administration (SAMHSA) is the agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. SAMHSA, along with the Center for Substance Abuse Treatment (CSAT), a subdivision of SAMHSA, has recognized the crucial role such homogenous therapy groups within the context of multi-model milieus play in substance abuse recovery:

> There has been significant debate within the field regarding the pros and cons of heterogeneous and homogeneous groups.... However, the homogeneous group, ***particularly when composed of clients with substance abuse disorders***, tends to lend itself more quickly to issues of cohesion and safety. For this reason, homogeneity has particular utility in the time-limited group intervention.
>
> An important issue within the context of the homogeneous substance abuse disorder group, whether time limited or not, is the group's tendency to bond around its history of substance abuse rather than its commitment to recovery. Although the general focus of substance abuse treatment is on the abuse itself, ***the focus also must include issues of living within the context of the group***. Through modeling and gentle persuasion, the group facilitator can broaden the scope of a substance

> abuse treatment group to include relationships, concerns about daily living, and newly discovered personal integrity. Such are the struggles of all people in all circumstances. The movement from "what is wrong with us" to "how do we build better lives?" is an important transition in the time-limited group, whether psychoeducational or process sensitive.
>
> Group therapy can be conducted within the context of almost any theoretical framework familiar to the therapist and appropriate to group goals. ***Often the therapist will work with two or more models at the same time***. The theoretical bases supporting both process-sensitive groups and a more directive style can be ***combined effectively to address substance-abusing clients***.

Treatment Improvement Protocols (TIP) Series, No. 34, SAMHSA/CSAT (1999), attached as **Exhibit M**, at p. 3 (emphasis added).

This is precisely what Liberty does. It combines a number of therapeutic models, as recommended by the SAMHSA/CSAT protocols. Also, it should be noted that "there is growing consensus among therapists that, whenever possible, women need to have their own groups, particularly during early recovery[.]" *Id.* at p. 13. *See also id.* at pp. 12-13.

Importantly, the City shouldn't confuse necessary therapeutic group size with the necessary residential treatment and recovery census. They are two different issues. Perhaps the easiest way to understand what happens in residential treatment is to think of the residential treatment center as a microcosm of society with more diversity and more complex social networks and the therapy groups as surrogate families functioning within that larger microcosm. The treatment center size is necessary so that "[t]he lessons in therapy are practiced in the normal social network." *Id.* at p. 1. Thus, residential treatment centers such as Liberty facilitate smaller groups, which are necessary for "breaking the isolation associated with substance abuse," among other things, within a larger social context, which is also necessary for "connecting individuals with others whose common purpose is to dramatically change their lives through connection ***and*** community." *Id.* (emphasis added).

As Mr. Webb explains in his declaration, it is necessary to recovery that Liberty's residents receive the needed social support at all social layers—from the smallest, most intimate groups, such as the "survival group" of 3-5 persons (such as roommates, etc.); to the intermediate layer of support found in the "sympathy group" (such as Liberty's therapeutic groups); to the broader "affinity band" or therapeutic community (or tribe) and the "active network" of approximately 150 known people, all of which are essential to create the structured environment necessary for recovery. *See* Ex. 17 at ¶¶ 52-68.

Further justifying Liberty's need for the desired census of 118 residents is its mentorship program, which is explained in Mr. Webb's declaration. *See id.* at ¶¶ 37.f, 66. Under this program, those at the higher stages of recovery mentor and model appropriate behavior for those in the lower

levels. Those at the lower levels receive support, training and instruction from those at the higher levels.

A census of 118 residents is necessary to avoid unnecessary resident isolation. *See id.* at ¶¶ 69-74. Indeed, because of their disability of addiction/SUDs it is necessary that a minimum of two persons occupy a bedroom, and sometimes the handicap of addiction requires three persons per bedroom to provide the support (and avoid isolation) necessary to recovery. *See id.* at ¶ 73. This is perhaps the main way that Liberty differs from the existing residents at Bel Aire and the main reason Liberty needs almost double the census of Bel Aire. While the elderly may be able to use and enjoy their dwelling rooms with just one resident, Liberty's residents cannot be alone in a single room due to their disabilities and handicaps. The disability of addiction/SUDs mandates a "buddy" system. The facility has 55 bedrooms. But, unlike Bel Air's residents, those 55 rooms cannot be occupied by a single resident suffering from addiction and/or SUDs. Thus, to have an "equal" housing opportunity to the 55-bedroom 61-resident housing opportunity that was given to Bel Air's residents, Liberty would need an accommodation at 118 residents so that there can be at least 2 residents per smaller room and a minimum of 3 residents in the larger rooms.

Also, because of the residents' disabilities and, thus, certain applicable UDHHS regulations, of the 55 bedrooms approximately 12 of them will be needed for staff offices and/or group therapy rooms. *See id.* at ¶ 74. That leaves 43 rooms for patients/residents.

The larger bedrooms will be used to house at least 3 residents. The smaller bedrooms will be used to house 2 residents per room. Residents with more acute addictions (i.e., who need more supervision and support from roommates) will be assigned to the 3-resident minimum rooms. Residents who are less acute will be assigned to the 2-bedroom room. The goal of making room assignments based upon resident acuity is to prevent loneliness and isolation, which is essential to avoid for those recovering from addiction and SUDs. *See* Ex. K at ¶ 74.

Additionally, 118 residents is necessary because there is a normal attrition that occurs in any therapeutic context. For example, speaking of psychotherapeutic groups, one of the foremost scholars in this area, Irvin D. Yalom, writes, "Since it is likely that one or possibly two clients will drop out of the group in the course of the initial meetings, it is advisable to start with a group slightly larger than the preferred size; thus, to obtain a group of seven or eight members, many therapists start a new group with eight or nine." *The Theory and Practice of Group Psychotherapy*, Irvin D. Yalom (5th ed. 2005), at p. 292, attached as **Exhibit N.** *See also* Ex. 17 at ¶¶ 75-79. The approval of a census of 118 is also essential to maintain the therapeutic community size and affinity band at all times due to resident absences caused by conflicting schedules, appointments, and admissions schedules and cycles. *See id.*

In short, because of their disabilities these residents must live together in a structured therapeutic community with a minimum of 118 residents. This is the only type of living arrangement that will work for these particular people at this juncture in their lives. Hence an accommodation from the City Code provisions set forth above is "necessary" under federal and state law.

F. Evidence the accommodation is reasonable.

"An '[a]ccommodation is not reasonable if it either (1) imposes undue financial and administrative burdens on a [city] or (2) requires a fundamental alteration in the nature of [a city] program.'" *Schwarz v. City of Treasure Island*, 544 F.3d 1201, 1220 (11th Cir. 2008) (quoting *Sch. Bd. of Nassau Cty. v. Arline,* 480 U.S. 273, 288 n. 17, 107 S.Ct. 1123, 94 L.Ed.2d 307 (1987) (quotation marks, alteration, and citations omitted)). In assessing whether an accommodation is reasonable, "a court may consider as factors the extent to which the accommodation would undermine the legitimate ***purposes*** and ***effects*** of existing zoning regulations . . . ." *Bryant Woods Inn, Inc. v. Howard Cty.*, 124 F.3d 597, 604 (4th Cir. 1997) (emphasis added). In other words the analysis of reasonableness is both aspirational/normative (evaluating purposes and goals) and actual/descriptive (taking into consideration the actual "effects" of existing zoning regulations). *Id. See also Courage to Change,* 73 F.4th at 1204.

The basic purpose of zoning is to bring complementary land uses together, while separating incompatible ones. *See Vill. of Euclid v. Ambler Realty Co.,* 272 U.S. 365, 388, 47 S.Ct. 114, 71 L.Ed. 303 (1926) ("A nuisance may be merely a right thing in the wrong place, like a pig in the parlor instead of the barnyard."). "Thus, ordering a municipality to waive a zoning rule ordinarily would cause a 'fundamental alteration' of its zoning scheme if the proposed use was incompatible with surrounding land uses." *Schwarz*, 544 F.3d at 1221. "On the other hand, if the proposed use is quite similar to surrounding uses expressly permitted by the zoning code, it will be more difficult to show that a waiver of the rule would cause a 'fundamental alteration' of the zoning scheme." *Id.*

For example, in *Hovsons, Inc. v. Township of Brick*, 89 F.3d 1096 (3rd Cir. 1996), the Third Circuit concluded that allowing the developer to build a nursing home in a residential zone would not be a "fundamental alteration" of the zoning code because the proposed facility was "similar to that of the local planned residential retirement communities" already allowed in that zone. Id. at 1105. Likewise, the requested accommodation in this case is "reasonable" because it is consistent with the stated purposes for the PO-1 zone.

According to the City Code, that zone "is established to provide an area which will accommodate the community's hospital and related buildings housing various health care uses; nursing homes and similar structures providing assisted care residential facilities; and a mixture of offices and related facilities for professional persons." City Code § 17.4.406(A). We believe Liberty's proposed uses fits the stated intent of this zone. After all, Liberty would be licensed by the UDHHS and, thus, would put the Property to a "health care use[]." *Id.*

Although I was unable to find a definition of "hospital" or "medical clinic" anywhere in the City Code, when a code does not define terms such as these it is appropriate to give those terms their common, dictionary definitions. *See State v. Bagnes*, 2014 UT 4, ¶ 14, 322 P.3d 719; *South Weber City v. Cobblestone Resort, LLC*, 2022 UT App 63, ¶ 23, 511 P.3d 1207. We think Liberty would fall within the meaning of "Hospitals (human care)" because it is a place "where the sick or injured are given medical or surgical care". https://www.merriam-

webster.com/dictionary/hospital; *see also* https://www.dictionary.com/browse/hospital. It also provides "medical" care. *See* https://www.merriam-webster.com/dictionary/medical ("of, relating to, or concerned with physicians or the practice of medicine"). It meets the definition of "medical" because what it provides to its residents is "curative; medicinal; therapeutic" and is "pertaining to or requiring treatment by other than surgical means". https://www.dictionary.com/browse/medical.

Liberty's proposed use will not fundamentally alter or change the character of the neighborhood. It will simply be replacing occupancy by 61 non-disabled (albeit aged) persons with occupancy with 118 disabled persons, a good number of whom will be Native American members of the Ute Tribe. There will be no material change in traffic patterns, parking patterns, etc.

Bel Aire is currently licensed by UDHHS as a Type II assisted living facility for 61 residents. *See* **Exhibit O**. "[A] type II assisted living facility[] … is a residential facility with a home-like setting that provides an array of coordinated supportive personal and health care services available 24 hours per day to residents who have been assessed under [UDHHS] rule to need any of these services." Utah Code Ann. § 26B-2-201(5)(a)(ii).

There is no need for resident parking because no client is permitted to leave a vehicle or have their own vehicle on site. *See* Ex. K at ¶ 80. In terms of staff parking, Liberty expects to have a maximum of 24 staff members on site during the days. *See id.* at ¶ 81. As the site plan, attached as **Exhibit P**, shows, there are at least 25 off-street parking places when only approximately a maximum of only 24 spaces are needed to accommodate Liberty's staff. Liberty will transport its clients to needed appointments and off-site visits/activities through Liberty's transportation van(s)/buses. *Id.* at ¶¶ 80-81. Consequently, the neighborhood shouldn't notice the change of occupancy in any way.

I note that the PO-1 zoning regulations contain no parking requirements. *See* City Code § 17.4.406. Accordingly, the City's off-street parking standards found in City Code § 17.5.133 (the "**Off-Street Parking Standards**"), do not strictly apply according to the plain language of the City Code.[2] I could not find any parking requirements for the type of facility that Liberty will operate. Therefore, it is difficult to discern what, if any, parking regulations may apply.

Assuming, for purposes of argument only ,that the Off-Street Parking Standards apply, they state that "[f]or uses not identified … the number of off-street parking spaces shall be determined by the planning commission." City Code § 17.5.133(C)(6). "The determination shall be based upon the requirements for the most comparable use listed" in the table set forth in City Code § 17.5.133(C)(6) "all at the discretion of the planning commission." City Code § 17.5.133(C)(6).

[2] According to the code, the Off-Street Parking Standards only apply "[w]herever the terms of the American Fork Development Code or other ordinance of the city require that off-street parking be required in conjunction with a specific use or development project[.]…" City Code § 17.5.133(B). As mentioned, the PO-1 zoning regulations contain no parking requirements. *See* City Code § 17.4.406. There is also no specific parking requirement mentioned anywhere in the code in conjunction with residential treatment, social detoxification, or recovery residences.

Under this table, the following parking requirements may apply, depending upon what use the planning commission thinks Liberty is most comparable to:

Use	**Parking Spaces Required**	**Parking Spaces Required (based on 43 bedrooms)**
Elderly housing, independent living	.6 per dwelling unit	25.8
Elderly housing, assisted living	.4 per dwelling unit	17.2

Liberty easily meets these requirements if the planning commission feels Liberty is more akin to either "Elderly housing, independent living" or "Elderly housing, assisted living." *See* City Code § 17.5.133(C)(6) (Table).

If Liberty is treated like an RFPD—which is what staff has labeled Liberty—then it easily meets the "three off-street parking spaces" required by City Code § 17.15.020.G.

If Liberty is treated like a "[l]ong-term patient care facilit[y[3]] under the Off-Street Parking Standards, then it would need to provide "[o]ne space for each employee during the maximum care period, plus one space for each four patient rooms for visitors." City Code § 17.5.133(C)(1)(c). Liberty meets the employee parking requirement because it will have a maximum of 24 staff members on site during the maximum care period and there are 25 off-street parking sites on the Property. *Id.*; Ex. P. But the visitor parking requirement is more challenging. Since there will be 43 patient rooms, *see* Ex. K at ¶ 74, that means Liberty would need an additional 10.75 parking spaces, if this code provision is strictly applied. However, there are a number of ways to address this requirement if the City insists that it applies, and if the planning commission wants to impose certain conditions of approval:

- Liberty could impose a "no visitors" parking policy. Visitors could be limited to off-site visits or virtual visits.
- Given that the Property is just steps away from UTA Bus Route 850, *see* **Exhibit Q**, Liberty could require that all visitors use public transit or park off site.
- Liberty could be required to lease, purchase, or otherwise acquire 11 off-site parking stalls for visitors and/or employees. Liberty is in the process of trying to secure just such an off-site parking arrangement.
- The visitor parking requirement could be waived by the planning commission under the authority of the FHA, ADA, and/or Rehabilitation Act as part of the reasonable accommodation granted by the City.

[3] The City Code lists "assisted living centers, rest homes[, and] nursing homes" as an example of this type of facility. City Code § 17.5.133(C)(1)(c).

As it regards parking, the bottom line is this: Liberty will be no more intense than Bel Aire was and, in any event, City Code § 17.5.133(C)(6), the FHA, ADA, and RA all give the planning commission substantial discretion to make reasonable parking adjustments and determinations.

Further, Liberty's use will not fundamentally alter the character of the neighborhood, which has already been altered by the City's prior land use decisions and approval of Bel Aire as an assisted living facility, as well as the widening of North County Boulevard and State Street.

Liberty's use will not create any additional traffic impact that cannot be absorbed by existing City infrastructure. Liberty's use will be no more intense than the assisted living facility. As Exhibit P shows, the Property is situated on the west side of North County Boulevard, which is a "Legacy Arterial (5 lanes)" road according to the City's master transportation plan, attached as **Exhibit R**. It is immediately south of the Maverick intersection of State Street and North County Boulevard. State Street is a "Legacy Principal Arterial (7lanes)" road at this location. Hence, the immediate road infrastructure is more than adequate to absorb any increased traffic due to Liberty, if any. But, again, there won't be any increased traffic burden caused by Liberty.

The use is reasonable because the physical capacity of the structure is more than adequate to accommodate the number of residents proposed by Liberty. As **Exhibit S** shows, there are 55 existing bedrooms at the facility. Some are larger than others. The larger bedrooms will be used to house at least 3 residents. The smaller bedrooms will be used to house 2 residents per room. Residents with more acute addictions (i.e., who need more supervision and support from roommates) will be assigned to the 3-resident minimum rooms. Residents who are less acute will be assigned to the 2-bedroom room. The goal of making room assignments based upon resident acuity is to prevent loneliness and isolation, which is essential to avoid for those recovering from addiction and SUDs. *See* Ex. K at ¶ 74.

UDHHS regulates the minimum square footage required per room for each resident. Liberty will ensure that it complies with UDHHS's square footage requirements and, based upon Liberty's calculations from Exhibit S, the facility is more than adequate to meet UDHHS regulations.

Finally, Liberty's proposed use "is quite similar to surrounding uses expressly permitted by the zoning code," and, therefore, granting Liberty an accommodation will not "cause a 'fundamental alteration' of the zoning scheme." *Schwarz*, 544 F.3d at 1221. As mentioned, it is very similar to the existing use as an assisted living facility. Liberty will simply be replacing non-disabled elderly persons with disabled non-elderly persons and Native Americans.

G. Physical address of the Property.

1088 East 390 South, Utah County Parcel No. 46:569:0008.

III. CONCLUSION

For the reasons set forth above, Liberty respectfully requests land use approval for a 118-resident facility as described above and an accommodation from the City Code provisions, staff interpretations, and/or City rules and policies described in Section I.B. and I.C. above.

It is imperative that the City act quickly on this request. Liberty is under contract to purchase the Property. It's due diligence period expires on July 20th. Hence, Liberty respectfully requests that it placed upon the Planning Commission's next available meeting, which, according to the City's website, should be July 16th. Because Liberty's due diligence deadline is July 20th, Liberty asks that the Planning Commission announce its decision at the meeting, followed by a written decision within ten (10) days of the date of its meeting.

If Liberty loses its opportunity to purchase the Property because of the City's refusal to treat Liberty as a permitted use and/or to grant a reasonable accommodation it will suffer at least $20 million in damages. Accordingly, Liberty hereby reserves the right bring a legal action to, among other things, compel compliance with state and federal law and/or seek its damages as permitted under federal and state law.

Finally, I would welcome the opportunity to discuss this application for reasonable accommodation with the City's planning staff, the City's administration, and/or the City's legal counsel, especially if you have questions about Liberty or its operations or federal case law. For example, there are important differences between the FHA, ADA and/or the Rehabilitation Act, which may come to bear.

While, for the most part, the FHA and ADA analysis is identical, *Courage to Change*, 73 F. 4th at 1187, the ADA is broader than the FHA in that it encompasses not just housing. Also, the ADA imposes a more "flexible … process" intended by Congress under the ADA when "considering a reasonable accommodation." *Seward v. Roy City*, 2020 U.S. Dis. LEXIS 11572, *11-*12 (D. Utah Jan. 22, 2020) (discussing ADA's flexibility in the employment context). The flexible process contemplated by the ADA requires good faith interaction with Liberty about any concerns the City's attorney or staff may have with its application. *See The Corp. of the Episcopal Church in Utah v. West Valley City*, 119 F. Supp. 2d 1215, 1221 (D. Utah 2000) ("the issue of reasonable accommodation under the Americans with Disabilities Act" is "intended to be an interactive process").

Sincerely,

McDonald Fielding PLLC

Daniel J. McDonald

Exhibit A

Subject: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008
From: "Daniel J. McDonald" <dan@mcdonaldfielding.com>
Sent: 6/9/2025 1:09:02 PM
To: mwhite@americanfork.gov; applications@americanfork.gov
Attachments: 2025.06.09 Letter to the City.pdf

Dear Melissa:

Please see the attached zoning inquiry letter for 1088 East 390 South, Tax Parcel No. 46:569:0008. Please confirm receipt. Many thanks.

Dan

Dan McDonald
McDonald Fielding, PLLC
Attorney at Law
P.O. Box 1184
Pleasant Grove, Utah 84062
Mobile: 801-372-0055
www.mcdonaldfielding.com

MCDONALDFIELDING
ATTORNEYS AT LAW

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Telephone: (801) 372-0055
www.mcdonaldfielding.com

June 9, 2025

Melissa White
Development Project Coordinator
American Fork City Planning Department
Via Email: mwhite@americanfork.gov

Via Email: applications@americanfork.gov

Re: Applicant: Liberty Addiction Recovery Centers, LLC ("Liberty")
Property: 1088 East 390 South, Tax Parcel No. 46:569:0008

Dear Melissa:

This firm represents Liberty Addiction Recovery Centers, LLC, which is under contract to purchase the Property described above. The Property has historically (and most recently) been used for a 61-resident "Type II" assisted living facility known as Bel Aire Senior Living. Liberty wants to use the Property primarily for a residential treatment facility licensed by the Utah Department of Health and Human Services ("**UDHHS**") to assist adults suffering from debilitating disabilities and handicaps. Liberty's residents suffer primarily from various low level mental health handicaps and disabilities with the comorbidity of drug and/or alcohol abuse and addiction and/or substance use disorders ("**SUDs**"). In other words, it's a dual diagnosis facility where residents will have an underlying mental health disability (i.e., anxiety, depression, etc.) with the comorbidity of addiction or SUDs. Liberty may also potentially use the Property for and seek licensure from UDHHS for social and/or medical detoxification as well as having a certain portion of the Property used as a licensed recovery residence to provide transitional housing for those stepping down to a lower level of care after residential treatment. Although the desired resident census would be determined by UDHHS regulations, our preliminary assessment suggests the Property could accommodate around 118+/- residents (10 for detoxification, 70 for treatment, and 38 for recovery residence services).

I am writing to seek clarification from the City as to whether the City believes this proposed use is a permitted use under the City's zoning laws or whether you believe it is *not* a permitted use, thereby requiring my client to seek some type of reasonable accommodation or other relief under the federal Fair Housing Act, Americans with Disabilities Act, and Rehabilitation Act. As you may know, Liberty's residents are a protected class and protected from unlawful housing discrimination under federal and state law.[1]

[1] They all are handicapped and/or have disabilities, which include drug and alcohol addiction. *See, e.g.*, 42 U.S.C. § 3602(h) (federal Fair Housing Act definition of handicap); 24 C.F.R. § 100.201(a)(2) (same). *See also* 29 U.S.C. § 705(9) (definition of disability under the federal Rehabilitation Act); 42 U.S.C. § 12102 (definition of disability under the federal Americans with Disabilities Act or "ADA"). *See also* Utah Code Ann. § 57-21-5(1). Indeed, the United States Court of Appeals for the Tenth Circuit, which is the federal appeals court that governs this jurisdiction, has held

It is my understanding that the Property is in the City's PO-1 professional office zone. According to the City Code, that zone "is established to provide an area which will accommodate the community's hospital and related buildings housing various health care uses; nursing homes and similar structures providing assisted care residential facilities; and a mixture of offices and related facilities for professional persons." City Code § 17.4.406(A). We believe Liberty's proposed uses fits the stated intent of this zone. After all, Liberty would be licensed by the UDHHS and, thus, would put the Property to a "health care use[]." *Id.*

Liberty also seems to fit within the following permitted uses, depending upon the meaning of these terms:

1. Hospitals (human care) and appurtenant structures and facilities.

....

3. Medical clinics and laboratories.
4. Office buildings for professional persons.

Id. § 17.4.406(B).

I was unable to find a definition of "hospital" or "medical clinic" anywhere in the City Code. When a code does not define terms such as these it is appropriate to give those terms their common, dictionary definitions. *See State v. Bagnes*, 2014 UT 4, ¶ 14, 322 P.3d 719; *South Weber City v. Cobblestone Resort, LLC*, 2022 UT App 63, ¶ 23, 511 P.3d 1207. We think Liberty would fall within the meaning of "Hospitals (human care)" because it is a place "where the sick or injured are given medical or surgical care". https://www.merriam-webster.com/dictionary/hospital; *see also* https://www.dictionary.com/browse/hospital. It also provides "medical" care. *See* https://www.merriam-webster.com/dictionary/medical ("of, relating to, or concerned with physicians or the practice of medicine"). It meets the definition of "medical" because what it provides to its residents is "curative; medicinal; therapeutic" and is "pertaining to or requiring treatment by other than surgical means". https://www.dictionary.com/browse/medical .

The Utah Health and Human Services Code defines "social detoxification" as "short-term residential services for persons who are experiencing or have recently experienced drug or alcohol intoxication, that are provided outside of a health care facility licensed under Part 2, Health Care Facility Licensing and Inspection, and that include: (a) room and board for persons who are unrelated to the owner or manager of the facility; (b) specialized rehabilitation to acquire sobriety; and (c) aftercare services." *Id.* § 26B-2-101(54).

It defines "residential treatment" as "a 24-hour group living environment for four or more individuals unrelated to the owner or provider that offers room or board and specialized treatment, behavior modification, rehabilitation, discipline, emotional growth, or habilitation services for

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that "treatment homes for drug and alcohol addiction are covered dwellings under the FHAA." *Courage to Change Ranches Holding Co. v. El Pas County*, 73 F.4th 1175, 1200 (10th Cir. 2023).

persons with emotional, psychological, developmental, or behavioral dysfunctions, impairments, or chemical dependencies." Utah Code Ann. § 26B-2-101(50)(a) (effective 7/1/2025). Liberty will operate a "mental health treatment program", "substance abuse treatment program", and/or "substance use disorder treatment program" as those terms are defined by the health and human services code. *See id.* §§ 26B-2-101(36), & -(56). These programs provide structured intervention to improve mental health, prevent mental disorders, and treat mental health conditions, and also specialized drug or alcohol treatment, rehabilitation, and/or habilitation services to persons with a diagnosed SUD or chemical dependency disorder. *Id.*

A "recovery residence" is a home, residence, or facility that meets at least two of the following requirements:

(i) provides a supervised living environment for individuals recovering from a substance use disorder;
(ii) provides a living environment in which more than half of the individuals in the residence are recovering from a substance use disorder;
(iii) provides or arranges for residents to receive services related to the resident's recovery from a substance use disorder, either on or off site;
(iv) is held out as a living environment in which individuals recovering from substance abuse disorders live together to encourage continued sobriety; or
(v)
  (A) receives public funding; or
  (B) is run as a business venture, either for-profit or not-for-profit.

Id. § 47(a).

Under UDHHS regulations "[a] provider wishing to provide medically monitored inpatient withdrawal management under a social detoxification license may only do so" if, among other things, "medical and nursing professionals provide 24-hour medically monitored evaluation and withdrawal management under physician-approved policies and physician-monitored procedures and protocols[.]" Utah Admin. Code R501-11-6(2)(a). In short, social detoxification is a medically-managed level of clinical care. So is residential treatment for mental health and SUDs.

For example, under UDHHS regulations Liberty will be offering "clinical" treatment. "'Clincal' means treatment or service delivered by a mental health or medical professional that is licensed by the Division of Professional Licensing." Utah Admin. Code R501-1-3(5). Amy Parry DNP, APRN, PMHNP-BC, (Psychiatric Mental Health Nurse Practitioner with a license to prescribe psychiatric and controlled medications) will be Liberty's clinical director. Further, "[e]ach residential treatment provider providing services to a substance use disorder client shall[] … only admit a substance use disorder client with a level of care that falls within American Society of Addiction Medicine levels 3.1 through 3.5[.]" Utah Admin. Code R501-19-3(9)(a). In other words, treatment for substance use disorders is a medical intervention governed by medical criteria. UDHHS regulations mandate that "[a] clinical professional shall oversee any therapeutic services conducted in the therapeutic environment[.]" *Id.* R501-19-3(12).

UDHHS regulations essentially make inpatient treatment a type of medical clinic that delivers clinical care and medical interventions.

Recovery residences are another type of medical intervention. The UDHHS requires each recovery residence provider to "contract with, or otherwise provide as needed, referral information for client access to" a physician, psychiatrist, mental health therapist, or substance use disorder counselor. *Id.* R501-18-6(1). Each recovery residence must be overseen by a qualified clinical director. *See id.* R501-18-6(2)-(5).

Consequently, we believe that Liberty would be a permitted use under the City Code because it is, in essence, a type of "hospital" or "medical clinic" and, of course, it will include offices for its professional staff. City Code § 17.4.406(B). Please let me know if the City agrees or disagrees with this interpretation. If it disagrees with this interpretation, then please let me know the basis for the City's disagreement.

Also, we have questions about the requirements of City Code §§ 17.4.406(C) and (D) we were hoping you could clarify. Those questions are as follows:

1. How is the "Minimum Area" and "Minimum Width" determined in Section 406(C)? Is it referring to the parcel area or the building footprint area or something else?
2. Is the "site area" in Section 406(D)(1) referring to the parcel lot size, the building footprint, the footprint *and* parking areas, or is referring to something else?
3. Is the "twenty thousand square feet" threshold in Section 406(D)(2) measured by footprint or total square footage for both floors or something else?
4. Assuming the City agrees with our interpretation that this use is "permitted" what is the approval procedure?

For your information, according to our records, the total ground floor footprint of the facility is 18,337 sq. feet. The upper floor is 8,865 sq. feet. Total square footage for the vertical structure is approximately 27,202 sq. feet.

Liberty is in its due diligence phase of purchasing the Property. Accordingly, a timely and prompt response from the City would be greatly appreciated. We would also welcome a meeting with the City to further discuss things and/or answer any questions the City may have. I look forward to hearing from you at your earliest opportunity.

Sincerely,

McDonald Fielding PLLC

Daniel J. McDonald

Exhibit B

Subject: RE: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008
From: "Patrick O'Brien" <pobrien@americanfork.gov>
Sent: 6/18/2025 3:04:34 PM
To: "Daniel J. McDonald" <dan@mcdonaldfielding.com>
CC: "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" <kwiese@americanfork.gov>; "Melissa White" <mwhite@americanfork.gov>

Mr. McDonald,

I appreciate your thorough letter and your client doing their due diligence to avoid any potential issues.

I have had an opportunity to discuss your letter and the details with our City Attorney. After reviewing your letter, our staff feels that the use you are proposing is not a permitted use in the PO-1 Professional Office Zone.

The subject property is located within the PO-1 zone. As stated in § 17.4.406 of the American Fork City Code, the intent of this zone is to accommodate health care-related uses, including hospitals (human care), medical clinics, and nursing homes, as well as office buildings for professional persons. While your letter provides a thoughtful interpretation of how Liberty's proposed facility could conceptually resemble a hospital or medical clinic, the City concludes that a residential treatment facility—particularly one involving long-term housing, recovery residence operations, and transitional care—is not specifically listed or contemplated as a permitted or conditional use in the PO-1 zone.

Based on the definition in the Utah Health and Human Services Code, residential services are a specific use identified in the American Fork Municipal Code, and they are permitted in different zones throughout the City. The definition of Residential Facilities is identified under Section 17.15 of the American Fork Municipal Code and does not resemble the permitted uses allowed in the PO-1 zone.

The City is fully committed to complying with all applicable state and federal laws, including the FHA, ADA, and related statutes protecting individuals with disabilities. If Liberty believes that the use of the property in the PO-1 zone is necessary to afford equal housing opportunity, Liberty may submit a written request for reasonable accommodation pursuant to American Fork City Code 17.15. The City will evaluate any such request promptly and in good faith, consistent with its legal obligations.

Please feel free to reach out further if you have any further questions.

AMERICAN FORK

Patrick O'Brien | Director
Development Services
P (801) 763-3060
F (801) 763-3033
275 E 200 N, American Fork, UT 84003

Office Hours: Monday-Thursday, 07:00-18:00

Book time with Patrick O'Brien

Find Out More About American Fork HERE

From: Melissa White <mwhite@americanfork.gov>
Sent: Thursday, June 12, 2025 12:39 PM
To: Daniel J. McDonald <dan@mcdonaldfielding.com>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese <kwiese@americanfork.gov>
Subject: Re: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Good Afternoon Daniel,

I wanted to provide a quick update on your recent zoning inquiry letter. We are waiting on an update from the city's legal counsel and will reach out to you when we have more information. Thank you for your patience, and please feel free to let me know if you have any questions in the meantime.

Thank you,

AMERICAN FORK
DEVELOPMENT SERVICES

Melissa White
Development Project Coordinator
Development Services

P: 801-854-5932 Ext. 5932
275 East 200 North, American Fork, UT 84003

From: Daniel J. McDonald <dan@mcdonaldfielding.com>
Sent: Monday, June 9, 2025 4:12 PM
To: Melissa White <mwhite@americanfork.gov>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese < kwiese@americanfork.gov>
Subject: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Melissa, thank you for getting back to me so quickly. I sent this to you because your information was available on the city's website. Thank you for getting our inquiry into the right hands.

Dan McDonald
McDonald Fielding, PLLC
Attorney at Law
P.O. Box 1184
Pleasant Grove, Utah 84062
Mobile: 801-372-0055
www.mcdonaldfielding.com

------ Original Message ------
From "Melissa White" <mwhite@americanfork.gov>

To "Daniel J. McDonald" <dan@mcdonaldfielding.com>
Cc "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" <kwiese@americanfork.gov>
Date 6/9/2025 1:35:20 PM
Subject Re: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Hello Mr. McDonald,

Thank you for reaching out to Development Services. I have forwarded your letter to the Planning and Zoning division and a member of the team will be reaching out to you with information. Please let me know if you have any questions in the meantime and I would be happy to assist you.

Thank you,

AMERICAN FORK
DEVELOPMENT SERVICES

Melissa White
Development Project Coordinator
Development Services

P: 801-854-5932 Ext. 5932
275 East 200 North, American Fork, UT 84003

From: Daniel J. McDonald <dan@mcdonaldfielding.com>
Sent: Monday, June 9, 2025 1:09 PM
To: Melissa White <mwhite@americanfork.gov>; Applications DS <applications@americanfork.gov>
Subject: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Dear Melissa:

Please see the attached zoning inquiry letter for 1088 East 390 South, Tax Parcel No. 46:569:0008. Please confirm receipt. Many thanks.

Dan

Dan McDonald
McDonald Fielding, PLLC
Attorney at Law
P.O. Box 1184
Pleasant Grove, Utah 84062
Mobile: 801-372-0055
www.mcdonaldfielding.com

Exhibit C

Subject: Re[4]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008
From: "Daniel J. McDonald" <dan@mcdonaldfielding.com>
Sent: 6/19/2025 3:27:23 PM
To: "Patrick O'Brien" <pobrien@americanfork.gov>
CC: "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" <kwiese@americanfork.gov>; "Melissa White" <mwhite@americanfork.gov>
Attachments: 2025.06.19 Letter to the City.pdf

Mr. O'Brien:

It seems we're at a crossroads here, as explained in my attached letter, which I respectfully request that you review with your legal counsel at your earliest convenience. As requested in the letter, please let me know if the city will reconsider its interpretations or if the city is going to force us to go through what I believe is a discriminatory reasonable accommodation process that shouldn't be required of Liberty. I have a national law practice that specializes in discrimination and Fair Housing Act/ADA land use cases. I just went through this with another city in Idaho and, fortunately, that city and its attorney had the wisdom to interpret the city's code to allow the proposed use of my client. I hope you and your staff will consider doing the same. I have given the city the interpretive tools it needs to interpret its code in compliance with state and federal law. I strongly urge the city to follow my counsel on this. But if, after reading my letter, you're still of the opinion Liberty must request an accommodation under Chapter 17.15 I need to know at the earliest moment if Liberty is to have any chance of completing that process before its due diligence deadline expires and its opportunity to purchase the property is lost. Best regards,

Dan McDonald

Dan McDonald
McDonald-Fielding, PLLC
Attorney at Law
P.O. Box 1184
Pleasant Grove, Utah 84062
Mobile: 801-372-0055
www.mcdonaldfielding.com

------ Original Message ------
From "Patrick O'Brien" <pobrien@americanfork.gov>
To "Daniel J. McDonald" <dan@mcdonaldfielding.com>
Cc "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" <kwiese@americanfork.gov>; "Melissa White" <mwhite@americanfork.gov>
Date 6/18/2025 3:04:34 PM
Subject RE: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

> Mr. McDonald,
>
> I appreciate your thorough letter and your client doing their due diligence to avoid any potential issues.
>
> I have had an opportunity to discuss your letter and the details with our City Attorney. After reviewing your letter, our staff feels that the use you are proposing is not a permitted use in

the PO-1 Professional Office Zone.

The subject property is located within the PO-1 zone. As stated in § 17.4.406 of the American Fork City Code, the intent of this zone is to accommodate health care-related uses, including hospitals (human care), medical clinics, and nursing homes, as well as office buildings for professional persons. While your letter provides a thoughtful interpretation of how Liberty's proposed facility could conceptually resemble a hospital or medical clinic, the City concludes that a residential treatment facility—particularly one involving long-term housing, recovery residence operations, and transitional care—is not specifically listed or contemplated as a permitted or conditional use in the PO-1 zone.

Based on the definition in the Utah Health and Human Services Code, residential services are a specific use identified in the American Fork Municipal Code, and they are permitted in different zones throughout the City. The definition of Residential Facilities is identified under Section 17.15 of the American Fork Municipal Code and does not resemble the permitted uses allowed in the PO-1 zone.

The City is fully committed to complying with all applicable state and federal laws, including the FHA, ADA, and related statutes protecting individuals with disabilities. If Liberty believes that the use of the property in the PO-1 zone is necessary to afford equal housing opportunity, Liberty may submit a written request for reasonable accommodation pursuant to American Fork City Code 17.15. The City will evaluate any such request promptly and in good faith, consistent with its legal obligations.

Please feel free to reach out further if you have any further questions.

AMERICAN FORK

Patrick O'Brien | Director
Development Services

P (801) 763-3060
F (801) 763-3033
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From: Melissa White <mwhite@americanfork.gov>
Sent: Thursday, June 12, 2025 12:39 PM
To: Daniel J. McDonald <dan@mcdonaldfielding.com>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese <kwiese@americanfork.gov>
Subject: Re: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

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Thank you,

Melissa White
Development Project Coordinator
Development Services

AMERICAN FORK
DEVELOPMENT
SERVICES

P: 801-854-5932 Ext. 5932
275 East 200 North, American Fork, UT 84003

From: Daniel J. McDonald <dan@mcdonaldfielding.com>
Sent: Monday, June 9, 2025 4:12 PM
To: Melissa White <mwhite@americanfork.gov>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese < kwiese@americanfork.gov>
Subject: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Melissa, thank you for getting back to me so quickly. I sent this to you because your information was available on the city's website. Thank you for getting our inquiry into the right hands.

Dan McDonald
McDonald Fielding, PLLC
Attorney at Law
P.O. Box 1184
Pleasant Grove, Utah 84062
Mobile: 801-372-0055
www.mcdonaldfielding.com

------ Original Message ------
From "Melissa White" <mwhite@americanfork.gov>
To "Daniel J. McDonald" <dan@mcdonaldfielding.com>
Cc "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" <kwiese@americanfork.gov>
Date 6/9/2025 1:35:20 PM
Subject Re: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

> Hello Mr. McDonald,
>
> Thank you for reaching out to Development Services. I have forwarded your letter to the Planning and Zoning division and a member of the team will be reaching out to you with information. Please let me know if you have any questions in the meantime and I would be happy to assist you.
>
> Thank you,

AMERICAN FORK
DEVELOPMENT
SERVICES

Melissa White
Development Project Coordinator
Development Services

P: 801-854-5932 Ext. 5932
275 East 200 North, American Fork, UT 84003

From: Daniel J. McDonald <dan@mcdonaldfielding.com>
Sent: Monday, June 9, 2025 1:09 PM
To: Melissa White <mwhite@americanfork.gov>; Applications DS <applications@americanfork.gov>
Subject: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Dear Melissa:

Please see the attached zoning inquiry letter for 1088 East 390 South, Tax Parcel No. 46:569:0008. Please confirm receipt. Many thanks.

Dan

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June 19, 2025

Patrick O'Brien, Director
Development Services
American Fork, Utah 84003
Via Email: pobrien@americanfork.gov

Re: Applicant: Liberty Addiction Recovery Centers, LLC ("Liberty")
Property: 1088 East 390 South, Tax Parcel No. 46:569:0008

Dear Mr. O'Brien:

Thank you for your email yesterday responding to the zoning inquiry of Liberty Addiction Recovery Centers, LLC, which is under contract to purchase the Property described above. I am writing to request that the City reconsider its determination that my client's proposed use would not be a permitted use in the PO-1 zone in light of what I have to say below, which I hope might change the City's mind.

Your letter seems to agree (in concept) with me that "Liberty's proposed facility could conceptually resemble a hospital or medical clinic," but deny this use is a permitted use because it "is not specifically listed … as a permitted or conditional use in the PO-1 zone." I am glad that we at least share *that* conceptual common ground.

But if I understand your letter correctly the City is taking the position that Liberty is a "residential facility" as that term is defined in Section 17.15 of the American Fork Municipal Code. As you state, "residential services are a specific use identified in the American Fork Municipal Code, and they are permitted in different zones throughout the City. The definition of Residential Facilities is identified under Section 17.15 of the American Fork Municipal Code and does not resemble the permitted uses allowed in the PO-1 zone."

With all due respect, I think this interpretation will run afoul of federal anti-discrimination law if the City persists in relying upon it.

To begin, the City Code recognizes two types of "residential facility": (1) a "residential facility for elderly persons" and (2) a "residential facility for persons with disabilities". A "residential facility" is defined in Section 17.15.010(D) as a "residential facility for elderly persons and/or residential facility for persons with a disability." City Code § 17.15.010(D). I will call these two general types of "residential facility" an RFEP and RFPD, respectively. An "assisted living facility" is a specific subtype of RFEP. As Section 17.12.201(F) of the City Code states, an "assisted living facility" is "[a] ***residential facility***, conforming to the requirements of the state

division of human services or successor agency, as a type I or type II facility, occupied or intended to be occupied by two or more elderly persons …" City Code § 17.12.201(F) (emphasis added).

The PO-1 zone allows assisted living RFEPs as a permitted use but prohibits RFPDs. *See* City Code § 17.4.406(B)(6). If Liberty truly is an RFPD—and I question this because Liberty will have more than 8 residents and an RFPD, by definition, has only 8 or fewer residents under City Code § 17.15.010(F)—this is a big problem for the City.

The federal Fair Housing Act ("**FHA**" or "**FHAA**") makes it illegal "[t]o discriminate in the sale or rental, or to otherwise make unavailable or deny, a dwelling to any buyer or renter because of a handicap of … (A) that buyer or renter, (B) a person residing in or intending to reside in that dwelling after it is so sold, rented, or made available; or (C) any person associated with that buyer or renter." 42 U.S.C. § 3604(f)(1). The Utah Fair Housing Act mirrors this prohibition. *See* Utah Code Ann. § 57-21-5(1). Moreover, Title II of the ADA provides "n]o otherwise qualified individual with a disability in the United States . . . shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance ...." 29 U.S.C. § 794(a). *See also* 42 U.S.C. § 12132 ("no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity").

Liberty's residents are handicapped and/or have disabilities, which include drug and alcohol addiction. *See, e.g.,* 42 U.S.C. § 3602(h) (federal Fair Housing Act definition of handicap); 24 C.F.R. § 100.201(a)(2) (same). *See also* 29 U.S.C. § 705(9) (definition of disability under the federal Rehabilitation Act); 42 U.S.C. § 12102 (definition of disability under the federal Americans with Disabilities Act or "ADA"). *See also* Utah Code Ann. § 57-21-5(1).

Discrimination occurs when similarly situated persons are treated differently. *See Courage to Change Ranches Holding Co. v. El Paso Cnty.*, 73 F.4th 1175, 1191-92, 1201-03 (10th Cir. 2023) (discussing facial and as-applied discrimination). Like the Orem City ordinance at issue in *Bangerter v. Orem City Corp.*, 46 F.3d 1491, 1498 (10th Cir. 1995), American Fork City's zoning ordinances "facially single out the handicapped and apply different rules to them[,]" which is illegal under federal law. *Bangerter,* 46 F.3d at 1500. If Liberty is not a type of medical clinic or human services hospital, then the City's zoning scheme gives an approved use for those types of facilities and for the elderly but expressly denies that same use to persons with disabilities. "[A] plaintiff makes out a prima facie case of intentional discrimination under the FHAA merely by showing that a protected group has been subjected to explicitly differential—i.e. discriminatory—treatment." *Id.* at 1501. Thus, under the authority of *Bangerter*, if the City refuses to consider Liberty a type of permitted medical clinic or human services hospital, Liberty could "state[] a direct claim of facially discriminatory treatment of handicapped persons[,]" *id.* at 1502, because the City Code facially discriminates against disabled persons.

Under the most recent decisions of the United States Court of Appeals for the Tenth Circuit, which is the federal appellate court with jurisdiction over Utah, there can be no doubt that assisted

living RFEPs are *the* relevant comparator group for purposes of anti-discrimination analysis. In *Courage to Change*, Soaring Hope Recovery Center sought to provide treatment and housing for people recovering from drug and alcohol addictions in a zone where group homes and assisted living facilities for the elderly were permitted. The county code in that case treated Soaring Hope differently from group homes and assisted-living for the elderly. Specifically, there were different occupancy caps with elderly living having higher occupancy than was allowed for addiction treatment facilities such as Soaring Hope. *See Courage to Change*,, 73 F.4th at 1193.

In determining that assisted-living facilities for the elderly were the relevant comparator group for residential facilities for the disabled such as Soaring Hope, the Tenth Circuit held:

> ***As a matter of law***, we agree with Soaring Hope that the other structured group-living arrangements governed by the Code, ***especially group homes for the aged***, are the relevant comparators to group homes for disabled persons.

Id. (emphasis added). The court based its reasoning on *Cinnamon Hills Youth Crisis Ctr., Inc. v. Saint George City*, 685 F.3d 917 (10th Cir. 2012), a case that I won for my client, the City of St. George., in 2012. It held:

> … our reasoning in *Cinnamon Hills* … supports that in identifying relevant comparators for group homes for disabled persons, we look to other structured group-living arrangements in the zoning scheme.
>
> After examining the Code, Colorado's statutes, and our precedent, we hold that the relevant comparators for group homes for disabled persons are other structured group-living arrangements in the Code, including group homes for the aged.
>
> This being so, we conclude that the Code's occupancy caps for disabled persons are facially discriminatory. Like the ordinance in *Bangerter*, the Code "facially single[s] out" disabled persons by applying five-person occupancy limits to group homes for disabled persons while allowing eight or more occupants in all other structured group-living arrangements. *Id.* at 1500. We find evidence of discriminatory intent and purpose on the face of the Code.

Courage to Change, 73 F.4th at 1196.

If American Fork City persists in not treating Liberty as a permitted use (i.e., a type of human services hospital or medical clinic) your situation is even worse than it was for the guilty county in *Courage to Change*. Instead of just imposing different census caps on the elderly vs. the disabled, American Fork City will have ***altogether excluded*** a similarly situated use in the PO-1 zone on the basis that Liberty's residents have disabilities. In short, the City cannot legally allow assisted living facilities while prohibiting Liberty's proposed use in the same zone. This is clear

from the face of the code *if* the City refuses to treat Liberty as a permitted use (and treats it as an RFPD).

Additionally, *Courage to Change* recognized a "zoning out" theory of disparate treatment discrimination that is applicable here. *See id.* at 1201 ("We find Soaring Hope's 'zoning-out' argument persuasive."). Under this theory of discrimination, because Bel Aire provides similar therapy, treatment, and longer-term living opportunities to the elderly that Liberty provides to its disabled residents the City cannot lawfully permit the former and prohibit the latter in the same zone. *See id.* at 1201-1204. The Tenth Circuit concluded that "[t]he record supports a conclusion that the County treated nondisabled residents more favorably than it did Soaring Hope" when it "allowed other structured group-living arrangements to engage in medical and mental-health therapies … while prohibiting the same activities" for Soaring Hope's residents. *Id.* at 1203.

Similarly, your email states: "the City concludes that a residential treatment facility—particularly one involving long-term housing, recovery residence operations, and transitional care—is not specifically listed or contemplated as a permitted or conditional use in the PO-1 zone." But assisted living facilities like Bel Aire do just that—they provide long-term housing and care for the elderly. What Liberty proposes to do for the disabled is substantially similar to what Bel Aire provided for the elderly. Of course, there are *some* differences but they are not substantial enough to remove Bel Aire as a relevant comparator for purposes of federal and state anti-discrimination laws. The *Courage to Change* and *Cinnamon Hills* cases make this clear. Hospitals and medical clinics are, for that matter, *also* relevant comparators for purposes of Title II of the ADA and the Rehabilitation Act. The city cannot allow those while excluding treatment for disabled persons.

And the solution to this problem is *not* to force Liberty to file a reasonable accommodation application and go through the reasonable accommodation process outlined in Chapter 17.15 of the City Code. The solution is to treat Liberty as a type of human services hospital or medical clinic. As mentioned, in my initial letter, this meets the broad purposes of the PO-1 zone, which "is established to provide an area which will accommodate the community's hospital and related buildings housing ***various health care uses***; nursing homes and ***similar structures*** providing assisted care ***residential facilities***; and a mixture of offices and related facilities for professional persons." City Code § 17.4.406(A) (emphasis added).

Indeed, forcing Liberty to go through the reasonable accommodation process will only *exacerbate* and *cement* discriminatory action because it is unlawful to make Liberty go through this process when it did not require the same of Bel Aire and does not require the same of similarly situated medical clinics and human health service providers such as human care hospitals. *See City of Cleburne v. Cleburne Living Center, Inc.*, 473 U.S. 432, 87 L. Ed. 2d 313, 105 S. Ct. 3249 (1985).

"A procedure may not be required only of the handicapped but not of other people." *Id.* at 1234. This is the core holding in *Cleburne*. There, the United States Supreme Court held that the city violated the constitution's equal protection clause because, among other things

> The city does not require a special use permit in an R-3 zone for apartment houses, multiple dwellings, boarding and lodging houses, fraternity or sorority houses, dormitories, apartment hotels, ***hospitals***, sanitariums, ***nursing homes for convalescents or the aged*** (other than for the insane or feebleminded or alcoholics or drug addicts), private clubs or fraternal orders, and other specified uses. It does, however, insist on a special permit for the Featherston home, and it does so, as the District Court found, because it would be a facility for the mentally retarded. ***May the city require the permit for this facility when other care and multiple-dwelling facilities are freely permitted***?

Id. at 447-48 (emphasis added). The Supreme Court answered that question with a resounding "no" holding that there is no rational basis to treat homes for the handicapped differently than other forms of group living and group care such as hospitals, nursing homes, elderly living and so forth. *See id.* at 449. It is unlawful to make the former go through special approval processes while freely permitting the latter. *See id.*

Finally, my client will likely lose its contractual right to purchase the Property before the planning commission can convene a hearing and issue a written decision on a reasonable accommodation application. In short, forcing my client to go through that process is, in effect, a denial of a reasonable accommodation.

There is an easy way to avoid the potential discrimination liability the City will have if it persists in treating uses such as Liberty Addiction differently than medical clinics, hospitals (human care), nursing homes, and assisted living facilities in this zone. I outlined that for the City in my initial zoning inquiry letter dated June 9, 2025. My client's use clearly fits the purposes for which this zone was created. My client's use can clearly come within the permitted uses outlined in the PO-1 zone without doing any violence to the English language. And, finally, if my client's use does not and cannot fit within any of the permitted use definitions the City *should*, nonetheless, allow Liberty as a permitted use in this zone to avoid liability for discrimination for the reasons outlined above.

Please let me know at your earliest convenience if, after reading this letter, the City is persuaded that Liberty's proposed use is a permitted use (or should be treated as a permitted use to avoid discrimination liability). Also, please let me know at your earliest convenience if the City's position remains unchanged. All rights are hereby expressly reserved under the FHA, ADA, and Rehabilitation Act. This is *not* a reasonable accommodation request. This is a demand for compliance with federal and state anti-discrimination laws.

Sincerely,

MCDONALD FIELDING PLLC

Daniel J. McDonald

Exhibit D

Subject: Fw: Re[5]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008
From: "Heather Schriever" <hschriever@americanfork.gov>
Sent: 7/3/2025 11:49:44 AM
To: "dan@mcdonaldfielding.com" <dan@mcdonaldfielding.com>
CC: "Patrick O'Brien" <pobrien@americanfork.gov>
Attachments: 2025.06.19 Letter to the City.pdf

Mr. McDonald,
The City has received your additional communication. The City has already provided you with an informal, nonbinding response to your initial inquiry.
Best regards,
Heather Schriever
American Fork City Attorney

From: Daniel J. McDonald <dan@mcdonaldfielding.com>
Sent: Tuesday, July 1, 2025 11:10 AM
To: Patrick O'Brien <pobrien@americanfork.gov>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese <kwiese@americanfork.gov>; Melissa White <mwhite@americanfork.gov>
Subject: Re[5]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008
Importance: High

Mr. O'Brien:

It's been more than a week since I sent you the attached letter and email below. Time is running out for Liberty Addiction. Its due diligence period expires on July 20th, which means that if a decision is not made by the City by then, Liberty Addiction will suffer severe damage. If I do not hear back from the City on the attached request by close of business tomorrow Liberty Addiction will assume that its request to be treated as a medical clinic/permitted use is denied. We will go from there. I am still hoping the City has a change of heart and reconsiders its prior interpretation. Thank you for your prompt attention to this matter.

Dan

Dan McDonald
McDonald Fielding, PLLC
Attorney at Law
P.O. Box 1184
Pleasant Grove, Utah 84062

Mobile: 801-372-0055
www.mcdonaldfielding.com

------ Original Message ------
From "Daniel J. McDonald" <dan@mcdonaldfielding.com>
To "Patrick O'Brien" <pobrien@americanfork.gov>
Cc "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" < kwiese@americanfork.gov>; "Melissa White" < mwhite@americanfork.gov>
Date 6/19/2025 3:27:23 PM
Subject Re[4]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

> Mr. O'Brien:
>
> It seems we're at a crossroads here, as explained in my attached letter, which I respectfully request that you review with your legal counsel at your earliest convenience. As requested in the letter, please let me know if the city will reconsider its interpretations or if the city is going to force us to go through what I believe is a discriminatory reasonable accommodation process that shouldn't be required of Liberty. I have a national law practice that specializes in discrimination and Fair Housing Act/ADA land use cases. I just went through this with another city in Idaho and, fortunately, that city and its attorney had the wisdom to interpret the city's code to allow the proposed use of my client. I hope you and your staff will consider doing the same. I have given the city the interpretive tools it needs to interpret its code in compliance with state and federal law. I strongly urge the city to follow my counsel on this. But if, after reading my letter, you're still of the opinion Liberty must request an accommodation under Chapter 17.15 I need to know at the earliest moment if Liberty is to have any chance of completing that process before its due diligence deadline expires and its opportunity to purchase the property is lost. Best regards,
>
> Dan McDonald

Dan McDonald
McDonald Fielding, PLLC
Attorney at Law
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From "Patrick O'Brien" <pobrien@americanfork.gov>
To "Daniel J. McDonald" <dan@mcdonaldfielding.com>
Cc "Angela McKee" <amckee@americanfork.gov>; "Katelyn Wiese" < kwiese@americanfork.gov>; "Melissa White" < mwhite@americanfork.gov>
Date 6/18/2025 3:04:34 PM
Subject RE: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

> Mr. McDonald,
>
> I appreciate your thorough letter and your client doing their due diligence to avoid any potential issues.

I have had an opportunity to discuss your letter and the details with our City Attorney. After reviewing your letter, our staff feels that the use you are proposing is not a permitted use in the PO-1 Professional Office Zone.

The subject property is located within the PO-1 zone. As stated in § 17.4.406 of the American Fork City Code, the intent of this zone is to accommodate health care-related uses, including hospitals (human care), medical clinics, and nursing homes, as well as office buildings for professional persons. While your letter provides a thoughtful interpretation of how Liberty's proposed facility could conceptually resemble a hospital or medical clinic, the City concludes that a residential treatment facility—particularly one involving long-term housing, recovery residence operations, and transitional care—is not specifically listed or contemplated as a permitted or conditional use in the PO-1 zone.

Based on the definition in the Utah Health and Human Services Code, residential services are a specific use identified in the American Fork Municipal Code, and they are permitted in different zones throughout the City. The definition of Residential Facilities is identified under Section 17.15 of the American Fork Municipal Code and does not resemble the permitted uses allowed in the PO-1 zone.

The City is fully committed to complying with all applicable state and federal laws, including the FHA, ADA, and related statutes protecting individuals with disabilities. If Liberty believes that the use of the property in the PO-1 zone is necessary to afford equal housing opportunity, Liberty may submit a written request for reasonable accommodation pursuant to American Fork City Code 17.15. The City will evaluate any such request promptly and in good faith, consistent with its legal obligations.

Please feel free to reach out further if you have any further questions.

AMERICAN FORK

Patrick O'Brien | Director
Development Services
P (801) 763-3060
F (801) 763-3033
275 E 200 N, American Fork, UT 84003

Office Hours: Monday-Thursday, 07:00-18:00

Book time with Patrick O'Brien

Find Out More About American Fork HERE

From: Melissa White <mwhite@americanfork.gov>
Sent: Thursday, June 12, 2025 12:39 PM
To: Daniel J. McDonald <dan@mcdonaldfielding.com>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese < kwiese@americanfork.gov>
Subject: Re: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Good Afternoon Daniel,

I wanted to provide a quick update on your recent zoning inquiry letter. We are waiting on an update from the city's legal counsel and will reach out to you when we have more information. Thank you for your patience, and please feel free to let me know if you have any questions in the meantime.

Thank you,

Melissa White
Development Project Coordinator
Development Services

AMERICAN FORK
DEVELOPMENT
SERVICES

P: 801-854-5932 Ext. 5932
275 East 200 North, American Fork, UT 84003

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Sent: Monday, June 9, 2025 4:12 PM
To: Melissa White <mwhite@americanfork.gov>
Cc: Angela McKee <amckee@americanfork.gov>; Katelyn Wiese < kwiese@americanfork.gov>
Subject: Re[2]: Zoning Inquiry - 1088 East 390 South, Tax Parcel No. 46:569:0008

Melissa, thank you for getting back to me so quickly. I sent this to you because your information was available on the city's website. Thank you for getting our inquiry into the right hands.

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> Hello Mr. McDonald,
>
> Thank you for reaching out to Development Services. I have forwarded your letter to the Planning and Zoning division and a member of the team will be reaching out to you with information. Please let me know if you have any questions in the meantime and I would be happy to assist you.

Thank you,

Melissa White
Development Project Coordinator
Development Services

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P: 801-854-5932 Ext. 5932
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Dan

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Exhibit E

Published in final edited form as:
J Community Psychol. 2008 September 1; 36(7): 947–958. doi:10.1002/jcop.20259.

Counteracting 'Not in My Backyard': The Positive Effects of Greater Occupancy within Mutual-help Recovery Homes

Leonard A. Jason, **David R. Groh**, **Megan Durocher**, **Josefina Alvarez**, **Darrin M. Aase**, and **Joseph R. Ferrari**
DePaul University

Abstract

Group homes sometimes face significant neighborhood opposition, and municipalities frequently use maximum occupancy laws to close down these homes. This study examined how the number of residents in Oxford House recovery homes impacted residents' outcomes. Larger homes (i.e., 8 or more residents) may reduce the cost per person and offer more opportunities to exchange positive social support, thus, it was predicted that larger Oxford Houses would exhibit improved outcomes compared to smaller homes. Regression analyses using data from 643 residents from 154 U.S. Oxford Houses indicated that larger House size predicted less criminal and aggressive behavior; additionally, length of abstinence was a partial mediator in these relationships. These findings have been used in court cases to argue against closing down larger Oxford Houses. 125 words

Keywords

Oxford Houses; group homes; 'Not in My Backyard'; substance abuse recovery

Group Homes and 'NIMBY'

Since the 1960's, many institutional settings have been replaced with community-based programs for persons with mental illnesses, developmental disabilities, and substance abuse disorders (Michelson & Tepperman, 2003). An example of a community-based, mutual-aid recovery home for individuals dealing with substance abuse problems is Oxford House (OH; Jason, Ferrari, Davis, & Olson, 2006a). Oxford House has grown since 1975 to over 1,200 homes across the U.S., 30 in Canada, and eight in Australia. All homes are single-sex (i.e., men or women-only), and some women Houses allow residents' minor children. Individuals are typically referred to Oxford Houses by treatment facilities or through word of mouth, and new residents are admitted based on an 80% House vote. Regarding the operation and maintenance of Oxford Houses, no professional staff is involved, enabling residents to create their own rules for communal governance (Oxford House, 2002). Residents are held accountable to abstain from substance use or disruptive behavior; find and maintain a job; complete chores; and pay for rent, food, and utilities. Failure to comply with these rules along with any disruptive/criminal behavior or substance use is grounds for expulsion, and all rules are enforced by the house residents; as long as rules are followed, residents are allowed to stay indefinitely. In addition, residents are required to hold house positions (e.g., president or treasurer) elected for six-month intervals by 80% majority vote. A randomized study found that at two-year follow up, the Oxford House participants had lower substance use (31% vs. 65%, respectively), higher monthly income ($989 vs. $440), and lower

Address correspondence to the first author Leonard A. Jason at the Center for Community Research, 990 W. Fullerton Ave. Suite 3100, DePaul University, Chicago, IL, USA, 60614. Phone: 773-325-2018. Fax: 773-325-4923. ljason@depaul.edu.

incarceration rates (3% vs. 9%) compared to usual-aftercare participants (Jason, Olson, Ferrari, & Lo Sasso, 2006b).

There are numerous theoretical reasons why group homes such as Oxford Houses should be located in residential areas (Seymour, no date). For example, group homes in residential communities may allow for community integration, an active ingredient in the treatment of substance abuse and many other disorders. Group homes might also serve to educate the community about stigmatized populations (e.g., people with substance abuse problems, developmental disabilities, or mental illnesses). Finally, group homes can be a deterrent to crime because residents are generally required to maintain positive behaviors (e.g., sobriety) and are often vigilant. The Oxford House national organization dictates that new Houses be established in safe, low crime, economically stable neighborhoods with minimal opportunities for relapse (Oxford House, 2002). Regardless of geographic location, Oxford Houses are typically situated in low-drug, low-crime communities in which residents have access to resources and amenities that enable autonomy and substance-free lifestyles (Ferrari, Jason, Blake, Davis, & Olson; 2006a; Ferrari, Groh, Jason, & Olson, 2007).

Nonetheless, group homes in residential areas sometimes face significant opposition (Zippay, 1997), with neighbors' concerns relating to property values, traffic, noise, inappropriate behavior (Cook, 1997), and safety (Schwartz & Rabinovitz, 2001; Solomon & Davis, 1984). This phenomenon is commonly referred to as the 'Not in My Backyard' syndrome (NIMBY; e.g., Dear, 1992; Kim, 2000; Low, 1993). Oxford Houses are certainly not immune to NIMBY; for instance, a North Carolina Oxford House was protested and vandalized by neighbors before it opened. In addition to neighborhood opposition, municipalities employ several techniques to legally regulate, restrict, or even close down group homes (Gathe, 1997). To start out with, cities sometimes decline to provide the required license to prevent the opening of a recovery home. Other regulatory tactics involve density limitations, which may include the Fair Housing Act and Landlord-Tenant Laws (e.g., group homes cannot remove substance-using or disruptive residents without a court order), prohibiting more than one recovery home within a certain radius, and maximum occupancy rules, the focus of the current investigation (i.e., too many unrelated people living in the same dwelling).

Despite the resistance faced by these homes, group homes actually have very little impact on their surrounding neighborhoods and generally blend into the community (Cook, 1997). Community members frequently expect to have more problems with group homes than really occur (Cook; McConkey et al., 1993), and residential facilities do not tend to negatively affect public safety (Center for Community Corrections, 2002). In fact, contrary to popular fears, literature reviews suggest that these settings may actually increase property values in their neighborhoods (Aamodt & Chiglinksy, 1989; Center for Community Corrections). Similar patterns have been demonstrated for Oxford House recovery homes. Local communities reported Oxford House residents blended well into the neighborhood and made good neighbors (Jason, Roberts, & Olson, 2005). The majority of Oxford House neighbors interviewed had either gained resources, friendships, or a greater sense of security following contact with the Oxford House residents. Furthermore, no evidence of property devaluation was found for neighborhoods containing Oxford Houses; community members who knew of the Oxford House actually saw an increase in property value over an average of 3 years.

Several studies investigated factors that influence the reception of group homes in residential areas. The Center for Community Corrections (2002) interviewed community members and found that neighbor acceptance of community justice facilities and halfway homes was enhanced by an engaged public, a well-run program with access to substance

abuse treatment and job development, community input and continuing involvement, discernible contributions to the community, and a careful assessment of the community prior to entry. Additionally, the more a facility resembles the neighborhood in which it resides and the more autonomous the facility residents, the more likely residents will integrate into the community (Makas, 1993). Further, research indicates that closer proximity (Gale, Ng, & Rosenblood, 1988) and increased contact (Butterfield, 1983) between community members and group home residents has a positive effect on the reception of the homes. Jason and colleagues (2005) revealed that residents who lived adjacent to an Oxford House, as opposed to a block away, had significantly more positive attitudes towards the need to provide a supportive community environment for those in recovery, allow substance abusers in a residential community, and the willingness to have a self-run home on their block.

In attempt to reduce the amount and level of concern related to Oxford Houses and other group homes, educational efforts might be developed such as documenting the effects of group homes on property values, having facility residents maintain friendly rapport with neighbors, and residents becoming more familiar with their surroundings in order to address neighbors' fears (Cook, 1997). For example, staff at a residential facility implemented educational measures to inform the neighborhood about the opening of the home (Schwartz & Rabinovitz, 2001). Significant interactions were found between neighbors visiting these facilities and decreases in dissatisfaction. Finally, it has been suggested that researchers should focus on developing ways that the public can become more familiar with halfway houses and other group homes (Center for Community Corrections, 2002).

Group Home Size

In order to implement educational efforts, this research study focused on one NIMBY threat to group homes: house size. While very little research exists on this topic, one study (Segal & Darwin, 1996) found that within sheltered care facilities for individuals with mental illness, although home size did not relate to levels of management, larger homes were less restrictive in their rules and procedures. Larger homes also spent more on program activities for their residents, and their residents were more involved in facility-based activities. It is possible that these greater occupancy facilities were able to provide more of an opportunity for residents to develop a sense of community. However, this type of sheltered care facility is fairly different from Oxford House recovery homes.

It is suggested that a sufficient number of residents in each home might be a necessary component in the effectiveness of Oxford House through the mechanism of social support. Individuals recovering from addictions should be surrounded by a community in which they feel they belong and are able to obtain sobriety goals (Jason & Kobayashi, 1995). Oxford House residents rated "fellowship with similar peers" the most important aspect of living in an Oxford House (Jason, Ferrari, Dvorchak, Groessl, & Malloy, 1997). The Oxford House experience also provides residents with abstinent-specific social support networks consisting of other residents in recovery (Flynn, Alvarez, Jason, Olson, Ferrari, & Davis, 2006). Individuals who spent more time in an Oxford House had a greater sense of community with others in recovery, less support for substance use (Davis & Jason, 2005), and more support for abstinence (Majer, Jason, Ferrari, Venable, & Olson, 2002). Oxford Houses with more residents might have greater opportunities for members to provide and receive these vital social resources. It is believed that larger Houses will promote recovery through their ability to promote larger (Zywiak, Longabaugh, & Wirtz, 2002), more supportive social networks (MacDonald, 1987) that include sober others in recovery (Hawkins & Fraser, 1987; Zywiak et al.), constructs linked to sober living.

In addition to increased levels of social support, there are other hypothesized benefits to larger Oxford Houses. For instance, rent may be lower in larger homes because residents can

split the costs. Additionally, having more residents allows members to learn from each other and increases opportunities for diversity. In this study, we examined the effects of House size on criminal and aggressive behaviors among Oxford House residents, two areas of significant concern to communities containing group homes (Cook; Schwartz & Rabinovitz, 2001; Solomon & Davis, 1984). Oxford House has been found to promote positive outcomes regarding both criminal activity (Jason et al., 2006b; Jason, Davis, Ferrari, & Anderson, 2007a; Jason, Olson, Ferrari, Majer, Alvarez, & Stout, 2007b) and self-regulation (Jason et al., 2007b), which relates to aggression. Therefore, it was hypothesized in the present study that residents of larger Houses (with 8 or more members) would exhibit fewer criminal and aggressive behaviors as measured by the *Global Appraisal of Individual Needs-Quick Screen* than residents of smaller Houses.

Method

Procedure

Data included in the present study were from the baseline data collection (completed between December 2001 and April 2002) of a community evaluation of residents living in one of 213 U.S. Oxford Houses (see Jason et al., 2007a for details). Participants from this Institutional Review Board-approved study were recruited and surveyed using two strategies. The majority of participants ($n = 797$) were recruited through an announcement published in the monthly Oxford House newsletter that provided contact information for the study. We then contacted Oxford Houses via letters to House Presidents, conducted follow-up phone calls to the Houses, and where possible, members of the research team arranged to visit Houses. Of the 189 Oxford Houses that were approached, 169 (89.4%) had at least one individual who agreed to participate in the study, and the average number of individuals per House choosing to participate in the study was 4.7. For the second method, 100 individuals were randomly selected to fill out the baseline questionnaires at an annual Oxford House Convention attended by 300. Analyses revealed no difference in demographic or outcome variables between the two recruitment groups.

In each case, the nature, purpose, and goals of the study were explained to the potential participants. As part of the consent process, staff members explained that participation was entirely voluntary and that withdrawal from the study was possible at any time. Fifteen dollar payments were made to participants following the survey. These data were gathered by research staff who primarily administered questionnaires in person to the participants. Some data were collected by telephone, which was often the case for those who had left Oxford House. No significant differences were found based on data collection method.

In addition, an environmental survey (assessing House size) was mailed to the House Presidents of all 213 Oxford Houses. No identifiable information about any House resident was requested, and confidentially was maintained for all data. Most often the survey was completed by the House President (60.2%) or another House officer (31.6%), such as the Secretary or Treasurer. The survey then was returned by mail, and a small package of coffee was subsequently sent to the House for participation. Pilot testing indicated that it would take less than 20 minutes to complete and mail the survey, which were collected over a four month period.

Participants

For this investigation, we only included participants from the 154 Houses for which we had data on House size, representing 72.3% of Houses in the larger study. On average, Houses had about 7 total members ($M = 7.1$, $SD = 2.0$, *Median* = 7), and Houses in this study ranged in size from 3–18 residents. Regarding geographic region within the U.S., 27.7% of Houses

were located in the West, 18.4% were in the Midwest and Texas, 28.3% were in the Northeast, and 25.7% were in the Southeast.

This present baseline sample consisted of 643 Oxford House residents, including 227 females (35.3%) and 416 males (64.7%). The sample was ethnically diverse, with 62.5% European American, 29.2% African American, 3.9% Hispanic/Latino, and 4.4% others. At baseline, the average age of the sample was 38.3 (*SD* = 9.2), and the average education level was 12.7 years (*SD* = 2.0). Regarding marital status, 50.4% were single or never married, 45.4% were divorced/widowed/separated, and 4.2% were married. With respect to employment, 67.4% reported being employed full-time, 14.2% part-time, 13.3% unemployed, and 5.1% retired or disabled, and the average monthly income of the sample was $965 (*SD* = 840). The average participant had stayed in an Oxford House for 1.0 years (*SD* = 1.4). The mean length of sobriety was 1.7 years (*SD* = 2.4) for alcohol and 1.9 years (*SD* = 3.2) for illicit drugs. Regarding recent substance use, participants on average consumed alcohol on 2.3 days (*SD* = 9.1) and drugs on 5.1 days (*SD* = 18.3) in the past 90 days. Concerning legal status, 30% of participants were currently on probation, and 14% claimed that their entry into OH was prompted by the law. Regarding lifetime data, the average participant was charged with a crime 9.9 times (*SD* = 14.0) and were incarcerated a total of 15.9 months (*SD*= 36.8).

Measures

Baseline demographic information (e.g., gender, race, substance disorder typology) was obtained from items on the 5th Edition of the *Addiction Severity Index-lite* (*ASI*; McLellan et al., 1992). The *ASI* assesses common problems related to substance abuse: medical status, drug use, alcohol use, illegal activity, family relations, and psychiatric condition. The *ASI* has been used in a number of alcohol and drug use studies over the past 15 years and has been shown to have excellent predictive and concurrent validity (McLellan et al.).

The *Form-90* (Miller & Del Boca, 1994) was administered to obtain a continuous record of alcohol and drug consumption and intensity within a 90-day time span. This measure gathers information related to employment, health care utilization, incarceration, and alcohol and other drug use over a 90-day retrospective (which provides a reliable time frame for abstinence assessment; Miller & Del Boca).

The number of residents per Oxford House was determined using a brief version of a reliable environmental audit developed and utilized by Ferrari and colleagues (Ferrari et al., 2006a; Ferrari, Jason, Davis, Olson, & Alvarez, 2004; Ferrari, Jason, Sasser, Davis, & Olson, 2006b) for use with group recovery settings. This survey requested responses to forced choice and frequency items in a number of domains, including information about the House setting such as the percentage of residents in recovery from alcohol, drugs, and poly-substances, along with the number of inhabitants within a House. Other sections of this audit gathered information on the interior and immediate exterior House characteristics, amenities found within a 2-block radius of the House, and characteristics of the surrounding neighborhood.

The *Global Appraisal of Individual Needs-Quick Screen* (*GAIN-QS;* Dennis & Titus, 2000) is a self-report, clinical screening tool examining whether or not a psychological or substance abuse symptom has occurred in the past 12 months similar to the DMV-IV Axis I criteria. While the *GAIN-QS* is not a diagnostic tool, it has been utilized within clinical screening contexts to identify problem areas and psychological symptoms that warrant further explanation. For the purposes of this study, 2 indices from the *GAIN-QS* were used as the outcome variables measuring aggressive and criminal behaviors: *Conduct Disorder/*

Aggression Index (6 items; *Cronbach's alpha* = .78, *Mean Score* = 1.34) and *General Crime Index* (4 items; *Cronbach's alpha* = .69; *Mean Score* = .29).

Results

House Size and GAIN-QS Subscores

The average House size in this study was about 7 members ($M = 7.1$, *median* = 7), and because a pending court case attempted to make it illegal for Oxford Houses to house 8 or more residents, we decided to compare 7 or fewer members in a House (i.e., smaller Houses) with 8 or more residents of an Oxford House (i.e., larger Houses). *Regression analyses*[1] determined that this dichotomized House size variable significantly predicted the *GAIN-QS* subscales of *Conduct Disorder/Aggression*, $\beta = -.10$, $t(632) = -2.52$, $p = .01$, and *General Crime Index*, $\beta = -.10$, $t(634) = -2.44$, $p = .02$. House size accounted for 0.8% of the variance in *General Crime Index* scores and 1.9% of the variance in *Conduct Disorder/ Aggression* scores. Larger Houses had fewer problems related to conduct disorder/ aggression, and criminal activity. Smaller Houses had a *General Crime Index* mean score of 0.34 and a *Conduct Disorder/Aggression Index* mean score of 1.43, whereas the respective scores for larger Houses were 0.21 and 1.16 (lower scores indicate fewer problem symptoms in each area).

House Size and Demographic Analyses

Next, *one-way ANOVA* and *chi-square* analyses were run to determine whether large and small Houses (7 or less vs. 8 or more) differed on demographic variables. Results indicated that the groups only differed on one key demographic variable: larger House residents had been abstinent from drugs and alcohol longer than individual from smaller Houses, $F(1,637) = 4.42$, $p = .04$. Residents in smaller Houses had 298.1 ($SD = 458.6$) cumulative days of abstinence on average, compared to 379.5 ($SD = 476.5$) days for residents of larger Houses. This indicates that individual living in larger Houses maintained abstinence for about 81 days longer. Since larger Houses had significantly longer lengths of cumulative abstinence, we ran correlations to determine if this variable also related to the *GAIN-QS* subscale scores. Among participants for whom we have House size data, cumulative days sober did significantly and negatively correlate with the *GAIN-QS* subscales of *Conduct Disorder/ Aggression*, $r(633) = -.26$, $p = .000$, and *General Crime Index*, $r(631) = -.30$, $p = .000$.

Mediational Analyses

We next examined whether the variables in the House size and *GAIN-QS* subscore regression analyses were only significant because individuals in larger Houses had been sober for longer periods of time. In order to evaluate this possibility, we utilized Baron & Kenny's (1986) framework for testing of mediation. In Baron & Kenny's model, the influence of variable A (the initial variable) on variable B (the outcome) may be explained by a third variable known as variable C (the process variable). Complete mediation occurs when variable A no longer affects B after C has been controlled. Partial mediation occurs when the path from variables A to B (the total effect) is diminished in total size but still different from zero after the mediating variable is controlled. The mediational model is a causal one; therefore, the mediator is presumed to bring about the outcome and not vice versa.

[1]Although participants were nested within Oxford Houses, we decided not to focus on Hierarchical Linear Modeling results because we wanted to test for mediation, which can be done using regression but not HLM. However, we did run HLM analyses and found that House size (as a level 2 group variable) significantly predicted individually-assessed level 1 *General Crime Index* scores ($t[144] = -2.18$, $p = .03$) but not level 1 *Conduct Disorder/Aggression* scores ($t[144] = -1.17$, $p = .25$).

We used Baron & Kenney's (1986) framework to determine whether cumulative days sober mediated the relationship between House size and *Conduct Disorder/Aggression* (A = House size [7 or less vs. 8 or more], B = cumulative days sober, and C = *Conduct Disorder/ Aggression*). As demonstrated earlier with linear regression analyses, House size significantly predicted *Conduct Disorder/Aggression*. House size also significantly predicted cumulative days sober (A→B; β = .08, $t[637] = 2.10$, $p = .04$; $r^2 = .007$), and cumulative days sober predicted *Conduct Disorder/Aggression* (B→C; β = −.30, $t[630] = -7.86$, $p = .000$; $r^2 = .089$). Finally, when both House size and cumulative days sober were put in the model predicting *Conduct Disorder/Aggression* (A and B→C), House size maintained significance, but less than earlier (House size: β = −.08, $t[628] = -2.11$, $p = .04$; cumulative days sober: β = −.29, $t[628] = -7.69$, $p = .000$; $r^2 = .096$). Therefore, House size is related to *Conduct Disorder/Aggression*, and cumulative abstinence is a partial mediator in this association. These two variables (i.e., House size and cumulative abstinence) explained almost 10% of the variance in *Conduct Disorder/Aggression* scores.

We again employed Baron & Kenney's (1986) framework to determine whether cumulative days sober mediated the relation between House size and *General Crime Index* (A = House size [7 or less vs. 8 or more], B = cumulative days sober, and C = *General Crime Index).* As reported earlier, House Size was a significant predictor of *General Crime Index,* and House Size significantly predicted cumulative days sober. Regarding new analyses, cumulative days sober predicted *General Crime Index* (B→C; β = −.26, $t[631] = -6.77$, $p = .000$; $r^2 = .068$). Finally, with both House size and cumulative days sober as predictors of *General Crime Index* (A and B→C), House size retained significance but less so than before (House Size: β = −.08, $t[630] = -2.04$, $p = .04$; cumulative days sober: β = −.25, $t[630] = -6.60$, $p = .000$; $r^2 = .074$). Thus, House size is related to *General Crime Index* scores, and cumulative sobriety is a partial mediator in this relationship. These two variables (i.e., House size and cumulative abstinence) explained more than 7% of the variance in *General Crime Index* scores.

Discussion

The objective of the present investigation was to examine how the number of residents in an Oxford House impacted outcomes related to aggression and crime among residents. Regression analyses supported our hypotheses that larger House size (i.e., 8 or more residents) would predict less criminal and aggressive behavior. However, an unexpected result was that length of abstinence was a significant mediator in these relationships. House size lost a fair amount of significance when the mediator of cumulative days sober was entered into the models predicting *GAIN* subscale scores, and the addition of cumulative sobriety to the models greatly increased the amount of variance explained. Cumulative sobriety partially explained the relationships between House size and *General Crime Index* and House size and *Conduct Disorder/Aggression*. Thus, greater House size leads to greater cumulative abstinence, which in turn leads to less criminal activity and aggression; however, House size does have some independent impact of its own on these outcomes. It is clear that having more residents in a House is beneficial to residents' recovery from alcohol and drug abuse.

These findings have important policy implications regarding the future of recovery homes. It is argued that local governments allow Oxford Houses immunity from maximum occupancy regulations due to the great need in many communities for these settings. It is very difficult for individuals lacking stable living environments to maintain a sober lifestyle following residential treatment (Milby, Schumacher, Wallace, Freedman, & Vuchinich, 1996). As the cost of housing continues to rise, many individuals leaving inpatient facilities are unable to find affordable housing. Without Oxford House or other recovery home options, former

addicts frequently have no choice but to return to their old negative environments and fall back into their pre-treatment habits, which frequently include antisocial activities such as substance use and criminal activity. Regardless of how successful a client has been in treatment, this progress can be reversed through residence in an environment that promotes crime and drug use (Polcin, Galloway, Taylor & Benowitz-Fredericks, 2004). As demonstrated in this study, a sufficient number of House residents is a factor in the ability of Oxford House to promote these outcomes that benefit local communities.

Furthermore, it is suggested that maximum occupancy regulations that apply to recovery homes are often based on false beliefs and fears. Neighbors often oppose recovery homes because they fear increased crime and violence (Cook, 1997; Schwartz & Rabinovitz, 2001; Solomon & Davis, 1984; Zippay, 1997), and in order to appease these residents, cities frequently use maximum occupancy laws to close the group homes (Gathe, 1997). This pattern is quite ironic given that the Houses being closed (i.e., larger homes) should actually give neighbors less reason for concern. It seems obvious that laws based on these misconceptions should be eliminated. Overall, Oxford Houses have positive (not negative) effects on local communities (Jason et al., 2005), and residents of larger Houses appear to be highly desirable community members (i.e., who engage in less criminal and aggressive behaviors).

This investigation provides one more step in the movement to improve the reception of Oxford Houses and other group homes in local communities. While second-order change alters the systems that cause the problems (Dalton, Elias, & Wanderman, 2001), 'Not in My Backyard' typically serves to inhibit this type of change. Changing the attitudes of mental health professionals, community members, and policy makers may break down the barriers to second-order change (Olson et al., 2002). Educational efforts along with successes in the court room may promote a more positive social climate and set legal precedents. Finally, researchers have argued that social scientists should explore ways that the public can become more familiar with residential facilities (Center for Community Corrections, 2002). We hope that these efforts and the efforts of other researchers, individuals in recovery, treatment providers, lawyers, and political activists are successful in reducing the opposition to group homes in residential areas.

Concerning limitations, our findings might not apply to other group homes or residential facilities, which can vary greatly in focus, procedures, setting, and size. For instance, a "large" Oxford House setting (i.e., greater than 7 members) might be very small in comparison to other residential settings, which may accommodate several dozen residents. It is actually possible in these cases that somewhat smaller settings are more effective. In addition, we were typically not able to collect data from all members within a House; thus, some Houses have more representation than others in this sample. Future studies in this area should acquire information from all members of a House if possible. Furthermore, data analyzed in this study were self-report; therefore, it may have been useful to obtain House size estimates using data from other sources such as Oxford House Inc., the national body that oversees Oxford Houses. Also, alcohol and drug use had little variability within this sample because all participants were recruited from Oxford Houses instead of treatment or detoxification centers (suggesting a later stage in recovery), and because residents caught using can be evicted. Perhaps future research assessing occupancy levels of recovery homes should consider a sample with more variability with regards to substance use. A final limitation is our use of regression analyses as opposed to Hierarchical Linear Modeling due to the tested nature of the data; however, we wanted to test the mediational model, which can be done using regression but not HLM. Nonetheless, future researchers assessing group home size may want to seriously consider the use of HLM.

In order to improve the reception of Oxford Houses in local communities and counteract the NIMBY syndrome, the Oxford House Research Team has provided expert testimony in court cases, sent information to legislators, disseminated research findings with policy implications, collaborated with community partners and state-level agencies, and worked with the media to change the image of recovery homes (see Jason, Davis, Ferrari, & Bishop, 2001). In particular, the DePaul University research team has been involved in several court cases over past several years on the behalf of Oxford Houses. Most recently, municipalities located in Kansas, Iowa, and North Carolina have attempted to close down Oxford Houses or similar recovery homes due to too many unrelated individuals living in one dwelling. Findings from the present study were used in these court cases, and at the present time, the Oxford House organization has won every court case.

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What Did We Learn from Our Study on Sober Living Houses and Where Do We Go from Here?

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Abstract

Lack of a stable, alcohol and drug free living environment can be a serious obstacle to sustained abstinence. Destructive living environments can derail recovery for even highly motivated individuals. Sober living houses (SLHs) are alcohol and drug free living environments for individuals attempting to abstain from alcohol and drugs. They are not licensed or funded by state or local governments and the residents themselves pay for costs. The philosophy of recovery emphasizes 12-step group attendance and peer support. We studied 300 individuals entering two different types of SLHs over an 18 month period. This paper summarizes our published findings documenting resident improvement on measures of alcohol and drug use, employment, arrests, and psychiatric symptoms. Involvement in 12-step groups and characteristics of the social network were strong predictors of outcome, reaffirming the importance of social and environmental factors in recovery. The paper adds to our previous reports by providing a discussion of implications for treatment and criminal justice systems. We also describe the next steps in our research on SLHs, which will include: 1) an attempt to improve outcomes for residents referred from the criminal justice system and 2) a depiction of how attitudes of stakeholder groups create a community context that can facilitate and hinder the legitimacy of SLHs as a recovery modality.

Keywords

Sober Living House; Residential Treatment; Recovery House; Social Model; Communal Living

Introduction

Research continues to document the important role of social factors in recovery outcome (Polcin, Korcha, Bond, Galloway & Lapp, in press). For example, in a study of problem and dependent drinkers Beattie and Longabaugh (1999) found that social support was associated with drinking outcome. Not surprising, the best outcomes were predicted by *alcohol-specific* social support that discouraged drinking. Similarly, Zywiak, Longabaugh and Wirtz (2002) found that clients who had social networks with a higher number of abstainers and recovering alcoholics had better outcome 3 years after treatment completion. Moos and Moos (2006) studied a large sample of 461 treated and untreated individuals with alcohol use disorders over a 16 year period to examine factors associated with relapse. They found that social support for recovery was important in establishing sustained abstinence. Finally, Bond, Kaskutas and Weisner (2003) reached a similar conclusion in a 3-year follow up

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study on 655 alcohol dependent individuals who were seeking treatment. Abstinence from alcohol was associated with social support for sobriety and involvement in Alcoholics Anonymous.

A critically important aspect of one's social network is their living environment. Recognition of the importance of one's living environment led to a proliferation of inpatient and residential treatment programs during the 1960' and 70's (White, 1998). The idea was to remove clients from destructive living environments that encouraged substance use and create new social support systems in treatment. Some programs created halfway houses where clients could reside after they completed residential treatment or while they attended outpatient treatment. A variety of studies showed that halfway houses improved treatment outcome (Braucht, Reichardt, Geissler, & Bormann, 1995; Hitchcock, Stainback, & Roque, 1995; Milby, Schumacher, Wallace, Freedman & Vuchinich, 2005; Schinka, Francis, Hughes, LaLone, & Flynn, 1998).

Despite the advantages of halfway houses, there are limitations as well (Polcin & Henderson, 2008). First, there is typically a limit on how long residents can stay. After some period of time, usually several months, residents are required to move out whether or not they feel ready for independent living. A second issue is financing the houses, which often includes government funding. This leaves facilities vulnerable to funding cuts. Finally, halfway houses require residents to have completed or be involved in some type of formal treatment. For a variety of reasons some individuals may want to avoid formal treatment programs. Some may have had negative experiences in treatment and therefore seek out alternative paths to recovery. Others may have relapsed after treatment and therefore feel the need for increased support for abstinence. However, they may want to avoid the level of commitment involved in reentering a formal treatment program. Sober living houses (SLHs) are alcohol and drug free living environments that offer peer support for recovery outside the context of treatment.

Characteristics of Sober Living Houses

Sober Living Houses are structured in a way that avoids some of the limitations of halfway houses. The essential characteristics include: 1) an alcohol and drug free living environment for individuals attempting to abstain from alcohol and drugs, 2) no formal treatment services but either mandated or strongly encouraged attendance at 12-step self-help groups such as Alcoholics Anonymous (AA), 3) required compliance with house rules such as maintaining abstinence, paying rent and other fees, participating in house chores and attending house meetings, 4) resident responsibility for financing rent and other costs, and 5) an invitation for residents to stay in the house as long as they wish provided they comply with house rules (Polcin & Henderson, 2008).

SLHs have their origins in the state of California and most continue to be located there (Polcin & Henderson, 2008). It is difficult to ascertain the exact number because they are not formal treatment programs and are therefore outside the purview of state licensing agencies. However, in California many SLHs are affiliated with coalitions or associations that monitor health, safety, quality and adherence to a peer-oriented model of recovery, such as the California Association of Addiction Recovery Resources (CAARR) or the Sober Living Network (SLN). Over 24 agencies affiliated with CAARR offer clean and sober living services. The SLN has over 500 individual houses among it membership.

While some SLHs use a "strong manager" model where the owner or manager of the house develops and enforces the house rules, contemporary SLH associations such as CAARR and SLN emphasize a "social model approach" to managing houses that empowers residents by providing leadership position and forums where they can have input into decision making

(Polcin & Henderson, 2008). Some houses have a "residents' council," which functions as a type of government for the house.

Recovery Philosophy in Sober Living Houses

Central to recovery in SLHs is involvement in 12-step mutual help groups (Polcin & Henderson, 2008). Residents are usually required or strongly encouraged to attend meetings and actively work a 12-step recovery program (e.g., obtain a sponsor, practice the 12 steps, and volunteer for service positions that support meetings). However, some houses will allow other types of activities that can substitute for 12 step groups, provided they constitute a strategy for maintaining ongoing abstinence.

Developing a social network that supports ongoing sobriety is also an important component of the recovery model used in SLHs. Residents are encouraged to provide mutual support and encouragement for recovery with fellow peers in the house. Those who have been in the house the longest and who have more time in recovery are especially encouraged to provide support to new residents. This type of "giving back" is consistent with a principle of recovery in 12-step groups. Residents are also encouraged to avoid friends and family who might encourage them to use alcohol and drugs, particularly individuals with whom they have used substances in the past (Polcin, Korcha, Bond, Galloway & Lapp, in press).

Purpose

There are several primary aims for this paper. First is to summarize key outcomes from our study, "An Evaluation of Sober Living Houses," which was a 5- year study funded by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) (i.e., Korcha, Polcin, Bond & Galloway, 2010; Polcin, 2009; Polcin & Henderson, 2008; Polcin, Korcha, Bond & Galloway, 2010; Polcin, Korcha, Bond & Galloway, in press; Polcin, Korcha, Bond, Galloway & Lapp in press). Second is to expand on these findings by considering potential implications of our research for inpatient and outpatient treatment and for criminal justice systems. Third is to describe the next steps in our research on SLHs. These include plans to study the community context of SLHs by examining attitudes of community stakeholder groups (e.g., neighbors, local government officials, mental health therapists, criminal justice professionals and practitioners in substance abuse treatment programs). We also describe plans to conduct studies of resident subgroups, such as individuals referred from the criminal justice system.

Data Collection Sites

The study was designed to assess outcomes for 300 individuals entering two types of SLHs: 1) Options Recovery Services (ORS) in Berkeley, California was an adapted model of SLHs in that the houses were associated with an outpatient treatment program. 2) Clean and Sober Transitional Living (CSTL) in Sacramento County, California consisted of freestanding houses that were not affiliated with any type of treatment. The descriptions of CSLT and ORS that follow are summaries of Polcin and Henderson (2008), Polcin (2009) and Polcin, Korcha, Bond, Galloway & Lapp (in press).

Clean and Sober Transitional Living (CSTL)

CSLT is located in Sacramento County California and consists of 16 houses with a 136 bed capacity. Residency at CSTL is divided into two phases. Phase I lasts 30 to 90 days and is designed to provide some limits and structure for new residents. Residents must agree to abide by a curfew and attend at 12-step meetings five times per week. The purpose of these

requirements is to help residents successfully transition into the facility, adapt to the SLH environment, and develop a stable recovery program.

The second phase allows for more personal autonomy and increased responsibility for one's recovery. Curfews and requirements for 12-step attendance are reduced. All residents, regardless of phase, are required to be active in 12-step recovery programs, abide by basic house rules, and abstain from alcohol and drugs. A "Resident Congress" consisting of current residents and alumni helps enforce house rules and provides input into the management of the houses. Although the owner/operator of the houses is ultimately responsible, she/he defers to the Residents Congress as much as possible to maintain a peer oriented approach to recovery. In order to be admitted to CSTL prospective residents must have begun some type of recovery program prior to their application.

Options Recovery Services (ORS)

ORS is an outpatient substance abuse treatment program located in Berkeley, California that treats approximately 800 clients per year. Most of the clients are low income and many have history of being homeless at some point in their lives. Because a large number do not have a stable living environment that supports abstinence from alcohol and drugs, ORS developed SLHs where clients can live while they attend the outpatient program. Currently there are 4 houses with 58 beds. The houses are different from freestanding SLHs, such as those at CSTL, because all residents must be involved in the outpatient program. Most residents enter the houses after residing in a short term homeless shelter located near the program. At admission, nearly all residents are eligible for some type of government assistance (e.g., general assistance or social security disability) and use those funds to pay SLH fees. To help limit social isolation and reduce costs residents share bedrooms. Like other SLH models of recovery, residence are free to stay as long as they wish provide they comply with house rules (e.g., curfews, attendance at 12-step meetings) and fulfill their financial obligations. Also like other SLH models, each house has a house manager who is responsible for ensuring house rules and requirements are followed. ORS does not have any type of Residents Council, but house managers meet regularly with the executive director and have input into operation of the SLHs in during these contacts.

Procedures

Participants were interviewed within their first week of entering a sober living house and again at 6-, 12-, and 18-month follow up. To maximize generalization of findings, very few exclusion criteria were used and very few residents declined to participate. Primary outcomes consisted or self report measures of alcohol and drug use. Secondary outcomes included measures of legal, employment, medical, psychiatric and family problems. Some measures assessed the entire 6 months between data collection time points. Others, such as the Addiction Severity Index, assessed shorter time periods of 30 days or less.

Measures

1) Demographic Characteristics—included standard demographic questions such as age, gender, ethnicity, marital status, and education.

2) Addiction Severity Index Lite (ASI)—The ASI is a standardized, structured interview that assesses problem severity in six areas: medical, employment/support, drug/alcohol, legal, family/social and psychological (McLellan et al., 1992). Each of the six areas is scored for 0 (low) to 1 (high).

3) Psychiatric symptoms—To assess current psychiatric severity we used the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). This 53-item measure assesses severity of psychiatric symptoms on nine clinical scales as well as three global indices. Items are rated on a 5-point scale and ask about symptoms over the past 7 days. We used the Global Severity Index (GSI) as an overall measure of psychiatric severity.

4) Six month measures of alcohol and drug use—These measures were taken from Gerstein et al. (1994) and labeled Peak Density and 6-month abstinence. *Peak Density* is the number of days of any substance use (i.e., any alcohol or drug) during the month of highest use over the past 6 months (coded 0-31). *Six-month abstinence* was a dichotomous yes/no regarding any use of alcohol of drugs over the past 6 months.

5) Arrests—This measure was taken from Gerstein et al. (1994) and was defined as number of arrests over the past 6 months.

Two additional measures were included as covariates because they assess factors emphasized by as important to recovery in SLHs.

6) Alcoholics Anonymous Affiliation Scale—This measure includes 9 items and was developed by Humphreys, Kaskutas and Weisner (1998) to measure the strength of an individual's affiliation with AA. The scale includes a number of items beyond attendance at meetings, including questions about sponsorship, spirituality, and volunteer service positions at meetings.

7) Drinking and drug use status in the social network—These measures were taken from the Important People Instrument (Zywiak, et al., 2002). The instrument allows participants to identify up to 12 important people in his or her network whom they have had contact with in the past six months. Information on the type of relationship (e.g., spouse, friend), amount of contact over the past 6 months (e.g., daily, once or twice a week) and drug and alcohol use over the past 6 months (e.g., heavy user, light user, in recovery) was obtained for each person in the social network. The drinking status of the social network was calculated by multiplying the amount of contact by the drinking pattern of each network member, averaged across the network. The same method is applied to obtain the drug status of the network member; the amount of contact is multiplied by the pattern of drug use and averaged across network members.

Hypotheses

Hypotheses suggested that we would find two types of longitudinal outcomes: 1) Individuals entering the houses with higher severity of problems would show significant improvement between baseline and 6 months and those improvements would be maintained at 12 and 18 months and 2) Individuals entering houses with low severity would maintain low severity at all follow up time points. It was expected that measures of social support for sobriety and 12-step involvement would be associated with primary outcomes.

The study design used repeated measures analyses to test how study measures varied over time. Because the two types of houses served residents with different demographic characteristics, we conducted disaggregated longitudinal analyses for each. For a more complete description of the study design and collection of data see Polcin et al. (2010), Polcin et al. (in press) and Polcin, Korcha, Bond, Galloway and Lapp (in press).

Data Collection

At CSTL we recruited 245 individuals within their first week of entering the houses. Most were men (77%), white (72.5%) and middle age (mean=38, se=0.65). Over 75% had at least a high school education or GED. The most common referral source was self, family or friend (44%) followed by criminal justice (29%) and inpatient treatment (15%). Over a third (35%) of the sample indicated that jail or prison had been their usual housing situation over the past 6 months and few reported any type of stable housing over the past 6 months. Just 7% reported renting an apartment as their primary housing, while 23% reported staying with family or friends and 12% reported homeless as their primary living situation

ORS had 4 houses, where we recruited 55 participants. Most were African American (59%), while 30% were white. The mean age was 43 years (se=1.2). Most residents had completed high school or a GED (73%). Nearly half of the residents had been self referred of referred by family or friends. About 24% were criminal justice referrals and a third had spent some time in a controlled environment during the month before entering the house. Many of the residents had histories of homelessness. When asked to indicate their usual housing situation the past six months, a third indicated homeless or in a shelter.

Follow up rates for CSLT were 72% at 6 months, 71% at 12 months ad 73% at 18 months. However, 89% of the sample (N=218) participated in at least one follow up interview. The proportions successfully followed up at ORS were similar at 12 and 18 months (76% and 71% respectively) but higher at 6 months (86%). To address the issue of missing data from individuals who we were not able to locate for follow up interviews, we used analytic methods that did not require participants to complete 0interviews at all time points to be include in the analysis. These included generalized estimated equations (GEE) and mixed model regressions. In addition, when we compared baseline characteristics of individuals successfully located and interviewed with those lost at follow up we did not find significant differences. However, individuals who we were not able to follow up did have shorter lengths of stay in the SLHs.

Main Findings

Detailed descriptions of analytic methods and statistical results have been reported in Polcin, Korcha, Bond, & Galloway (2010), Polcin Korcha, Bond, & Galloway (in press), and Polcin Korcha, Bond, Galloway & Lapp (in press). Our purpose here is to summarize the most salient and relevant findings for SLHs as a community based recovery option. We then expand on the findings by considering potential implications of SLHs for treatment and criminal justice systems. We also include a discussion of our plans to study the community context of SLHs, which will depict how stakeholder influences support and hinder their operations and potential for expansion.

Retention

Retention of residents in the sober living houses was excellent. Average lengths of stay in both types of sober living houses surpassed the National Institute on Drug Abuse recommendation of at least 90 days to obtain maximum benefit. The average length of stay at ORS was 254 days (se=169 days) and at CSLT it was 166 days (se=163).

Primary Outcomes

As hypothesized, there were two patterns of outcome for our primary outcome variables. One pattern was that residents reduced or stopped their substance use between baseline and 6 month follow up and then maintained those improvements at 12 and 18 months. This was the case for both substance use measures that assessed 6 month period of time: 1) complete

abstinence over the 6 months and 2) maximum number of days of any substance use during the month of highest use. For example, at ORS 6-month abstinence rates improved from 11% at baseline to 68% at 6- and 12-months. At 18 months abstinence was a bit lower, (46%) but still significantly better than the time period before they entered the houses. For CSLT, abstinence improved from 20% at baseline, to 40% at 6 months, 45% at 12 months and 42% at 18 months. Maximum number of days of use per month at ORS on average declined from 19 days per month at baseline, to 3 days at 6 months, 4 days at 12 months and 7 days at 18 months. CSLT declined from 19 days at baseline, to 11 days at 6 months, 9 days at 12 months and 13 days at 18 months.

Findings on the ASI alcohol and drug scales measuring the past 30 days reflected different patterns. At CSLT, residents entered with low alcohol (mean=0.16, se=0.02) and drug (mean=0.08, se=0.01) severity. Because severity was low there was limited room to improve on these measures. Nevertheless, we found significant improvement at 6 months for both alcohol (mean=0.10, se=0.02) and drug (mean=0.05, se=0.01). Those improvements were maintained at 12 and 18 months. At ORS, residents entered with even lower alcohol (mean=0.07, se=0.02) and drug (mean=0.05, se=0.01) severity that was maintained at 6, 12 and 18 month follow up. Potential reasons for low alcohol and drug severity at baseline included large proportions spending some time in a controlled environment during the 30 days before they entered the houses. In addition, many residents had begun working on a recovery program shortly before they entered the houses (e.g., attending 12-step meetings). In fact, the ORS program typically required 30 days of abstinence before being eligible to enter the residence.

It was noteworthy that a wide variety of individuals in both programs had positive outcomes. There were no significant differences within either program on outcomes among demographic subgroups or different referral sources. In addition, it is important to note that residents were able to maintain improvements even after they left the SLHs. At 12 months 68% had left ORS and 82% had left CSLT. By 18 months nearly all had left, yet improvements were for the most part maintained.

Secondary Outcomes

There were also improvements noted on the secondary outcome measures. At CSTL these included improvements on employment, psychiatric symptoms, and arrests. The pattern was again significant improvement between baseline and 6 months that was generally maintained at 12 and 18 months. The percent arrested 6 months pre-baseline was 42%, which dropped to 26% at 6-month follow up and 22% at 12 months. There was a light increase at 18 months (28%), which was still significantly lower than pre-baseline. Employment severity on the ASI improved from a mean of 0.76(se=0.02) at baseline to a mean of 0.53(se=0.02) at six months. At 12 months the mean was 0.54(se=0.03), which increased only slightly at 18 months (mean=0.59, se=0.02). Psychiatric symptoms improved from a mean of 0.83(se=0.05) at baseline to 0.69(se=0.05) at 6 months. By 18 months there was a bit of an increase (mean=0.72, se=0.06), which was no longer statistically significant but was still a statistical trend ($p<.10$).

At ORS there were similar patterns of improvement on employment and arrests. From baseline to 6 months the average score on the ASI employment scale improved from 0.61 (se=0.02) to 0.51 (se= 0.03) and was maintained at 12 and 18 months. The odds of being arrested were reduced from baseline to 6 months by 80% and even further reduced at 12 and 18 months.

Factors that Predicted Outcome

In addition to documenting longitudinal outcomes, we were interested in assessing factors that predicted outcomes. Using GEE models that assessed a variety of factors across data collection time points we found involvement in 12-step groups to be the strongest predictor of our primary outcomes. For CSLT, 12-step involvement was associated with being abstinent for at least 6 months ($p<.001$), lower maximum days of substance us per month ($p<.001$, and fewer arrests ($p<.01$). For ORS, 12-step involvement was associated with abstinent for at least 6 months ($p<.05$), lower maximum days of substance us per month ($p<.01$), and lower ASI legal severity ($p<.05$).

We also examined how drinking and drug use in the participant's social network related to outcomes. At CSLT we found heavier drinking and drug use in the social network was related to worse outcome on all alcohol and drug outcome measures ($p<.01$ for all variables). At ORS the findings were mixed. There was a significant relationship between maximum number of days of substance use per month and drinking in the social network ($p<.05$) and drug use in the social network ($p<.01$). However, there were no significant relationships between social network variables and abstinence. In addition, for the ASI alcohol and drug scales at ORS, the only significant association with social network variables was heavier drug use in the social network predicting ASI alcohol outcome ($p<.01$).

In a recent analysis of CSTL residents we looked at psychiatric severity as a predictor of alcohol and drug outcome using growth curve models (Korcha et al (2010). We found that a subgroup of about a third of the residents had significantly higher psychiatric severity than other residents and had significantly worse outcomes. Our work on identifying and describing these residents with worse outcome is continuing.

Limitations

There are several limitations to the study that are important to consider. First, we could not directly compare which type of SLH was most effective because there were demographic and other individual characteristics that differed between the two types of houses. Second, individuals self selected themselves into the houses and a priori characteristics of these individuals may have at least in part accounted for the longitudinal improvements. Although self selection can be viewed as a weakness of the research designs, it can also be conceived as a strength, especially for studying residential recovery programs. Our study design had characteristics that DeLeon, Inciardi and Martin (1995) suggested were critical to studies of residential recovery programs. They argued that self selection of participants to the interventions being studies was an advantage because it mirrored the way individuals typically choose to enter treatment. Thus, self selection was integral to the intervention being studied and without self selection it was difficult to argue that a valid examination of the invention had been conducted. In their view, random assignment of participants to conditions was often appropriate for medication studies but often inappropriately applied when used to study residential services for recovery from addiction.

Significance of the Study

Our study represents the first examination of sober living house residents using a longitudinal design. To date, our papers have looked at study findings in terms of the types of improvements residents make and factors associated with outcome, the substance of which has been summarized above. One of our aims here, however, is also to look at significance from the perspective of how SLHs might impact various service systems in the community. The promising outcomes for SLH residents suggest that sober living houses

might play more substantive roles for persons: 1) completing residential treatment, 2) attending outpatient treatment, 3) seeking non-treatment alternatives for recovery, and 4) entering the community after criminal justice incarceration.

Treatment Systems

The two types of recovery houses assessed in this study showed different strengths and weaknesses and served different types of individuals. Communities and addiction treatment systems should therefore carefully assess the types of recovery housing that might be most helpful to their communities. Several considerations are reviewed below.

Outpatient programs in low income urban areas might find the Options Recovery Services model of SLHs helpful. Relative to the other housing programs, this model was inexpensive and the houses were conveniently located near the outpatient facility. Typically, residents entered these SLHs after establishing some period of sobriety while they resided in a nearby shelter and attended the outpatient program. A significant strength of the Options houses was that residents were able to maintain low alcohol and drug severity at 12-month follow up.

There are several significant advantages of establishing SLHs associated with outpatient treatment as apposed to traditional halfway houses. First, residents in SLHs are free to stay as long as they wish after completing the outpatient program as long as they abide by program rules. This eliminates arbitrary discharge dates determined by the program, a procedure often used by halfway houses to free up beds. Rather, the resident is able to decide when he or she is ready to transition to more independence. Among other things, this eliminates the need to move to questionable living environments that might not support recovery due to time limitations. SLHs are also less costly than halfway houses, which are usually funded by treatment programs.

SLHs combined with outpatient treatment may be especially valuable to resource poor communities that do not have funds to establish residential treatment programs or have the income levels that could support freestanding sober living houses which are more expensive. Most of the rent for the Options SLHs was paid by General Assistance or Social Security Income, so a variety of low income residents could be accommodated. While the level of support is less intensive (and less expensive) than that offered in residential treatment, it is more intensive than the relative autonomy found in freestanding SLHs. Some residents probably benefit from the mandate that they attend outpatient treatment during the day and comply with a curfew in the evening. For some individuals, the limited structure offered by freestanding SLHs could invite association with substance using friends and family and thus precipitate relapse. This could be particularly problematic in poor communities where residents have easy access to substances and people who use them.

Freestanding SLHs

The roles that freestanding SLHs can play in communities are different from SLHs that are associated with outpatient treatment. First, freestanding houses are often used by individuals who have some previous experience with residential treatment. While some of these individuals transition directly from the inpatient program to the SLH, others enter the houses after some post-treatment period in the community. They may slip, relapse or feel vulnerable to relapse, but for a variety of reasons not want to reenter a formal treatment program. Nevertheless, they may feel the need to take action and get support for reestablishing abstinence. Freestanding SLHs can be a good match for these individuals because they offer support for sobriety outside the context of formal treatment.

Freestanding SLH's offer a limited amount of structure and no formal treatment services. Thus, they are optimal for residents who are capable of handling a fair amount of autonomy and who can take personal responsibility for their recovery. Despite these limitations, CSLT appeared to benefit many different types of residents who were referred from an array of personal and institutional sources (i.e., self, family, criminal justice systems, and inpatient treatment programs). Expansion of freestanding SLHs in communities might therefore ease the burden on overwhelmed treatment systems. In communities that are unable to fund a sufficient number of treatment programs for individuals with substance use disorders, freestanding SLHs might be a clinically and economically effective alternative. The availability of treatment slots for individuals released from jail or prison or particularly lacking. For some those offenders who are motivated for abstinence and capable of handling some degree of autonomy SLHs might be a viable and effective option for recovery that is currently underutilized.

Criminal Justice Systems

Prison and jail overcrowding in the U.S. has reached a crisis point. Each year more than 7 million individuals are released from local jails into communities and over 600,000 are released on parole from prison (Freudenberg, Daniels, Crum, Perkins & Richie, 2005). Although the need for alcohol and drug treatment among this population is high, very few receive services during or after their incarceration. In California, studies show that few offenders being released from state prisons have adequate housing options and in urban areas such as San Francisco and Los Angeles up to a third become homeless (Petersilia, 2003). Housing instability has contributed to high reincarceration rates in California, with up to two-thirds of parolees are reincarcerated within three years. In a study of women offenders released from jails in New York City 71% indicated that lack of adequate housing was their primary concern.

Despite the enormous need for housing among the offender population, SLHs have been largely overlooked as a housing option for them (Polcin, 2006c). This is particularly concerning because our analysis of criminal justice offenders in SLHs showed alcohol and drug outcomes that were similar to residents who entered the houses voluntarily. However, as reviewed elsewhere (i.e., Polcin, 2006c), SLHs need to carefully target criminal justice involved individuals so that they select offenders that have sufficient motivation to remain abstinent and are able to meet their financial obligations.

Where do We go from Here?

There are multiple directions one could go in pursuit of additional research on SLHs. For example, studies comparing different living situations for individuals in early recovery could help highlight the relative strengths and weaknesses of SLHs. In addition, longer follow up time periods could be assessed as well as outcomes for a wider variety of subgroups. These might include minority groups, larger samples of women, and a variety of individual level characteristics not assessed here (e.g., self efficacy and interpersonal skills). However, we have opted to look at two topics that we think are of immediate relevance to communities: 1) documenting and improving outcomes for criminal justice referred residents and 2) understanding the community context within which SLHs operate.

Improving Outcomes for Criminal Justice Referred Residents

Findings from our study suggested that alcohol and drug outcomes for residents referred from the criminal justice system were equivalent to that of voluntary residents. However, offenders did not fare as well as others in two areas: finding and maintaining employment and avoiding arrests. In addition, the numbers of criminal justice referred residents was

relatively small and an examination of a larger sample of offenders is warranted. Among other things, the larger sample would enable us to identify predictors of outcome among offenders. The field would therefore be better equipped to identify those offenders who are more likely to do well in SLHs.

In addition to studying a larger number of offenders, we hope to explore an innovative intervention designed to improve outcomes for these residents in terms of employment, arrests, and other areas. Toward that end, we are in the process of developing a Motivational Interviewing Case Management (MICM) intervention designed to help offenders successfully transition into SLHs, avoid rearrest by complying with the terms of probation or parole, and succeed in activities that support successful transition into the community (e.g., employment). Our intervention modifies motivational interviewing to address the specific needs of the offender population (Polcin, 2006b). Specifically, it helps residents resolve their mixed feelings (i.e., ambivalence) about living in the SLH and engaging in other community based services. Thus, the intervention is a way to help them prepare for the challenges and recognize the potential benefits of new activities and experiences.

Assessing the Impact of the Community Context

The fact that residents in SLHs make improvement over time does not necessarily mean that SLHs will find acceptance in the community. In fact, one of the most frustrating issues for addiction researchers is the extent to which interventions that have been shown to be effective are not implemented in community programs. We suggest that efforts to translate research into treatment have not sufficiently appreciated how interventions are perceived and affected by various stakeholder groups (Polcin, 2006a). We therefore suggest that there is a need to pay attention to the community context where those interventions are delivered.

As a next step in our research on SLHs we plan to assess how they are viewed by various stakeholder groups in the community, including house managers, neighbors, treatment professionals, and local government officials. Interviews will elicit their knowledge about addiction, recovery, and community based recovery houses such as SLHs. Their perceptions of the strengths and weaknesses of SLHs in their communities should provide data that can be used to modify houses to improve acceptance and expand to serve more drug and alcohol dependent persons. We hypothesize that barriers to expansion of SLHs might vary by stakeholder groups. Different strategies may be needed for those who lack information about SLHs, have beliefs that they are not effective, have allegiances to other treatment approaches, have views that minimize social factors in recovery, and live in communities where public policy hinders expansion of SLHs. Drug and alcohol administrators and operators of houses might therefore need different strategies to address the concerns of different stakeholders.

Conclusion

Many individuals attempting to abstain from alcohol and drugs do not have access to appropriate housing that supports sustained recovery. Our study found positive longitudinal outcomes for 300 individuals living in two different types of SLHs, which suggests they might be an effective option for those in need of alcohol- and drug-free housing. Improvements were noted in alcohol and drug use, arrests, psychiatric symptoms and employment. Owners and operators of SLHs should pay attention to factors that predicted better alcohol and drug outcomes, including higher involvement in 12-step meetings, lower alcohol and drug use in the social network, and lower psychiatric severity. Although criminal justice referred residents had alcohol and drug use outcomes that were similar to other residents, they had a harder time finding and keeping work and had higher rearrest rates. Areas for further research include testing innovative interventions to improve criminal

justice outcomes, such as Motivational Interviewing Case Management (MICM) and examining the community context of SLHs. Recognizing stakeholder views that hinder and support SLHs will be essential if they are to expand to better meet the housing needs of persons suffering from alcohol and drug disorders.

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Exhibit G

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ADDICTIVE BEHAVIORS

The need for substance abuse after-care: Longitudinal analysis of Oxford House

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Abstract

Aims: There is a need to explore the processes of social support and self-efficacy change over time among individuals in recovery homes, and to assess the extent to which residents remain abstinent, obtain and maintain employment, refrain from criminal activity, and utilize health care systems both while within the and after leaving such settings.
Design: Residents were recruited and interviewed at an initial baseline phase and then re-interviewed at three subsequent 4-month intervals.
Setting: Oxford Houses are recovery home residences for individuals with substance abuse and dependence problems who seek a supportive, democratic, mutual-help setting.
Participants: A national US sample of Oxford House residents (n=897: 604 men, 293 women).
Measurements: Information was gathered on abstinence, social support, self-efficacy, employment, criminal history, and medical care utilization.
Findings: Change in cumulative abstinence was predicted by support for alcohol use, abstinence self-efficacy, and length of residency in OH (i.e., less than versus ≥6 months), even after controlling for initial time spent in OH.
Conclusions: Results suggest that receiving abstinence support, guidance, and information from recovery home members committed to the goal of long-term sobriety may enhance residents' abstinence self-efficacy and enable persons recovering from alcohol and other drug addiction to reduce the probability of a relapse.

Keywords: Recovery homes; Substance abuse; Social support; Self-efficacy; Oxford House

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1. The need for substance abuse after-care

Substance-related disorders pose serious health threats and exact significant costs to individual users, their families and friends, and society. Despite increased knowledge regarding the harmful consequences that result from substance abuse, as well as persistent efforts to combat these problems, data from the 2003 National Survey on Drug Use and Health (SAMHSA, 2004) reveals that rates of use and abuse of legal and illicit psychoactive-substances have remained relatively stable. Acute treatments help patients achieve abstinence, but relapse rates following treatment are substantial. An important component of relapse appears to be immediate re-exposure to risks associated with one's ongoing living situation (e.g., high substance availability, family and peers non-supportive of recovery, interpersonal conflict, poorly structured time). Drug-free housing that supports recovery, risk avoidance, and employment might heighten one's chances of recovery (Jason, Olson, Ferrari, & Davis, 2004).

There is currently a rising interest in mutual-help groups and in self-help influenced treatments that offer an alternative to professional treatment and after-care. A mutual-help initiative that combines 12-step support within a network of community-based recovery homes for substance abuse is called *Oxford House* (OH). OH was established in 1975 for persons who seek a supportive, mutual-help, residential setting with recovering peers in order to develop long-term sobriety skills. To date, there are over 1200 OHs across the USA, as well as over 30 homes in Canada and eight in Australia. Each house is a rented, multi-bedroom dwelling for same-sex occupants, located in low-crime, residential neighborhoods, and each operates democratically by majority rule and residents govern by electing house officers (e.g., President, Secretary, Treasurer) every 6 months. Houses are not over-crowded and rarely are there more than 12 people in a house. Similar to AA, they are financially self-supported and there are no professionals involved. However, unlike AA there is no single, prescribed course for recovery that all members must follow. Similar to AA, members of an OH receive abstinence support from peers, which has been shown to be an important factor for successful outcomes (Longabaugh, Beattie, Noel, Stout, & Malloy, 1993).

Longabaugh et al. (1993) have proposed that the presence or absence of social support that advocates abstinence support may be related to recovery from substance abuse. That is, successful substance abuse outcomes might be most likely when one has social support networks that discourage substance use and advocate abstinence. In addition, the development of self-efficacy has been implicated as a critical factor in resisting the urge to use drugs and alcohol in high-risk situations after treatment (Solomon & Annis, 1990), and in maintaining long-term abstinence (Rychtarik, Prue, Rapp, & King, 1992). Thus, social factors or environments that promote the development of self-efficacy should reduce the likelihood of substance abuse relapse. Given the peer-based mutual-support approach to addiction recovery that OH might promote, it is possible that residents of OH gain both abstinence social support and abstinence self-efficacy in these environments, which might lead to more successful maintenance of abstinence over time.

Prior studies with Oxford House on client-demographic profiles that generally match the typical profile characteristics reported on recovering substance abusers from more traditional programs (e.g., Jason et al., 2004). In a cross-sectional study of 87 residents, Davis and Jason (2005) found that length of residency in OH was significantly related to decreased social support for alcohol and drug use and increased self-efficacy for abstinence; however, social support for alcohol/drug use fully mediated the link between length of residency and abstinence self-efficacy for women, but not for men. There is a need to examine abstinence social support and abstinence self-efficacy among larger longitudinal samples of OH residents.

The aim of the present study was to explore the processes of social support and self-efficacy change over a 1-year period of time among a national sample of OH residents. In addition, we examined the

extent to which OH residents remain abstinent, obtain and maintain employment, refrain from criminal activity, and utilize health care systems both while within the OH and after leaving such settings. Length of time was considered an important predictor, as it has been found that a six or more month stay in OH is considered optimal for residents to obtain the most benefits from this recovery home experience (see Jason, Olson, Ferrari, & Lo Sasso, in press). It was hypothesized that change in cumulative abstinence would be predicted by support for alcohol use, abstinence self-efficacy, and length of residency in OH (i.e., less than versus ≥6 months). We also examined whether support for substance use played a direct role in abstinence or whether its influence was mediated by abstinence self-efficacy.

2. Methods

2.1. Procedure

Analyses of records provided by Oxford House, Inc. (OH) using a geographical information systems program (GIS) indicated that the majority of OHs across the United States clustered in five regions. These cluster areas included: Washington/Oregon, Pennsylvania/New Jersey, North Carolina, Illinois, and Texas. Therefore, in the present study, participants were recruited from OHs clustered in these five geographic regions (total houses assessed=170).

Participants for this study were recruited through two methods. The method soliciting the most participants (n=797, 88.9% of the sample) utilized an announcement that was published in the monthly OH newsletter distributed by OH, Inc. The announcement indicated that we were conducting a national study and provided contact information. We then contacted OHs within the target geographic areas via letters addressed to House Presidents, conducted follow-up phone calls to the houses, and where possible members of the research team arranged to visit houses. Of 189 houses that were approached, 169 (89.4%) houses had at least one individual who agreed to participate in the study and the average number of participants per house was 4.7 (there were an average of 7.1 individuals per house). For the second method, 100 individuals filled out the baseline questionnaires at an annual OH Convention. There were approximately 300 people at this convention, and the authors attempted to secure a sample of those attending the Convention (a table was set up in a room where individuals could complete the questionnaires with our research staff). We recognize that this is a convenience sample of those who attend the conference and elected to participate, and self-selection factors were presumably in operation. However, analyses of data collected at the Convention versus data collected using the first method did not reveal significant differences in outcome variables.

In each case, the longitudinal nature, purpose, and goals of the study were explained to the potential participants. Staff members also explained that participation was entirely voluntary, withdrawal from participation without pressure was possible at any time, and the consent form was reviewed in detail with each participant. After completing the baseline surveys, each participant received a $15 payment. There were three subsequent waves of data collected at 4-month intervals (i.e., at 4, 8, and 12 months) and $15 payments were made to participants following each survey. Data were gathered by research staff who primarily administered questionnaires in person to the participants. Some data were collected by telephone, particularly when an individual had left an Oxford House. As a measure of reliability of participants' self-reports of alcohol and drug use, upon completion of the final surveys, research staff interviewed a random sample of the fourth wave participants' *Important Person*, who was a person

identified by each participant (at the first interview) as someone who would be knowledgeable about the participant's alcohol and drug use.

2.2. Measures

2.2.1. Addiction severity index

The *Addiction Severity Index-lite* (ASI; McLellan et al., 1992) is a reliable and well validated instrument that assesses problem areas commonly related to substance abuse including medical status, drug use, alcohol use, illegal activity, family relations, family history, and psychiatric condition. We administered the entire scale at the baseline and portions of it (viz. related to employment and criminal involvement) at the final, fourth follow-up assessment. McLellan et al. (1992) indicate that it is appropriate and psychometrically sound to administer only sub-sections of this scale. The following information was derived from the ASI along with socio-demographic data: substance abuse history, physical and mental health information, and criminal activity. In each area, objective questions measure the number, extent, and duration of problem symptoms in the person's lifetime and in the past 30 days.

2.2.2. Alcohol and substance abuse

At the baseline and at each of the subsequent follow-up waves, participants were administered a modified version of Miller and Del Boca's (1994) *Form 90 Timeline Follow-back*, which measures general health care utilization and residential history, and past 90-day alcohol and drug use. The Form 90 has been reported to have good reliability for all key summary measures of alcohol consumption and psychosocial functioning and moderate reliability for most frequently used illicit drugs. Consistency of self-reported drinking has not been found to suffer across test–retest interviews (Tonigan, Toscova, & Miller, 1996). Even though the intervals in the present study were 4 months, the instrument was used to capture alcohol and drug usage during the last 90 days of the 4-month period.

2.2.3. Important people and activities inventory

At baseline and at each follow-up assessment, participants also completed a modified version of Clifford and Longabaugh's (1991) *Important People and Activities Inventory* (IPA) that solicited information regarding individuals' social support networks related to substance use and abstinence. This scale provides detailed information regarding the composition and utilization of individuals' support networks. In the first section of the IPA, respondents list the names of persons (>12 years old) who have been important to them in the past 3 months. Respondents also provide information on how often others use alcohol or drugs during activities that are important to the participant (Beattie et al., 1993). This measure yields 11 indices, including an overall *Composite Support Index* (CSI) and a *support for drinking/drug use* score representing the extent to which an individual's network is supportive of substance use versus abstinence. While the original IPA scale elicits information with respect to alcohol use only, in the present study, additional items were added to assess support for drug use (independent of alcohol use). We also used an index capturing the percentage of abstainers and recovering individuals in respondents' social networks (calculated by dividing the number of abstinent and recovering persons identified in an individual's network by the total number of persons in one's social network).

2.2.4. Alcohol and drug abstinence self-efficacy

At baseline and each of the three follow-up sessions, all participants were administered the 20-item *Alcohol Abstinence Self-Efficacy* scale (AASE; DiClemente, Carbonari, Montgomery, & Hughes, 1994) and a slightly modified version with 20 items to measure *Drug Abstinence Self-Efficacy* scale (DASE). The AASE is a self-report measure derived from Bandura's (1986) cognitive-behavioral self-efficacy theory and based on empirical studies of high-risk situations for relapse (e.g., DiClemente, Fairhurst, & Piotrowski, 1995). Instructions for the AASE asked respondents to imagine themselves in each of 20 situations and to indicate how confident they were that they would not drink in each situation. Individuals rated their level of confidence to not use alcohol on a 5-point Likert scale (1=*not at all confident*, 5=*extremely confident*). The DASE version was identical to the AASE except that the words "drink alcohol" were replaced by the words "use drugs" in order for respondents to answer regarding their confidence that they would not to use drugs in each of the 20 situations. The alphas for the AASE and DASE were 0.98 and 0.99, respectively.

2.2.5. Statistical analysis

Latent growth curve analysis was used to model trajectories of variables related to participants' rate of change in abstinence during the time of their participation in the current 1-year longitudinal study (baseline, 4-month, 8-month, and 1-year assessments). Latent growth curve analysis is a form of multilevel modeling in which separate growth curves are estimated within individuals. Latent growth curve analysis has been applied to the study of substance use outcomes in preventive interventions (Brown, Catalano, Fleming, Haggerty, & Abbott, 2005), variations in drinking trajectories (Greenbaum, Del Boca, Darkes, Wang, & Goldman, 2005), the structure of aggression and drug use (Farrell, Sullivan, Esposito, Meyer, & Valois, 2005), and normative beliefs and substance initiation (Lillehoj, Trudeau, & Spoth, 2005). The widespread use of growth curve models reflects the advances made in longitudinal analysis in the previous two decades (Shadish, 2002).

The dependent measure for the present growth curve analysis was the variable *cumulative days abstinent*. This variable had the following properties: (a) ratio-scaled, (b) showing systematic change (regular, time-related increases or decreases), and (c) having increasing variability over time. These properties were necessary in order for a model to identify a common growth factor. In other words, to examine change over time it is necessary that a variable reflect "growth over time," such as height or weight. Rate of change in abstinence represents the most accurate history of substance use available. The repeated assessments provide greater sensitivity to detect departures from complete abstinence. In addition, as this is a large sample, there is adequate power to detect small effects.

Because residents in this sample had lived in an OH ranging from a period of only a few days to 9 years at baseline data collection, it was most appropriate to analyze only the 1-year prospective data, rather than rely on retrospective recall regarding substance use prior to the commencement of the study. Thus, rate of change was calculated as a function of the cumulative numbers of days abstinent from alcohol or drugs, beginning with the time of the first survey.

In regression analyses, we calculated an observed rate of change in sobriety. This variable examined a rate of change calculated by the number of actual days sober divided by the total possible days sober. A rate of change, or slope, equal to 1.00, indicates that the individual remained alcohol- or drug-free during each day of the 12-month study (i.e., number of days abstinent is equal to number of days participating in the study). A trajectory with a slope less than 1.00 indicates some substance use during their participation in the current study.

3. Results

Statistical analyses were performed in two stages: descriptive analyses exploring the sample and latent growth curve analysis investigating model trajectories of variables related to abstinence. Results of data analyses indicated no significant differences between participants based on data collection method (in person versus by telephone). Of the random sample of collateral informants who were contacted regarding participants who reported they were abstinent from drugs throughout the study (n=114), 98% reported consistently regarding participant's drug abstinence and 97% furnished collateral reports that were consistent with participants' reports of abstinence from alcohol (n=111).

3.1. Descriptive analyses

Characteristics of the sample at baseline are presented in Table 1, reported separately for females and males. We felt that it was important to examine these data based on possible gender differences, as Davis and Jason (2005) found that gender moderated the relationship between social support and abstinence self-efficacy. Furthermore, there is considerable evidence that women and men react differently to after-care services (DeLeon, 1997). At baseline, the sample consisted of 293 female and 604 male residents. Participants were ethnically diverse, with 58.4% being Caucasian, 34.0% African American, 3.5% Hispanic, and 4% other. Regarding marital status, 49% were single/never married, 46.2% were divorced/widowed or separated, and only 4.8% were married. On average, 69.3% of the respondents report being employed full-time and 13.9% part-time, while 11.6% reported being unemployed and 3.8% were retired or disabled. The average age of sample participants was 38.4, and the average total monthly income was $981.80. Most participants reported multiple alcohol and drug dependencies, as well as prior participation in numerous substance abuse treatment programs. Thus, it is evident by their substance use and treatment histories that this sample represents a chronic substance abusing population.

As noted in Table 1, the women and men in this sample reported fairly similar profiles in terms of ethnicity, marital status, and current legal status. However, women in comparison to men were younger and had significantly less employment, employment income, education, time in OH, and number of alcohol treatments, but women reported significantly more use of psychological medications, attempted suicide, and physical and sexual abuse. Additionally, although the men in this sample had used various substances for significantly longer lengths of time than the women, the pattern of lifetime abuse of drugs was similar for women and men (e.g., alcohol was used for the longest amount of time, followed by cannabis, cocaine, and amphetamines respectively). Further, on average, both women and men reported histories of numerous charges, convictions, and having spent time incarcerated. Although men had significantly higher rates with respect to historical legal issues, a slightly higher percentage of women were currently on probation or parole, awaiting charges, trial, or sentencing, and who entered Oxford House based on prompting by the legal system.

3.2. Outcome characteristics across waves 1 through 4

Descriptive variables related to the key outcome areas for the sample across the four survey waves are presented in Table 2. These variables depict participants' use of alcohol and drugs, employment, involvement with the legal system, utilization of the health care system for medical, psychological, and

Table 1
Baseline mean frequencies and percentages of sociodemographic characteristics by gender

Descriptor variable	Sample *percentage*	Women *percentage*	Men *percentage*	Statistical significance
Ethnicity				
Caucasian	58.4	57.7	58.8	
African American	34.0	34.5	33.8	
Hispanic/Latino	3.5	2.4	4.0	
Other	4.2	5.5	3.5	
Marital status				
Never married	49.0	48.8	49.2	
Divorced, widowed, or separated	46.2	44.7	46.8	
Married	4.8	6.5	4.0	
Employment status [a]				
Full-time	69.3	60.6	73.5	**
Part-time	13.9	17.8	11.9	**
Unemployed	11.6	17.4	8.8	**
Retired/disabled	3.8	2.1	4.6	
Psychological status [b]				
History of psych meds	43.0	55.0	37.1	**
Attempted suicide	30.1	42.5	24.0	**
History of physical abuse	46.1	65.1	20.7	**
History of sexual abuse	35.3	72.4	33.3	**
1 or more inpatient treatments	40.1	44.9	37.8	
1 or more outpatient treatments	40.0	45.3	37.6	
Legal status				
On probation/parole [c]	30.3	32.3	29.3	
Awaiting charges, trial, sentencing [c]	9.0	10.6	8.3	
OH entry prompted by legal system [c]	13.7	14.1	13.4	

Descriptor variable	Sample	Women	Men	Statistical significance
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	
Age [d]	38.4 (9.2)	36.5 (8.5)	39.4 (9.4)	**
Education [d]	12.6 (2.1)	12.4 (2.3)	12.8 (1.9)	**
Income ($)				
Employment [e]	794.0 (887.6)	563.8 (655.4)	903.3 (960.2)	**
Illegal activities [e]	2.7 (53.6)	.5 (7.5)	3.8 (64.8)	
Total income [e, f]	981.8 (867.5)	750.7 (734.9)	1087.8 (918.0)	**
Time in OH [g]	10.8 (15.6)	8.6 (13.2)	11.9 (15.6)	**
Time since last alcohol use [d]	1.7 (2.2)	1.2 (1.6)	1.9 (2.4)	**
Time since last drug use [d]	1.8 (2.8)	1.4 (2.4)	2.0 (3.0)	**
Lifetime substance use [d]				
Alcohol	18.3 (10.3)	15.0 (9.5)	19.9 (10.3)	**
Alcohol to intoxication	14.4 (10.9)	11.7 (10.1)	15.7 (11.1)	**
Heroin	2.6 (6.6)	2.3 (5.4)	2.7 (7.1)	
Methadone	0.4 (2.2)	0.5 (2.3)	0.4 (2.1)	
Other opiates/analgesics	2.3 (6.0)	2.3 (5.7)	2.2 (6.1)	
Barbiturates	1.9 (5.4)	1.9 (5.3)	2.0 (5.5)	
Sedative/hypnotics/tranq	2.5 (6.1)	2.9 (6.1)	2.4 (6.1)	
Cocaine	8.3 (8.1)	7.5 (7.6)	8.7 (8.3)	

(continued on next page)

Table 1 (*continued*)

Descriptor variable	Sample	Women	Men	Statistical significance
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	
Lifetime substance use [d]				
Amphetamines	4.1 (7.0)	4.3 (7.0)	4.1 (7.0)	
Cannabis	10.5 (10.5)	8.0 (9.2)	11.7 (10.9)	**
Hallucinogens	3.2 (6.1)	2.5 (5.3)	3.5 (6.5)	*
Inhalants	1.1 (4.2)	1.2 (4.6)	1.0 (4.0)	
More than 1 substance	10.4 (10.5)	8.6 (9.2)	11.3 (10.3)	*
Substance abuse treatments [b]				
# of alcohol treatments	2.8 (4.2)	2.3 (3.8)	3.0 (4.4)	*
# of drug treatments	2.9 (3.5)	2.8 (2.6)	2.9 (3.9)	
Legal history [b]				
Times charged	10.3 (15.0)	8.3 (14.5)	11.3 (15.2)	**
Times convicted	3.1 (5.8)	2.5 (4.6)	3.4 (6.3)	*
Months incarcerated	15.8 (36.5)	7.6 (18.6)	19.7 (41.9)	**
n	897	293	604	

[a] Within the past 3 years.
[b] Lifetime data.
[c] Currently.
[d] In years.
[e] In the past 30 days.
[f] Total income comprises dollars received from employment, unemployment compensation, DPA, pension, benefits or social security, mate, family or friends, and illegal activities.
[g] In months.
* $p \leq 0.05$, two-tailed.
** $p \leq 0.01$, two-tailed.

substance abuse treatment, self-efficacy for abstinence from alcohol and drugs, and abstinence social support over the span of the study. Repeated measures statistical tests reported in Table 2 are based on similar numbers across waves.

Table 2 shows that 607 participants from the initial measurement wave (68% of the sample) remained in the study at wave 4,[1] and of this group, only 13.5% reported having *used either drugs or alcohol* at the

[1] Using baseline data, we examined if there were any differences between those who were interviewed versus those who were not interviewed at wave 4. *Independent sample t-tests* and *chi-square analyses* indicated that there were no significant differences for ethnicity, marital status, and years of education, employment status, income, psychological status, or prior alcohol/drug treatments between those participants who completed wave 4 versus those individuals who did not complete wave 4. However, those who were not available to be interviewed compared to those who were interviewed at wave 4 had higher baseline substance use [percent who used any substances in the past 90 days=22.1% versus 12.6%, $\chi^2(1, N=895)=13.52, p<0.01$; percent who used drugs in the past 90 days=19.4% versus 10.4%, $\chi^2(1, N=895)=13.55, p<0.01$; and percentage who used alcohol in the past 90 days=14.2% versus 8.1%, $\chi^2(1, N=895)=7.96, p<0.01$], had a shorter total length of alcohol sobriety, 1.4 versus 1.8 years, $t(2, 895)=-2.98$, $p<0.01$, and a shorter total length of drug sobriety, 1.4 versus 2.0 years, $t(2, 895)=-3.27, p<0.01$, although they had less total lifetime years using alcohol, 12.7 versus 15.2 years, $t(2, 870)=-3.11, p<0.01$. Additionally, those unable to be surveyed compared to those surveyed at wave 4 were more likely to be awaiting charges, trial, or sentencing, 7.6% versus 12.1%, $\chi^2(1, N=895)=4.78, p<0.05$, respectively, and more likely to have been incarcerated within 90 days prior to baseline, 12.2% versus 5.3%, $\chi^2(1, N=895)=13.19, p<0.01$. Those who did not complete the study were also younger [36.8 versus 39.2 years, $t(2, 891)=-3.71, p<0.01$], had less time living in an OH [7.8 versus 12.3 months, $t(2, 886)=-4.25, p<0.01$], and had lower AASE [78.4 versus 81.8, $t(2, 885)=-2.24, p<0.01$] and lower DASE [78.3 versus 81.4, $t(2, 885)=-1.93, p<0.01$] scores.

Table 2
Outcome characteristics across study waves 1 through 4

Descriptor variables	Wave 1	Wave 2	Wave 3	Wave 4
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Alcohol/drug use[1]				
% who used alcohol or drugs	15.7	10.5	9.7	13.5
% who used alcohol	10.1	5.0	7.7	10.3
% who used drugs	13.3	9.0	7.0	9.8
Days consumed alcohol	2.2 (9.1)	1.4 (8.9)	1.8 (9.5)	3.7 (14.9)**
Days used drugs	5.5 (20.5)	3.7 (15.6)	2.3 (11.0)	5.6 (24.0)**
Employment				
% employed[a]	81.5	86.6	83.3	79.5
Days paid for work[a]	42.0 (28.0)	49.8 (26.5)	50.5 (27.0)	48.4 (40.4)**
Employment income[b]	794.0 (887.6)			941.9 (960.8)**
Total monthly income[b]	981.8 (867.5)			1133.7 (970.6)**
Legal status[a]				
% incarcerated	7.5	3.4	3.4	4.8
Days in jail	1.3 (7.0)	0.7 (6.1)	0.7 (6.3)	2.0 (12.7)
Days in prison	0.6 (6.3)	0.2 (3.5)	0.5 (6.0)	1.44 (11.0)
Medical status[a]				
Days in hospital for medical problems	0.5 (3.4)	0.3 (1.5)	0.8 (4.4)	0.8 (6.3)
Visits to doctor, nurse, p.a., etc.	2.6 (7.9)	2.4 (7.2)	2.1 (5.9)	2.0 (5.7)
Days taking Rx for medical problems	21.3 (36.1)	22.4 (38.7)	21.7 (36.8)	22.6 (37.2)
Psychological status				
Days experienced psyc problems[b]	3.6 (8.0)			3.9 (8.2)
Days taking Rx for psyc problems[b]	0.4 (0.5)			0.2 (0.4)
Days in residential Tx for psyc problems[a]	1.1 (7.1)	0.4 (5.3)	0.5 (4.6)	0.4 (5.2)
Sessions with counselor for psyc problems[a]	2.9 (10.1)	1.8 (6.5)	1.4 (6.7)	1.6 (5.7)**
Alcohol/drug treatment[a]				
Days attended 12-step meeting	44.9 (28.1)	40.5 (26.9)	35.1 (27.0)	33.4 (29.4)**
Days in residential drug treatment	7.1 (20.3)	1.6 (10.4)	1.1 (8.1)	1.1 (8.6)**
Days in residential alcohol treatment	6.5 (19.4)	1.1 (8.7)	.7 (5.7)	1.0 (7.8)**
Sessions with counselor for alc. problems	4.9 (14.0)	2.2 (7.8)	1.4 (7.5)	1.6 (7.8)**
Sessions with counselor for drug problems	5.4 (14.9)	2.3 (7.7)	1.6 (8.0)	1.4 (8.1)**
Days in hospital for detox	0.6 (3.5)	0.1 (1.1)	0.2 (1.4)	0.1 (0.7)**
Days in residential detox	0.3 (2.4)	0.1 (0.9)	0.1 (1.6)	0.0 (0.4)
Self-efficacy—alcohol[a]	80.7 (21.2)	80.4 (23.8)	79.3 (25.2)	84.6 (20.1)**
Self-efficacy—drug[a]	80.4 (22.3)	80.8 (23.8)	81.1 (25.0)	84.6 (21.3)**
% of network abstinent/in recovery[a]				
For alcohol use	75.0	79.0	79.0	77.0**
For drug use	90.0	94.0	94.0	93.0**
n	897	685	588	607

[a] In the past 90 days.
[b] In the past 30 days.
** $p \leq 0.01$, two-tailed, based on repeated measures analyses.

final assessment, and the average number of days they consumed alcohol or used drugs was 3.7 and 5.6, respectively. It appears that the highest rates of substance use for this sample occurred during waves 1 and 4, with lower rates at waves 2 and 3, but overall, the rates were relatively low across waves. Throughout

the study, the rate of *employment* for participants ranged from a high of 86.6% to a low of 79.5%. At wave 4, their average monthly income from employment was $941.90, which was a significantly higher than their baseline employment-related income.

In regard to *legal status*, there was a directional decrease in the percentage of participants incarcerated between the start and end of the study. In contrast, the *medical status* of participants, which included number of days spent in hospital, visits to the doctor, and days taking prescription drugs, remained relatively stable across the four waves. With respect to *psychological status*, as evident in Table 2, over the course of the study, there were directional decreases in the days spent in residential treatment and significant decreases in sessions with a counselor for psychological problems. Participants evidenced a significant decrease over the four waves with respect to *alcohol and drug treatment*, which included the number of days that participants attended 12-step meetings, days in residential and outpatient treatment, as well as sessions with substance abuse counselors and days spent in hospital detoxification programs. At the final assessment, participants' *self-efficacy for remaining abstinent from alcohol and from drugs* had significantly increased. Significant increases were also noted with the percentage of participants' social network members who were abstinent/in recovery from alcohol use and the percentage of participants' social network members who were abstinent or in recovery from drug use.

3.3. Models of abstinence

As noted above, latent growth curve analysis was used to model trajectories of variables related to participants' rate of change in abstinence during the time of their participation in the current 1-year longitudinal study, and a trajectory with a slope less than one indicates some substance use during their participation in the current study. Of the 748 cases in which a slope could be calculated (i.e., participants in which we collected more than one wave of assessment data), 79.4% of the alcohol abstinence trajectories and 80.5% of the drug abstinence trajectories have slopes equal to 1. The observed slopes from these trajectories were treated as dependent variables in OLS regression analyses. Sample size for this analysis is reduced somewhat further by missing data on some of the predictors. Results from these analyses for cumulative alcohol sobriety are presented in Table 3.

Our first hypothesis was that change in cumulative abstinence would be predicted by support for alcohol use, abstinence self-efficacy, and length of residency in OH (i.e., less than versus ≥ 6 months; length of residency in OH was the variable that assessed the participant's residency in the OH during the course of the 1 year longitudinal study). We selected these constructs to be tested based on theoretical issues described in the introduction and findings in Table 3. Before testing for these effects, we controlled for a series of socio-demographic and other key variables. Model 1 includes the following control covariates: participant age, years of education, gender, never married versus ever married, African American versus non-African American, lifetime months incarcerated at wave 1, composite alcohol use score on the ASI at wave 1, and initial length of stay in OH (i.e., number of months individuals had resided in OH prior to the wave 1 assessment). Only this last variable was significantly related to the slope of cumulative abstinence.

In Model 2, we entered a contrast that indicated whether an individual left OH prior to 6 months versus stayed at least 6 months. In this model, leaving OH prior to 6 months was associated with a significant reduction in the slope of cumulative abstinence, and the significance of the length-of-initial-stay predictor dropped from a significance of $p<0.001$ to $p<0.05$. Support for alcohol use was added in Model 3. This variable was the mean score across available longitudinal assessments of the support for alcohol use

Table 3
Regression models predicting longitudinal slope of cumulative alcohol sobriety (N=642)

Parameter	Model 1: covariates only	Model 2: add stayed in OH ≥ 6 months	Model 3: add support for alcohol use	Model 4: add abstinence self-efficacy
Age	0.08	0.05	0.05	0.04
Education	0.03	0.02	0.03	0.02
Sex (female)	0.04	0.08*	0.07	0.05
Never married	−0.01	−0.03	−0.01	−0.04
African American	0.03	0.02	−0.01	−0.01
Lifetime months incarcerated	0.00	−0.01	−0.02	−0.01
Initial alcohol ASI	−0.06	−0.04	−0.03	−0.02
Length of time in OH at w1	0.14***	0.08*	0.08	0.06
Stayed in OH ≥ 6 months	–	0.29***	0.28***	0.24***
Support for alcohol use	–	–	−0.19***	−0.15***
Alc. abstinence self-efficacy	–	–	–	0.25***
R	0.202	0.343	0.392	0.456
R^2	0.041	0.118	0.154	0.208
R^2 change	–	0.077	0.036	0.054
F change	–	54.9***	26.8***	43.2***
NDf	8	9	10	11
DDf	633	632	631	308
F	3.37***	9.36***	11.45***	15.02***

ASI=Addiction Severity Index; OH=Oxford House; *p<0.05; **p<0.01; ***p<0.001.

(using the CSI from the IPA).[2] This predictor also added significantly to the model (R^2 change=0.036, p<0.001) and predicted lower alcohol sobriety. The final model includes the measure of abstinence self-efficacy. As shown in Table 3, this variable also added significantly (R^2 change=0.054, p<0.001) and predicted greater cumulative sobriety. Results of predictions of cumulative drug sobriety were similar. (Findings for drug abuse were similar, and these findings can be obtained by writing the first author.)

We next examined whether support for substance use played a direct role in abstinence or whether its influence was mediated by abstinence self-efficacy using a *latent growth curve model* (LGM). It is possible that residents of OH gain both abstinence social support and abstinence self-efficacy, which might lead to more successful maintenance of abstinence over time, and it is also possible that the effects of the abstinence social support on successful maintenance are mediated by self-efficacy. The LGM provides a method for representing individual growth curves as latent variables in a structural equation model. Repeated-measures data are organized into latent intercepts (or "levels") and latent slopes that can be treated as dependent variables in a structural model. In this model, support for alcohol use and abstinence self-efficacy were represented as latent variables with four indicators corresponding to the four repeated assessments. These constructs were fit as single-variable factors rather than as bivariate intercept

[2] Social support was averaged across the three time points because there was no systematic increase in social support over time and a latent growth curve of social support could not be identified. This is in large part due to the fact that the measure was created as an individual difference measure. In other words, it is designed to describe differences across individuals rather than change within an individual over time. Individual difference measures tend to have high test–retest reliability by definition, and this can be a problem when the intent is to measure a variable that changes over time. However, the lack of identified change does not necessarily mean that OH residents are not experiencing change in support over time. Because a measure is designed to have high stability does not mean that the construct itself is not changing.

and slope factors. Parameter estimates for the structural model for alcohol are given in Fig. 1. The χ^2 (chi-square) for this model was 179.0 with $df=74$; a number of fit indices suggested acceptable fit to the data (NFI=0.98, RFI=0.98, CFI=0.99, RMSEA=0.04). Results indicated that change in cumulative abstinence, represented by the latent slope variable, was predicted by support for alcohol use, abstinence self-efficacy, and length of residency in OH (i.e., less than versus ≥6 months) even controlling for initial time spent in OH. It should be noted that initial time spent in OH was associated with higher levels of abstinence self-efficacy, although there was no significant relation between time and support for alcohol use. Additionally, length of residency in OH predicted increased abstinence self-efficacy as well as continued abstinence. (Similar findings occurred for drug usage and these data are available by contacting the first author.).

3.4. Staying versus leaving OH

Examining differences between the participants who remained living in an OH throughout the entire study (32.6% of the sample) versus those of those who left by waves 2, 3, or 4 (67.4% of the sample), there were no significant differences for ethnicity, employment status, total income, or psychological status, based on independent sample *t*-tests or chi-square analyses. Compared to participants who stayed in OH across all four waves, individuals who left OH had higher rates of any substance use over the last

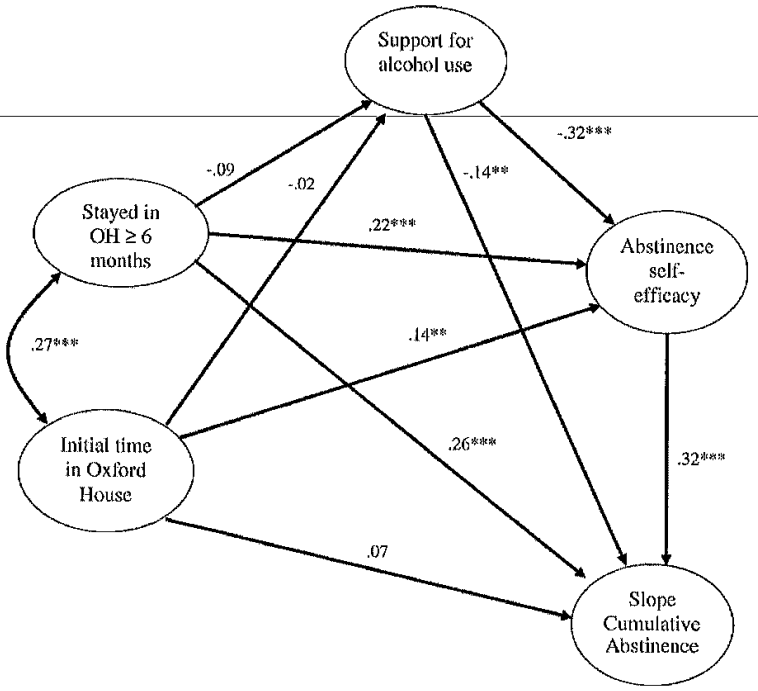

Fig. 1. Results of testing latent growth model regarding alcohol abstinence. Notes: *$p<0.05$; **$p<0.01$; ***$p<0.001$.

90 days at wave 4 [18.5% versus 3.1%, respectively, $\chi^2(1, N=595)=26.43$, $p<0.01$]; however, these findings indicate that 81.5% of those who left the house and were interviewed at the final wave remained consistently alcohol- and drug-free.

Those individuals who were no longer living in an OH at wave 4 compared to continued residents had spent less time in OH at baseline [9.8 versus 17.5 months, $t(2, 593)=5.59$, $p<0.01$] and were younger [38.0 versus 41.6 years, $t(2, 593)=4.49$, $p<0.01$]. Examining wave 4 data, those who had left versus those who remained in an OH spent more days in hospitals for medical problems over the past 90 days [1.2 versus 0.1 days, $t(2, 594)=-1.96$, $p<0.05$], spent more days in residential treatment for drug use in the past 90 days [6.3 versus 5.8 days, $t(2, 593)=-2.14$, $p<0.05$] as well as more time in residential treatment for alcohol use in the past 90 days [1.4 versus 0 days, $t(2, 592)=-2.06$, $p<0.05$], had lower self-efficacy for abstinence from alcohol [82.9 versus 88.7, $t(2, 596)=3.23$, $p<0.01$] and lower self-efficacy for abstinence from drugs [82.8 versus 89.4, $t(2, 596)=3.62$, $p<0.01$], and lower percentage of network members in abstinence or recovery for alcohol use [74.8% versus 80.0%, $t(1, 585)=2.19$, $p<0.05$] and drug use [92.6% versus 95.7%, $t(1, 584)=2.37$, $p<0.05$].

4. Discussion

Our data analytic approach was based on a theoretical framework which posited that change in cumulative abstinence would be predicted by social support for alcohol (or drug) use, abstinence self-efficacy, and length of residency in OH (i.e., less than versus ≥ 6 months). These hypotheses were confirmed, and the results were consistent with research indicating that substance abusers are more likely to maintain abstinence in abstinent supportive settings (Longabaugh, Mattson, Connors, & Cooney, 1994; Longabaugh, Wirtz, Beattie, Noel, & Stout, 1995). It is likely that OH settings promote abstinent support systems, as the present study found that the networks of OH members were mostly composed of individuals who were abstinent or in recovery. An OH recovery home experience of communal living may help develop a sense of bonding with similar others who share common abstinence goals (Ferrari, Jason, Davis, Olson, & Alvarez, 2004; Jason et al., in press). The OH communal living experience also appears to increase self-efficacy to refrain from using alcohol and other drugs. Facilitating this personal resource is important given indications that abstinence self-efficacy is related to more successful abstinence and coping activities during recovery maintenance (DiClemente et al., 1995). Receiving abstinence support in a setting that promotes abstinence self-efficacy may reduce the probability of a relapse among substance abusers.

It was also important to explore the 6-month length of stay in OH criterion given DiClemente et al. (1995) claim that efficacy expectations, which are related to addictive behavior change, stabilize after 6 months of abstinence in accordance to process of change theory (Prochaska & DiClemente, 1992). In addition, other evidence suggests that it may take approximately 6 months for OHs to adequately exert their effects on recovery (Jason et al., submitted for publication). Our results support that staying in OH at least 6 months was related to increased self-efficacy and maintaining abstinence. This outcome suggests that maintaining residency for at least 6 months of time might be a critical factor in promoting positive outcomes. However, it should be noted that, if residents who are found to be using substances are asked to leave Oxford House, some of the association may be a consequence of substance use. But, the theory of abstinent social support networks indicates that residents need to be in the OH environment a certain minimal amount of time to obtain the maximal effects.

The present study suggests that Oxford House is a network of abstinent support settings that is associated with maintenance of abstinence while living in the setting and post-residence. At the final wave 4, only 13.5% of participants reported using either alcohol or drugs, and of those who had left the OH, only 18.5% indicated using any substances. These findings are supportive of the Oxford House model, although the data need to be cautiously interpreted as there was some attrition over the course of the year-long study and there was no control group. Nevertheless, in a separate study (Jason et al., in press), individuals completing substance abuse treatment were randomly assigned to either an OH or usual after-care condition. At a 24-month follow-up, significantly lower substance use rates were found for those in the OH (31%) versus the usual after-care condition (65%). Taken together with the findings of that study, the present study suggests that the OH model may reduce substance abuse relapse rates. The public health implications of these findings are heightened because these OH homes are self-governing and require minimal costs with residents paying their own expenses for housing and food.

Results from the present study also indicate a general trend toward increased employment and income, and low levels of involvement in the legal system related to residency in OH. This result was in contrast to the finding that individuals with substance abuse disorders are more likely to be unemployed (Treatment Improvement Protocol 38, 2000) and have involvement with the criminal justice system. Those individuals with substance abuse problems often lack the benefits of employment, which provides a source of income, requires managing the use of time, improves self-esteem, and is associated with reductions in substance use (Copeland & Hall, 1992). In the present study, employment income significantly increased over time from $794 to $942 per month and 80% of participants reported being employed by the last assessment. In addition, the percentage of incarceration remained at low levels throughout the study (less than 5% were incarcerated by the wave 4). In part, these findings may reflect other forms of support that may be operating with the house systems (e.g., where peers encourage and help fellow residents to find work) that might help residents obtain stable employment. Additionally, residing in OH may support individual behavior changes that lead to low levels of involvement with the criminal justice system. Residents' successes with respect to maintaining abstinence likely bolster and are bolstered by their heightened ability to obtain and maintain employment, and their reduced association with criminal systems while living within these recovery settings.

4.1. Limitations and future directions

There are several limitations in the present study. For instance, we used a naturalistic follow-up of residents recruited from a large sample of facilities located in states where clusters of OHs are found. There was a considerable range in the study sample with respect to how long participants had been residing in OH at the start of the study. While much outcome research has a standard practice of recruiting participants at roughly the same point in treatment, and another study with OH used such a design (Jason et al., in press) interviewing individuals who just arrived in OHs. However, the present research design allowed the investigators to enroll a larger sample by including all available residents, and then statistically controlling for length of time living in OHs prior to the study start.

Attrition did occur between the baseline and last wave of data collection, and there were a number of differences between those who ultimately dropped out of the study and those who continued to participate.[1] Still, the tracking rates were relatively good for this national sample, and on the primary outcome data, there were only small differences between those who remained in and those who attrited. In addition, we did not use a control group to assess what might occur had residents not been provided this

abstinent supportive environment. However, as noted, a randomized study of Oxford Houses (Jason et al., in press) had findings on substance abuse indices that were in line with present study, and these convergent findings increase confidence in the overall validity and reliability of these results regarding effectiveness.

Finally, there might have been some selection bias in the recruitment effort, with only more motivated residents expressing an interest in participating in this study. As all participants were abstinent at the time of baseline assessment, participants who might have had a negative initial reaction to Oxford House might have left early, and therefore might not have been included in the sample. Clearly, some selection bias did occur with the current sample, and this possibly contributes to the low rates of substance use at the 12-month assessment in the current study (13.5%).

Typically, after treatment for substance abuse, whether in hospital-based treatment programs or therapeutic communities, many patients return to former high-risk environments or stressful family situations. Returning to such settings without a network of people to support abstinence increases chances of relapse (McCusker, Willis, Vickers-Lahti, & Lewis, 1998). As a consequence, alcohol and substance use recidivism following treatment is high for both men and women (Hubbard, Flynn, Craddock, & Fletcher, 2001). It is possible that non-treatment factors may be the best predictors of future recovery status (Vaillant, 1983; Westermeyer, 1989). Programs like OH that provide naturally occurring abstinent social supportive settings might represent effective ways to promote abstinence. Future research is needed to identify whether certain types of residents might have less positive outcomes in OHs, as well as better understanding those person–environment matches that either facilitate or impede recovery.

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Exhibit H

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Interaction of Motivation and Social Support on Abstinence among Recovery Home Residents

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Abstract

Background and Aims—The impetus to abstain from alcohol and drugs is especially robust when individuals seek help. However, motivation to continue abstinence during ongoing recovery is less understood. The present study assessed how social support interacted with motivation to affect abstinence over an 18-monthe time period.

Methods—A sample of 289 residents entering residential recovery homes were recruited and followed at 6-, 12-, and 18-months. Motivation was measured as the perceived costs and benefits of abstinence. Five social influence measures were used to assess interactive effects with costs and benefits on abstinence.

Results—Perceived costs and benefits of abstinence were robust predictors of abstinence over the 18 month assessment period. Two social support factors interacted with perceived benefits to influence abstinence: 12-step involvement and number of persons in the social network.

Conclusion—Suggestions are made for recovery services to influence perceived costs, benefits, and social network characteristics.

Keywords

Motivation; Social Influences; Social Support; Sober Living House; Recovery Home

Introduction

Few concepts in the addiction literature have received more attention than motivation for change. One view of motivation is that is an intrapersonal trait, something within the individual (Miller, 2006). However, research suggests that motivation to change substance use behaviours can be altered by the social context in which it occurs (Miller, 1999; Miller et al., 1995; Moos, 2008). Anecdotally, practitioners in the substance misuse treatment field have long acknowledged that the most motivated clients are also the most successful. Research has generally supported this contention, as studies on motivation for change have been associated with improved alcohol and drug use outcomes (Adamson, Sellman, & Frampton, 2009; McKay & Weiss, 2001). However, much of the literature on motivation has centered on a single measurement of motivation rather than a multidimensional construct.

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Motivation has typically been assessed at treatment entry to predict later outcome (Korcha, Polcin, Bond, Lapp, & Galloway, 2011). Less emphasis has been devoted to assessing change in motivation over time or how motivation may function to maintain long term abstinence. However, one study of motivation as a longitudinal and multidimensional construct showed better drug and alcohol outcomes over 18 months were predicted by higher perceived benefits of sobriety, while increased costs, or negative aspects of sobriety (e.g., boredom, social anxiety, and stress),were predictive of worse outcomes (Korcha, et al., 2011).Similarly, Heather and McCambridge (Heather & McCambridge, 2013) found support for improved drinking outcomes based on level of motivation after clients completed treatment.

A strong body of work indicates that the characteristics of one's social network impacts substance use (Galea, Nandi, & Vlahov, 2004; Kaskutas, Humphreys, & Bond, 2001; Longabaugh, Wirtz, Zweben, & Stout, 1998). Several theories have been proposed to understand the influence of social networks, including Hirschi'ssocial control of behaviour (Hirschi, 1969). Social control refers to the strong bonds with family, friends, and other interpersonal relationships that promote drug use prosocial behaviour and discourage deviant behaviour. Addiction research has traditionally examined social control as the amount of support given toward inhibiting or abstaining from alcohol and (Beattie & Longabaugh, 1999; Longabaugh, Beattie, Noel, Stout, & Malloy, 1993; Longabaugh, Wirtz, Zywiak, & O'Malley, 2010; Miller, 2006). Support from the social network that is drug and alcohol specific is more predictive of treatment outcomes than general support (Groh, Jason, Davis, Olson, & Ferrari, 2007; Polcin, Korcha, Bond & Galloway, 2010) and a social network that is supportive of recovery efforts is related to better treatment outcomes (Beattie & Longabaugh, 1999; Subbaraman & Kaskutas, 2012).

Recent studies have considered the mediational role of motivation to understand how motivation operates in the wider scope of the recovery process (Hunter-Reel, McCrady, & Hildebrandt, 2009; Hunter-Reel, McCrady, Hildebrandt, & Epstein, 2010; Small, Ounpraseuth, Curran, & Booth, 2012). Hunter-Reel and colleagues (Hunter-Reel, et al., 2009), proposed that social network members may provide motivation to resist drinking and motivation may change as a function of these relationships. This theory was supported in a later study (Hunter-Reel, et al., 2010) that demonstrated motivation as a mediator between social support and drinking outcomes for alcohol dependent women.

Purpose

The present work examined a variety of social network factors that might interact with motivation to influence abstinence over time. Our goal was to identify ways social support might buffer the destructive effects of low motivation and identify groups for whom motivation might be particularly important. This work contributes to the literature in two important ways. First, most studies on motivation and substance use outcomes have used treatment seeking populations. Motivation to abstain from alcohol and drugs for those with some recovery time has largely been ignored. Of central interest to the present study was examining factors that influence motivation to *maintain abstinence* from alcohol and drugs rather than the motivation to stop or decrease substance use. A second goal was to expand on

the operationalization of the social network to include different types of social influences. We included traditional characteristics of the social network (e.g., number of persons in the network and number of alcohol and drug users in the network) but also other forms of social influences that may impact motivation and alcohol and drug abstinence. The concept of confrontation (Polcin, 2003;Polcin, Galloway, Bond, Korcha, & Greenfield, 2009,2010) as a measure of supportiveness is a relatively recent development in the addiction literature that updates the notion of confrontation as it is perceived by the recipient. The concept of confrontation as helpful takes on a broader perspective that specifically queries those in recovery on the comments or warnings they may have received about their drug and alcohol use from multiple sources (e.g., "bad things" may happen if they do not change their substance use or, if in recovery, make changes to maintain abstinence). Previous work has found this construct or confrontation to be generally experienced as accurate, helpful and supportive by the recipient (Polcin, et al., 2009).

Additionally, this work included affiliation with 12-step programs such as Alcoholics Anonymous (AA) (Humphreys, Kaskutas, & Weisner, 1998) as another component of social influence that might moderate the effect of motivation on outcome. We hypothesized that the relationship between motivation and abstinence would be strongest when there were high levels of alcohol and drug abstinence in the social network, more supportive confrontation, and greater affiliation with 12-step groups. However, we also wanted to explore whether these social influences night buffer destructive influences when motivation remained low over time.

Methods

Sample

Participants were recruited within the first week of entry into residential recovery homes in Northern California. Three programs were targeted. All three used a social model approach to recovery that emphasized 12-step involvement, peer support, and residence in an alcohol and drug-free living environment. However, there were some differences between the sites. The largest (n=218) consisted of 16 houses and required at least a few days of sobriety and no signs of withdrawal from substances prior to entry into the residence. Although these freestanding houses were not affiliated with any type of treatment program, nearly half of the residents reported receipt of residential or outpatient treatment in the 30 days prior to entering the house (n=106). The second location consisted of 51 residents that entered SLHs that were affiliated with an outpatient treatment program. Typically, these individuals needed to be in good standing in the outpatient program for 30 day before applying to the sober living residence. The third site was smaller site (N=20) and offered some on-site treatment services in a residential setting for a period of 30 to 60 days followed by residence in sober living homes. All study materials and protocols were approved by the Public Health Institute's internal review board (IRB).

To maximize generalization of study findings, few exclusionary criteria were implemented and refusal to participate in the study was rare. Eligibility required all participants to be at least 18 years old, have the ability to understand and read English, report no major psychiatric impairments that would interfere with their ability to provide informed consent,

and be available for follow-up interviews. A total of 323 residents were recruited from three locales. All residents were interviewed at baseline and follow-up interviews were conducted at 6, 12 and 18 months. A total of 289 residents (90%) were interviewed for at least one follow-up interview. Because the current paper targets assessment of longitudinal changes over time, residents who did not complete a follow up interview were excluded from the analysis. The sample selected was favourable for the current study because we saw significant increases in alcohol and drug abstinence over time (Polcin, et al., 2010). We could therefore assess how interactions between motivation and social support were associated with improved rates of abstinence.

Measures

Demographic characteristics—In addition to the usual demographic indicators such as gender, race, marital status, education, psychiatric symptoms, and alcohol and drug use measures, SLH information on the length of stay (LOS) and number of days living in a controlled environments in the 30 days prior to house entry are included.

Psychiatric symptoms—To assess current psychiatric severity we used the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). The 53-item measure assesses severity of psychiatric symptoms on nine clinical scales as well as a Global Severity Index (GSI). Items are rated on a 5-point scale and ask about symptoms over the past 7 days. The GSI was used to assess overall psychiatric severity.

Alcohol and Drug Consequences Questionnaire (ADCQ)—The ADCQ (Cunningham, Sobell, Gavin, Sobell, & Breslin, 1997) draws upon a view of motivation that emphasizes the 'pros' and 'cons'of behaviour (e.g., Janis, 1977).The ADCQ uses the terms "perceived costs" and "perceived benefits" to describe two subscales. Perceived costs consists of 15 items and the perceived benefits subscale was inclusive of 14 items. Examples of costs include items such as "I will have difficulty relaxing," "I will get depressed," and "I will feel bored." Examples of benefits include items such as "I will have a better relationship with my family," "I will feel better about myself"and"Iwillbemoreactiveandalert."Because this instrument was administered several times over the course of the study and included persons with no recent substance use, participants were asked to consider their substance use prior to administration of ADCQ items and pick one of two options; (1) "if I keep my sobriety" or (2) "if I stop or cut down." Responses are measured on a 6-point Likert scale ranging from zero to five assessing level of importance for each cost and benefit item. Two scales were created by summing scores and dividing by the number of items. Alphas for our modification of these scales (i.e., assessing motivation to "keep my sobriety" as a response option) were 0.88 for costs and 0.84 for benefits (Polcin, Korcha& Bond, 2015).

Alcohol and Drug Confrontation Scale (ADCS)—The ADCS used 8 items to assess experiences of supportive confrontation from 9sources: spouse, family, friends SLH residents, health care professionals, mental health professionals, substance use treatment professionals, co-workers, and criminal justice professionals (Polcin, et al., 2009). Assessment of each source section begins with the question, "Did (source) say bad things might happen to you if you did not make changes to address drug or alcohol problems or if

you did not make changes to maintain your sobriety?" If the response was affirmative, additional questions followed assessing the intensity of confrontation (Internal Intensity subscale) and supportiveness of confrontation (Internal Support subscale). We used the Internal Support scale as our measure of Supportive Confrontation. Examples of items on this scale included the participant's assessments of how supportive the person(s) were of their recovery, how supportive the person(s) were overall, and how much the confronter was trying to help. Items were rated on a 5-point Likert scale and averaged for each participant. Psychometric support for this scale is derived from several studies (Polcin, et al., 2009; Polcin, Galloway, Bostrom, & Greenfield, 2007). The alpha coefficient across all sources of confrontation was 0.90 and a confirmatory factor analysis yielded a comparative fit index of 0.90. Although a two factor structure was found, only one factor, internal support, was hypothesized to be a moderator of motivation and abstinence. The scale was dichotomized at the median so that scores below 4.5 were deemed 'lower internal support' and those at 4.5 or higher were 'higher internal support'.

Six-month abstinence—Was a single question which asked if any alcohol or drugs were used during the past 6 months (Gerstein, 1994). This dichotomous variable is the primary outcome measure analysed here. Abstinence was chosen because our measure of motivation specifically asked about motivation "to keep sobriety." In addition, abstinence was the explicit goal of all of the recovery homes. For an analysis of outcomes a using a wide variety of alcohol and drug and other outcome measures see Polcin et al (2010).

Important People Instrument (IPI)—The IPI (Zywiak, Longabaugh, & Wirtz, 2002 was used to assess number of important persons in the social network, drinking in the social network and drug use in the social network. This instrument allows participants to identify up to 12 important people in his or her network with whom they have had contact in the past six months. The four most important persons from this list were identified and rated on importance on a scale from 1–6 and mean importance was averaged. Information was obtained on the type of relationship, amount of contact over the past 6 months (a 7-point Likert scale ranging from once in the past 6 months to daily),and drug and alcohol use for each member of the social network (a 5-point Likert scale including ranging from "in recovery" to "heavy user"). Our analyses used three social network measures were dichotomized at the median: 1) size of social network was defined as 'low' if the resident's network was empty or consisted of 1 person, 'high' if 2–12 persons were reported; 2) alcohol use of the social network scale was alcohol use multiplied by the amount of contact with the resident. This scale was scored as 'low' if the mean scale score was 0.83 or less and 'high' if 0.84 or higher; 3) drug use of the social network scale was the drug use of the network members multiplied by the amount of contact with the resident. A 'low' score corresponded to a scale score of 0 and a 'high' scores indicated a scale score above 0.

Alcoholics Anonymous Affiliation Scale (AA affiliation)—This measure includes 9 items and was used to assess the strength of an individual's affiliation with 12-step groups including Alcoholics Anonymous (AA), Narcotics Anonymous (NA), or Cocaine Anonymous (CA) (Humphreys, et al., 1998). The scale includes items assessing attendance at meetings, questions about sponsorship, spirituality, and volunteering for service positions

at meetings. The measure shows strong validity and internal consistency with Cronbach's alphas of 0.85 for treatment samples and 0.84 for community samples. Because the data distribution for this variable was highly skewed we used a dichotomized measure.

Analysis Plan

The main outcome measure of 6-monthabstinence was analysed using random effects logistic regression modelling for panel models, adjusted for age and gender via the 'xtlogit' Stata macro (Stata Corp., 2013). The formal model estimated was: $\text{logit}(p_{i,t}) = \alpha_i + \beta_1 A_i + \beta_1 G_i + \gamma_1 M_{i,t} + \gamma_2 Z_{i,t} + \gamma_3 M_{i,t} Z_{i,t} + \varepsilon_i$, where A_i is the baseline age, G_i the gender (females are the reference), and $M_{i,t}$ and $Z_{i,t}$ represent the motivation (i.e., costs and, separately, benefits) and social support moderator measures, respectively. The random intercept term ε_i represents the combined effect of all unmeasured subject-specific covariates that may result in systematic over or under-prediction of abstinence within individual across the three waves analysed. Such a model estimates the time averaged effect of the number of persons in the social network, alcohol and drug use in the social network, supportive confrontation, and 12-step affiliation measures as moderators of the relationship between motivation measures and 6-month abstinence. Demographic information was obtained from the baseline interview but, because a central goal of the study was to evaluate a population with at least some degree of time in recovery, only data from the 6-, 12-, and 18-month follow-ups were used in the logistic regression models and graphs.

Results

As Table 1 indicates, residents were primarily male (81.0%) and white (65.1%). Most had received a high school education or equivalent (78.5%). Approximately half of the residents had never been married with a minority that were married or living with a partner prior to moving to the SLH (10.7%). Over a quarter had served jail or prison time in the past 30 days (29.1%). Most met DSM-IV criteria for at least one substance in the past year, with about half the sample (49.8%) reporting dependence on 2 or more substances.

Length of stay (LOS) in the sober living residence was over six months on average, although differences were apparent by site. Those residents living in sober living house affiliated with the outpatient treatment program stayed an average of 254 days (sd=169.1). Shorter lengths of stay were reported for individuals in the residential treatment program 143 days (sd=133) and the freestanding SLHs (166.6 days; sd=162.). Few other demographic differences were observed between the study locales except that those affiliated with the outpatient program tended to be older (43 years; sd=9.) compared to those in the residential treatment program 36 years (sd=12.) and freestanding houses (37 years; sd=10.). Residents in the houses affiliated with outpatient treatment also had a higher percentage of African-Americans (70%) and more men (94%).

Psychiatric symptomatology as measured by the Global Severity Index on the Brief Symptom Inventory was higher than normative data on adult non-patient populations but lower than adult psychiatric outpatients (Derogatis & Melisaratos, 1983). Residents entering the residential treatment program had significantly high GSI scores at baseline (1.1; sd=0.7) than those that completed the 90 day outpatient treatment (0.7; sd=0.6).

Table 2 displays variable distributions for motivation and social support scales as well as abstinence. Residents rated the perceived benefits of sobriety much more highly than the perceived costs at every interview. Cross-sectional t-tests comparing perceived costs and perceived benefits at each time point were significant at $p < 0.001$ at every interview. Within subject repeated measurement for the perceived costs and for the perceived benefits did not differ significantly, indicating that resident ratings of these two measures of motivation remained relatively stable across the one year time span. Social influence variables (i.e., 12-step affiliation, supportive confrontation, drug use in the social network, alcohol use in the social network, and number of contacts in the network) were dichotomized due to highly skewed variable distributions across all follow up time points. Table 2 shows the percentages for the dichotomized categories at each follow-up time point. Most of these variables were consistent over the course of the study, showing only modest variation across data collection time points. The one exception was 12-step Affiliation, which showed a decline, particularly at the 18 month time point.

Table 3 displays beta coefficients for the interaction terms of the perceived benefits and the perceived costs with each of the social influence variables, predicting abstinence. First, two models were first run to examine the marginal effects of perceived benefits and the perceived costs (not tabled). One demonstrated a significant negative relationship between perceived costs and the odds of abstinence ($\beta = -0.8$; 95% CI=−1.0 to −0.6; $p<0.001$) and a second model showed a significant positive relationship between perceived benefits and odds of abstinence ($\beta=0.6$; 95% CI=0.4 to 0.8; $p<0.001$). Interaction terms, entered in separate models, were then included to test whether social influence measures moderated the relationship between motivation and abstinence. None of the social influence measures moderated the relationship between perceived costs and abstinence. However, significant interactions were evident for the perceived benefits. Interactions included the number of persons in the social network ($p<.05$) and12-step affiliation ($p < 0.05$).

The number of persons in the social network interacted with perceived benefits to influence abstinence (Figure 1). For residents with low and high numbers of social contacts, higher perceived benefits was associated with higher abstinence. However, smaller networks were associated higher abstinence than larger social networks across all levels of benefits, but especially when benefits were low. As benefits increased for the larger social network group there was a relatively larger effect on abstinence. For persons in the smaller social network group, increases in benefits resulted in more modest improvement on abstinence.

The relationship between perceived benefits and abstinence also showed differing patterns based on level of 12-step affiliation (Figure 2). Abstinence was highest among persons in the high 12-step involvement group. That finding held across all levels of perceived benefits. However, there was a stronger effect for benefits among the low 12-step involvement group. As perceived benefits increased, the log odds of abstinence increased more among those with low rather than high 12-step affiliation.

Discussion

Research assessing motivation at treatment entry has shown only modest effects on long-term outcome. Less studied is the influence of motivation to maintain abstinence over time once a person has established some time in recovery. The findings reported here and results from previous work (e.g., Korcha, et al., 2011) demonstrate that proximal measures of motivation are strong predictors of abstinence across time. The current paper adds to this literature by showing how social influences alter the impact of motivation on abstinence.

The discussion below begins with an examination of the resiliency of costs and benefits as influential factors on abstinence. The discussion then examines the two social support factors that interacted with benefits to influence abstinence: size of the social network and 12-step involvement. Implications of the findings for sober living homes and other recovery services are discussed along with identification of study limitations.

Resiliency of Perceived Costs and Benefits

Results show that the two ADCQ scales, especially the costs scale, are strong, resilient predictors of abstinence. These scales appear to be useful for predicting outcome for a range of different client groups with different characteristics. We hypothesized that a number of social influences, such as social networks with limited or no alcohol or drug use, high affiliation with 12-step programs and greater receipt of supportive confrontation would mitigate the poorer outcomes observed with higher perceived costs. Yet all of these models, irrespective of the moderator tested, were non-significant. While 12-step affiliation and the size of the social network moderated the effect of perceived benefits on abstinence, neither substance use in the social network nor supportive confrontation had moderating effects.

It is important to remember that we were testing these social factors as moderators of motivation, not their direct impact on outcome. For example, previous research with this dataset (Polcin et al, 2010) showed alcohol and drug use in the social network and 12-step affiliation were strong predictors of outcome. One potential reason for the lack of findings for supportive confrontation is that few individuals yielded low scores on the internal support scale used. There were few counterproductive experiences of confrontation and therefore limited variation of scores. A sample with more varied experiences of how confrontation was received might yield more significant results.

Social influences on abstinence that were found in previous studies (e.g., alcohol and drug use in the social network) appear to be unrelated to motivation as measured by costs and benefits. Social influences may operate independently through containment of impulses to use substances and social reinforcement for continued abstinence. For a qualitative analysis of different ways social influences within recovery homes facilitates abstinence see Polcin and Korcha (2015).

Twelve-step Involvement

The finding that high12-step affiliation was associated with higher abstinence across all levels of perceived benefits supports our previous work (Polcin, et al, 2010). Results suggest that for those with high 12-step affiliation increases in perceived benefits adds little to

maintaining abstinence. Practical application of the finding is limited by the fact that the 12-step model of recovery is not necessarily suited to all persons in recovery (Miller, 2008; Walters, 2002) and other approaches to assist these 'non-affiliated' individuals achieve success are needed. Hoffman (Hoffmann, 2003) suggested that individuals have 12-step career types. Some move in and out of 12-step participation but do not fully commit to it while others have 'tourist careers' with 12-step programs where they attend meetings due to coercion but have little interest in continued attendance.

Even though SLHs follow a social model program of recovery that requires 12-step attendance and promotes resident affiliation with 12-step, only about half the residents reported feeling a high level of connection with a 12-step program. Nearly all residents had left the SLH by the 18-month interview and a noticeable increase in the percentage reporting lower 12-step affiliation occurred at the 12-month interview. These results indicate that 12-step affiliation is not consistent over time and that the road to recovery is not the same for all individuals.

Interestingly, those residents with lower levels of 12-step affiliation increased the odds of abstinence with increased perceived benefits. The most rewarding aspects of sobriety may act as a buffer to using drugs and alcohol for those not interested in active participation in 12-step programs. Treatment efforts aimed at increasing perceptions about the benefits of abstinence may be particularly helpful for these individuals.

Number of Persons in the Social Network

Interaction models were not significant for alcohol or drug use in the social network, but the number of persons in the network, regardless of alcohol or drug use, was a significant moderator of the relationship between benefits and abstinence. Residents with one or no members in their social network showed a trajectory of improved abstinence with increased perceived benefits. However, the increase was significantly less than that found among residents with two or more persons in their network. These larger social networks showed a stronger improvement on abstinence as benefits increased.

One potential explanation for this finding is that individuals with larger social networks might have more opportunities to use the benefits of abstinence as a prophylaxis to relapse. For example, persons with larger networks may engage in more social activities where alcohol or drug use is possible. Possessing a strong sense of why abstinence is important (i.e., the benefits) might be very helpful in avoiding or successfully managing potential relapse situations. Individuals with little or no social support in their networks will have fewer opportunities for benefits to help them avoid relapse in social situations. It was interesting that these individuals with limited social support had higher abstinence than those with higher numbers of contacts across all levels of motivation. It seems likely that some of the participants with limited social support who were achieving abstinence were successfully avoiding contact with persons who could potentially exert a destructive influence.

Given the widespread finding that social contact and social support facilities health and well-being, recovery home service providers might consider ways to increase social support for socially isolated residents through structured recreational and social activities within the

home or facilitating involvement in outside activities. For example, individuals with little or no social support in their personal networks might need the structured social support found in 12-step meetings, even though they might not indicate fellow 12-step members as "important people" in their lives, which is how the size of the social network item is worded.

Strategies for Maximizing Motivation

Study results support the importance of addressing several issues to facilitate recovery. First, our findings suggest that the emphasis that SLHs place on 12-step involvement is warranted. Although 12-step involvement interacted with benefits to influence abstinence, higher involvement in 12-step groups was associated with higher odds of abstinence across all levels of perceived benefits. Residents identifying few important people in their lives might particularly benefit from such involvement.

Second, strategies that help individuals learn how to cope with the challenges (i.e., costs) that abstinence presents are essential. In the current study as well as in previous work (e.g., Korcha, et al., 2011), motivation as measured by the costs scale had a consistent and robust association with outcome. The absence of moderators suggests that addressing costs should be an important part of the recovery process for all persons with substance use disorders. Cognitive behavioural therapy (CBT) interventions that address ways to cope with the challenges of recovery, such as those described by Kadden et al. (1994) and Carroll (1998) seem to be warranted. These types of interventions address issues that can exacerbate substance use, such as anxiety and depression, difficulty socializing, and discomfort when experiencing urges to use. Moreover, they provide alternative ways of getting needs met that substitute for alcohol and drug use. Our results suggest that addressing the costs associated with abstinence should be conducted over the course of recovery, not limited to relatively brief periods during treatment. Although SLHs do not typically provide formal services such as CBT, modifications could be made to provide them in a group format onsite.

Our results also suggest that service providers pay attention to the experienced benefits of sobriety over time, particularly with some subgroups. Individuals with higher numbers of contacts in their social networks and lower involvement in 12-step groups were those who were most impacted by benefits. It therefore makes sense to target efforts to increase perceived benefits most among these subgroups. The same aforementioned CBT strategies can be used to help individuals recognize the benefits of sobriety and use those recognitions as a prophylaxis to alcohol and drug use.

Limitations

There are a variety of limitations that need to be considered:

1. Our study sample consisted of SLH residents in Northern California and outcomes may not generalize to other populations, although SLH residents may be more representative of a broader community context than traditional treatment seeking samples (Jason & Ferrari, 2010).

2. Concomitant with using self-report measures is the possibility of under- or over-reporting although random urine screens were implemented and agreement with self-report was high.
3. Motivation has been measured in a variety of ways other than assessing perceived costs and benefits. Other measures of motivation may show different associations with abstinence and social support.
4. It is difficult to know whether our findings continue beyond an 18-month time period.
5. There were limitations in our variable distributions. Most of our measures were highly skewed and were therefore dichotomized for analyses. This was particularly the case for the internal support scale, which was used as our measure of supportive confrontation.
6. Because we assessed "motivation to maintain sobriety" our outcome variable was abstinence. Other outcomes, such as ways that motivation impacts severity of alcohol and drug problems, could result in different findings.

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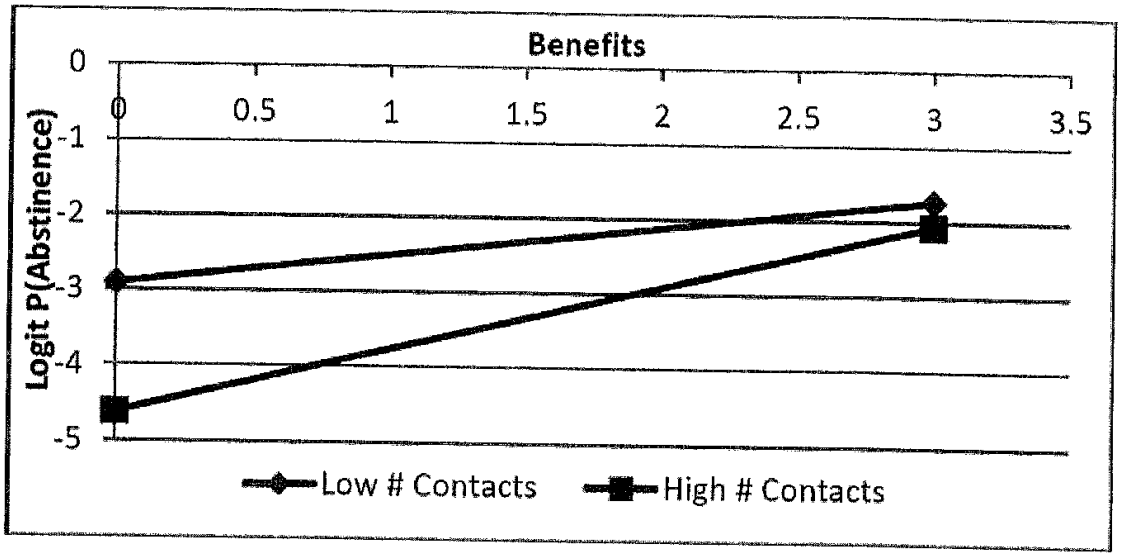

Figure 1.
Perceived benefits by number of persons in the social network at each interview.

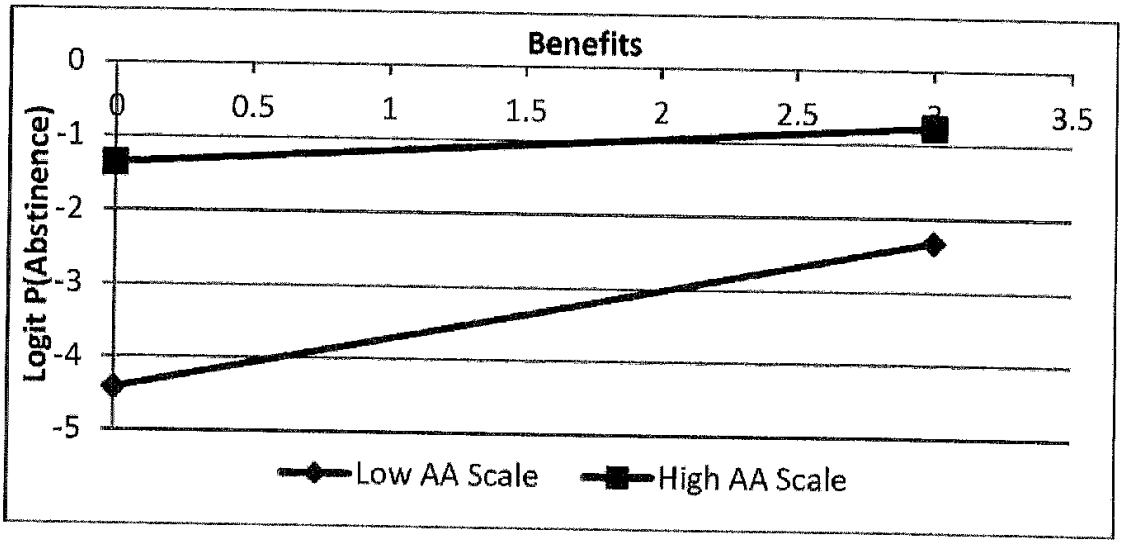

Figure 2.
Perceived Benefits by 12-step affiliation at each interview.

Table 3

Beta coefficients of the interaction of social influence and motivation predicting abstinence

	Interaction of social influence measure and benefits		Interaction of social influence measure andcosts	
	β	*95% CI*	β	*95% CI*
# in the social network	**0.5**[a]	**0.03, 0.9**	−0.01	−0.5, 0.5
Supportive Confrontation	−0.3	−0.9, 0.3	−0.02	−0.4, 0.5
12-step affiliation	**−0.5**[b]	**−1.0, −0.03**	−0.01	−0.4, 0.5
Alcohol use in the network	0.4	−0.04, 0.8	0.02	−0.5, 0.5
Drug use in the network	0.2	−0.3, 0.6	0.02	−0.5, 0.5

Note: All models control for age and gender

[a] $p < 0.05$; interaction illustrated in Figure 1 below

[b] $p < 0.05$; interaction illustrated in Figure 2 below

Exhibit I

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Social Networks among Residents in Recovery Homes

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Abstract

Although evidence exists that substance abuse abstinence is enhanced when individuals in recovery are embedded in social networks that are cohesive, few studies examined the network structures underlying recovery home support systems. In two studies, we investigated the mechanisms through which social environments affect health outcomes among two samples of adult residents of recovery homes. Findings from Study 1 ($n = 150$) indicated that network size and the presence of relationships with other Oxford House (OH) residents both predicted future abstinence. Study 2 ($n = 490$) included individuals who lived in an OH residence for up to 6 months, and their personal relationship with other house residents predicted future abstinence. Implications of these findings are discussed.

Index Terms

Substance abuse; recovery; Oxford House; social networks

I. Introduction

Substance abuse creates significant and pervasive health and economic burdens in the United States. Approximately 22 million (9%) of US citizens meet diagnostic criteria for substance dependence [1], and the annual costs associated with illicit drug use are estimated to be $181 billion dollars [2]. Drug abuse and addiction research currently suggests that a complex set of interacting environmental and individual factors are predictive of addictive behaviors [3]. Some factors included parental and peer modeling, social pressure, socioeconomic status, social networks, and geographic location [3]. Vaillant [4] noted that environmental factors may be key contributors to whether or not individuals maintain abstinence, and these factors included the support one receives for abstinence among their support networks. Moos [5], [6] pointed to similar environmental factors that predicted

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abstinence maintenance. Moos [7] maintained that effective interventions for recovering individuals might be those that engage clients and promote naturally-occurring healing processes, such as self-help based treatments.

Social support for abstinence may be critical to facilitating abstinence among persons with substance use disorders. Such social support is often acquired and utilized through participation in *mutual-help groups* [8], where individuals develop peer networks consisting of abstainers in recovery. Investment in abstinence-specific social support was reported to be one of the best post-treatment prognostic indicators of recovery [9], [10]. Regrettably, few studies examined the composition of or change within these social network structures, which underlie many community-based recovery support systems.

Much of the prior research on social networks and substance abuse focused on adoption (e.g. social network influences of using) and maintenance of alcohol or drug usage [11]– [12]. Neaigus et al. [13], for instance, found that drug injectors with more frequent social contacts with non-injectors engaged in lower levels of injecting risk behavior. Buchanan and Latkin [14] examined the social networks for heroin and cocaine users. In that study, which investigated social networks before and after quitting, found that those who quit had a significant change in the composition of their social network.

One type of community, mutual-support setting is *Oxford House*, a network of recovery homes providing affordable and safe housing for individuals in recovery for substance abuse (see [15], [16] for review and contextual information). This self-help organization has grown enormously over that last two decades from 18 Oxford Houses to over 1,400 [17]. The residences are rented, single family homes with a capacity of 6 to 12 individuals and they are gender segregated. Houses are usually located in middle class neighborhoods with access to public transportation and employment opportunities [18]. The average rent paid by an Oxford House resident is generally $100 per week, and the Oxford House represents sustainable, affordable housing for those working full-time with even minimum wage jobs. Over 10,000 people live in these recovery homes, making them the largest self-help residential recovery program in the US [19]. These houses are self-supporting and democratically run; the houses are chartered and expected to follow guidelines and traditions as suggested by Oxford House, Inc., a 501(c)(3) non-profit corporation [20]. The guidelines include models of governance, reporting, and member practices (e.g. elections, officer roles, financial reporting, financial operations, interviewing, basic member behavior guidelines, problem resolution, etc.[21]. Unlike traditional recovery homes, Oxford Houses have no professional staff or limitations on length of stay. Residents may remain at an Oxford House as long as they are abstinent, pay rent, do their fair share of chores, and are not disruptive [22]. In addition, Oxford House guidelines usually strongly encourage some level of participation in a 12-step group. The uniform, documented approach to operating an Oxford House allowed us an unparalleled opportunity to investigate a substantial sample of homogeneous communal housing units whose primary mission involved supporting recovery from substance use.

One study of Oxford House members examined abstinence-specific social support and abstention from substance use in a national sample of Oxford House residents. Results from this study found that only 18.5% of the participants reported any substance use over a one year period of time [23]. Additionally, over the course of the study, the percentage of their social networks who were abstainers or in recovery increased. Finally, latent growth curve analyses indicated that less support for substance use by significant others and time in Oxford House predicted change in cumulative abstinence over the course of the study. It also was important to explore the 6-month length of stay in Oxford House criterion, given the fact that DiClemente, Fairhurst, and Piotrowski's [24] claimed that efficacy

expectations, related to addictive behavior change, stabilized after six months of abstinence [25]. Staying in an Oxford House at least 6 months increased self-efficacy and maintaining abstinence. This outcome suggested that maintaining residency for at least 6 months of time might be a critical factor in promoting positive outcomes.

In another study, 150 Oxford House individuals who completed treatment at alcohol and drug abuse facilities in the Chicago metropolitan area were randomly assigned to live in an Oxford House or community-based usual aftercare services [26]. Positive outcomes were evident in terms of substance use (31.3% of participants assigned to the Oxford House condition reported substance use at 24 months compared to 64.8% of Usual Care participants), employment (76.1% of Oxford House participants versus 48.6% of Usual Care participants reported being employed at the 24 month assessment), and days engaged in illegal activities during the 30 days prior to the final assessment (mean = 0.9 for Oxford House and 1.8 for Usual Care participants). This study reported that durations of stay of 6 months or more led to better outcomes for individuals in recovery from substance abuse [26].

From the studies above taken together, it appears that the first 6 months of living in an Oxford House appears to be critical. However, it is still unclear how network size changes over time and may predict substance use. It is also unclear whether network composition, or the ties and relationships with Oxford House residents, may predict usage behavior. Finally, while the presence of heavy users in an individual's network was associated with the likelihood of relapse [27], it is unclear whether an individual changing this presence of "heavy users" might predict a change in future usage. The present research predicted, across two samples of participants, that individuals with larger networks and networks that included relationships with OH residents would do better than those adults without such support. In addition, it was hypothesized that individuals who reduced the number of heavy users in their network would decrease their odds of relapse.

II. STUDY 1

A. Sample

Participants were recruited from residential substance abuse treatment facilities located in northern Illinois. Clients were asked if they were interested in taking part in a research project assessing post-treatment recovery patterns by measuring the function and outcomes related to substance use across two years following discharge. Participants were recruited over a one and a half-year period to allow a gradual transition of individuals into both conditions. Data were collected from 2002–2005, including both recruitment and two year follow-up data (see [26] for details).

In order to participate in the study, inpatient clients agreed to be randomly assigned to an Oxford House or usual after-care condition. Of those persons approached to be in the study, only four individuals indicated that they were not interested in being involved in the project. A total of 150 adults approached at treatment centers agreed to participate, and these individuals were randomly assigned to either one of the two conditions. Thus, there were 75 adults (46 women, 29 men) in the Oxford House and 75 adults (47 women, 28 men) in the usual after-care conditions.

Over the two-year follow-up, participants in the Oxford House condition spent an average of 256.2 days (range 8–730) in this setting. Of the 75 Oxford House participants, 5% stayed in Oxford House for the entire 24 months of the study, 35% moved into their own home or apartment after leaving the Oxford House, 20% went to relatives' homes, 15% moved into a partner's or spouse's home, 9% went to a friend's home, 5% went to a treatment program,

4% went to jail, 4% went to another staffed recovery home, and 3% went to a homeless shelter. Over the course of the study, two individuals assigned to the usual care condition had applied for and gained admission to an Oxford House (both decided to apply for entry into an Oxford House after spending time at other sites following discharge from the treatment facility). Using intent-to-treat rules, both individuals continued to be assigned to the usual care condition until the end of the study.

B. Procedure

All participants underwent a baseline questionnaire assessment two to three days before discharge from inpatient substance abuse treatment programs. Clients assigned randomly to the Oxford House condition, however, were scheduled to visit one of 20 Illinois Oxford Houses with one of our research staff members. During that initial visit, the participant filled out a one-page application form for entry into the Oxford House and was interviewed by the House residents. Residents then voted within 24 hours of the interview on whether or not to accept the applicant into the House. If the applicant was voted into the Oxford House, that participant moved into the house at their planned release date from the treatment facility. All Oxford House participants except one person were successfully voted into a house at this initial attempt. The participant not voted into the first Oxford House visited was brought to a second Oxford House and was then accepted as a resident.

Participants randomly assigned to the control or usual care condition were referred following discharge from the inpatient treatment facility by their case managers to different forms of outpatient treatment, self-help groups, or other resources in the community. Participants assigned randomly to the usual care condition, after leaving the treatment setting, went to the following sites: a relative's home (32%), a staffed recovery home (18%), a partner's or spouse's home (16%), their own home or apartment (16%), a homeless shelter (10%), a substance abuse treatment program (4%), or a friend's home (3%).

After participants entered the study, they were interviewed every six months over a two-year period, yielding a total of five assessments (i.e., baseline and 6, 12, 18, and 24 month follow-ups). In order to reach the participants during these four subsequent assessment waves, the interviewers used data from a detailed tracking information sheet developed for this study. This sheet contained, for instance, telephone numbers and addresses of family, friends, neighbors, employers, post offices, credit unions, and tax offices. Name and contact information for the person who always knew how to reach the participant also had been obtained at the beginning of the study and in each subsequent wave. Participants were paid $40 for filling out the pretest questionnaire at baseline, and equivalent incentives were used for the subsequent four interview waves. Study completion rate across the two years was comparable for Oxford House (89%) and usual after-care (86%) participants.

The validity of abstinence self-report data was enhanced by having a person in each participant's support network listed on the 24 month follow-up assessment confirmed the participant's level of abstinence at the 2 year assessment [28]. This collateral information, based on a procedure developed by Clifford and Longabaugh [29], was obtained from the person who was rated by the respondent as a most important person in his or her life. If the collateral report indicated alcohol or drug use, and the individual reported no use, we counted this person as using. This is a standard method in substance abuse research, and is generally seen as a more conservative approach to assessing abstinence.

C. Measures

All participants completed the *Form 90 Timeline Follow-back* [30] administered at baseline and subsequent interviews to measure alcohol and drug use in the previous 180 days.

Reliability research, including test/retest interviews, on the Form 90 found the instrument to be sufficiently reliable for alcohol and drug treatment research and individual assessment using self-reported usage [31].

Participants also completed at each wave the *Important People Inventory* (IP) [29], [32]. The IP solicits information regarding an individual's social support network including the enumeration of people, their relationship to the participant, duration of relationship, frequency of contact, general support and their own drinking and drug usage behavior. The IP has been utilized extensively in addiction research since its development for Project Match [33]. This instrument provided information on the participant's network characteristics.

D. Results and Discussion

Table I shows the trends of descriptive measures for self-efficacy, unemployment, and the usage behavior of an individual's most important person list. For these measures of medians and proportions, the dramatic changes occur in the first 6 months of the study; the slopes of change post-6 months are generally flat. This suggests, at least for these measures, an individual's progress in recovery occurs in the initial 6 months post treatment. These findings suggest that significant changes occur over those first six months with respect to likelihood of employment, change in median abstinence specific self-efficacy, and percentage of sober members in the most important person network. For example, the median abstinence specific self-efficacy for the Oxford House sample increased by nearly 10 points in the initial 6 month measurement period, the unemployment rate dropped by over 52 percentage points, and the most important four person social network of the last 90 days became a 100% sober network.

In Study 1, a mediation logistical path model was used to test whether network size, the presence of relationships with Oxford House residents, and changes in the numbers of heavy users within an individual's important person network were predictive of short term (usage at 6 months) and longer term (usage at 24 months) abstinence. Since individuals in both conditions could have relationships with OH residents, condition was used as a control variable thereby eliminating the possibility of relationships with OH residents serving as a proxy for treatment condition. At 6 months, 37.3% of the participants had not remained abstinent in the previous 6 months and at 24 months, 45.2% had not been abstinent in the preceding 6 months.

While treatment condition was used as a control method, it was not significantly predictive of usage behavior in the first 6 months of the study (see Table II). Network size at 6 months and the number of Oxford House relationships were both significantly related to usage at 6 months. Changing the number of heavy users in the network was not predictive of usage behavior; that is on average, reducing the number of heavy users in the network did not increase the odds of remaining abstinent.

For the two significant relationships, network size and number of OH relationships, the changes in odds for not being abstinent were material. The overall average odds ratio was approximately .60 and an increase of one person in the social network size was associated with a reduction in predicted odds to about .40 or a 28.6% likelihood of not being abstinent compared with the overall average of 37.3%. If an individual reported a relationship with an Oxford House resident, the effects were even stronger. A one person addition of an Oxford House resident to the individual's important person inventory predicted a reduction in the odds ratio of approximately 88%. This relationship would suggest individuals with OH personal relationships were unlikely to not remain abstinent at 6 months.

Simultaneously, the path model measured the relationship between usage at 6 months (for the prior 6 months) and usage at 24 months (for the prior 6 months). In addition, the mediation paths of network size and OH relationships were tested (see Table III). Usage behavior at 6 months was strongly predictive of behavior at 24 months ($t = 5.29$, $p = .000$). The odds ratio of 9.75 strongly suggests that those using at 6 months were also using at 24 months and those that were abstaining at 6 months had significantly lower likelihoods (≈ . 20) of not abstaining than the overall average of 45.2%.

Overall, these results suggest a powerful association between abstinence and personal relationships with Oxford House residents and that overall, social network sizes are predictive of abstinent behavior and that these phenomenon carried through to 24 month behavior.

III. STUDY 2

A. Background

Several studies focused explicitly on general and specific social support within Oxford House. Regarding general support, residents rated "fellowship with similar peers" the most important aspect of living in an Oxford House [34]. In terms of perceived specific support, cross-sectional research suggested that the Oxford House experience may provide residents with abstinent-specific social support networks consisting of other residents in recovery. For instance, among African Americans living in Oxford House, other house residents contributed to abstinent support networks [35]. Davis and Jason [36] found that longer lengths of stay in Oxford House were related to less specific social support for alcohol and drug use, which was related to abstinence self-efficacy. Likewise, Majer, Jason, Ferrari, Venable, and Olson [37] found that time spent in Oxford House combined with twelve-step participation was related to increased support for abstinence.

Using a national data base of residents of Oxford House members, Groh, Jason, Davis, Olson, and Ferrari [27] found that general support from friends was predictive of drinking rates. Groh et al. [33] performed factor analyses to develop a more structurally consistent model of the IP as compared to the original model. Results indicated a three-factor model, which explained about two thirds of the total variance. These three factors included: *Support for Drinking from Network Members, Drinking Behaviors of Network Members,* and *General Social Support.* Drinking Behaviors of Network Members consistently had a stronger relationship with alcohol use variables as compared to Support for Drinking from Network Members. This finding implied that whether one's friends and family were drinkers may have a greater impact on one's alcohol use than whether friends and family actually provide support for drinking. Nonetheless, these findings lead to the prediction that out of the three factors (which measure general support, network drinking behaviors, and support for drinking), Drinking Behaviors of Network Members may be the best predictor of alcohol use over a four-month period. In addition, it was expected that Drinking Behaviors of Network Members would be a better predictor of alcohol use over a four-month period than the Network Support for Drinking summary score from the original model of the IP. Subsequently, Groh, Jason, Ferrari, and Halpert [38] found of the three factors measuring general support, network drinking behaviors, and support for drinking, drinking behaviors of network members was the only significant predictor of alcohol use over a four month period. Study 2, then, explored issues of network size composition and Oxford House relationships with this data set.

B. Sample

Participants at the start of Study 2 ($n = 490$) consisted of 187 women and 303 men, a subset of a larger sample of 897 Oxford House residents who participated in a national study of

recovery for Oxford House residents (see [26]). This sample was limited to those individuals who had spent 6 months or less in OH residency to minimize the effects of natural relocation effects post 6 months. The overall sample was ethnically diverse, with 58.4% European American, 34.0% African American, 3.5% Hispanic/Latino, and 4.0% others. The average age of the sample was 36.2 (SD= 8.9) and the average education level was 12.6 years (SD= 2.1). Regarding marital status, 49.0% were single or never married, 46.2% were divorced, widowed, or separated, and only 4.8% were currently married. The average participant had undergone alcohol treatment 2.8 times (SD= 4.2) and drug treatment 2.9 times (SD=.5) in their lives.

C. Procedure

Study 2 performed secondary analysis on data from a large national investigation funded by the National Institute on Drug Abuse of current residents of Oxford House who were at various stages in their alcohol and drug recovery. Data was collected from 2001 to 2004 at four time points starting at Time 0 and continuing every 4th month for 12 months. The nature, purpose, and goals of the study were explained to the potential participants. Participation was entirely voluntary, and payments of $15 were made to participants following each survey. These data were gathered by research staff who primarily administered questionnaires in person to the participants. Additionally, some data were collected by telephone. No significant socio-demographic differences were found based on methods of data collection.

D. Measures

Baseline Time 0 demographic information was obtained from items on the 5th Edition of the *Addiction Severity Index-lite* (ASI) [39]. The ASI assesses common problems related to substance abuse: medical status, drug use, alcohol use, illegal activity, family relations, and psychiatric condition. In addition, questions in the ASI-lite measure the number, extent, and duration of problem symptoms in the person's lifetime and in the past 30 days. The ASI was used extensively in substance abuse studies over the past 15 years, and has been shown to have excellent test-retest reliability (≥.83) [39]. For the present study, demographic and background information from the ASI included age, sex, ethnicity, years of drug use, and whether participants abused alcohol, drugs, or both alcohol and drugs.

At Time 1,2, and 3, participants also completed a version of Miller and Del Boca's [30] *Form 90 Timeline Follow-back*, which measures general health care utilization and residential history, in addition to past 90 day alcohol and drug use. The psychometric properties of the Form 90 were reported above in Study 1 and discussed in detail in Tonigan et al. [31]. In addition, participants completed the *Important People Inventory* [29], [32]. As in Study 1, this instrument collected information on an individual's list of important people including relationship, length of relationship, frequency of contact, support, and their own usage behaviors.

E. Results and Discussion

In Study 2, logistic regression was used to model future abstinence as predicted by network size, changes in network size, and the proportion of the network that were Oxford House residents. Since this sample consisted solely of Oxford House residents and was a convenience sample with differing lengths of stay, length of stay was used as a control variable. In addition, this sample was constrained to those residents with 6 months or less of Oxford House experience to minimize the possible erosion of Oxford House relationships over time due to the natural transitioning of residents to more permanent housing.

Overall, the logistic regression model was significant ($r^2 = .085$, $p = .04$) with the control variable length of stay significantly predictive of future abstinence for the final 8 months of the study (see Table IV). The odds of relapse or not being abstinent decreases by 16.7% for every month increase in length of stay, Overall, the percentage of participants who did not remain abstinent in the future 8 months of the study was 29.4% with a mean length of stay of 2.6 months ($SD = 1.8$) at study initiation. This odds ratio would suggest that for a one month increase the likelihood of being abstinent would increase from 70.6% to 74.3%.

The predictors, network size and change in network size, were not significantly related to future usage behavior. Descriptively, the mean network size was 6.00 ($SD = 3.43$) and the mean change in network size was 0.07 ($SD = 3.62$). The effect of having OH relationships was statistically and materially significant. Individuals with a larger proportion of their important people being OH residents were significantly more likely to remain abstinent in the future 8 months. The mean proportion of OH relationships was .215 ($Md = .167$, $SD = .24$). This relationship would predict that if an individual were to increase their OH network representation to .333 (or to 2 out of 6 individuals, for example) their predicted likelihood of substance usage would drop from 29.4% to 25.6%. In testing network composition for this sample of Oxford House residents, length of stay, as expected, was an important control variable, and the proportion or mix of OH residents within an individual's important person inventory was predictive of likelihood of abstinence in the future 8 months. Network size and change in size were not significantly related to usage behavior.

IV. Conclusion

Significant changes occur over those first six months with respect to likelihood of employment, change in median abstinence specific self-efficacy, and percentage of sober members in the most important person network. For example, the median abstinence specific self-efficacy for the Oxford House sample increased by nearly 10 points in the initial 6 month measurement period, the unemployment rate dropped by over 52 percentage points, and the most important four person social network of the last 90 days became a 100% sober network.

Taken together, both studies suggest a strong relationship between an individual's social connection with Oxford House individuals and their own likelihood of remaining abstinent. In Study 1, where individuals were generally recruited directly from 30 day treatment centers, the formation of a single Oxford House relation reduced the probability of relapse in the first 6 months by nearly a factor of 5 and the overall size of the important person network was materially significant as well. In the convenience sample that included 100% OH residents and where the average length of abstinence was 9 months ($M = .77$ years, $SD = 1.11$ years), Study 2 found that network size was no longer predictive of abstinence after this length of stay, and while OH relationships were still significant, the marginal positive effect of adding an OH relationship was substantially smaller. Given the characteristics of the samples, these results are supportive of the criticality of an individual's development in early recovery and the dynamic nature of recovery as a continuous and evolving process.

Dynamic social network characteristics allow researchers to investigate the co-evolution of networks and behavior. These approaches allow for new insights into the initiation and maintenance of substance abuse. For example, Pearson, Steglich, and Snijders [40] illustrate the co-evolution of friendship networks and substance abuse among teenagers. They found strong network selection effects occurring with a preference for same sex reciprocated relationships in closed networks. Steglich, Snijders, and West [41] explored the co-evolution of social networks regarding the role of peer groups in friendship networks and alcohol consumption. Mercken, Snijders, Steglich, Vartiainen, and de Vries [42] tried to tease apart

is the relative importance of selection versus influence in a study of Finnish adolescents, and they found that both played a role but that selection had a larger effect.

For many individuals with substance abuse problems, entry into the existing continuum of services begins in a detoxification program. In the optimal case, an individual completes the detoxification process and then moves through a time limited therapeutic program. However, these programs are becoming briefer as federal, state and local sources of funding for these services has decreased [15]. For a substantial portion of addicted persons, detoxification does not lead to sustained recovery. Instead, these individuals cycle repetitively through service delivery systems [43], [44]. Recidivism rates within one year following treatment are high for men and women, and 52–75% of all substance abusers drop out during treatment [45]. These kinds of programs are also expensive [46]. The missing element for many patients is supportive, cohesive settings following treatment for substance abuse.

Oxford Houses differ from traditional recovery homes in terms of who is responsible for enforcing the rules and policies. In traditional recovery homes, although the delegation of some tasks might be shared with residents, it is the owners or people designated with management authority who often have the most substantive responsibilities for implementing rules. In traditional recovery homes, owners or designated staff make key decisions regarding house governance such as entrance into the house as well as eviction. Therefore, traditional recovery homes might have resident social climate perceptions that are different compared to peer-run settings such as Oxford Houses [47], [48]. Self-run settings might require residents to perform duties normally completed by staff, therefore, self-governance in Oxford House peer-run settings might create social climates that are more supportive, involving, and oriented towards solving residents' problems [49]. Other aspects of the Oxford House experience that may contribute to recovery include social control and reinforcement by fellow house members, social learning, reduced stress, and improved coping strategies [50].

This study could lead to a clearer understanding of mechanisms through which social environments affect health outcomes, which could help policymakers and health care providers reduce unnecessary health care costs by improving the effectiveness of residential recovery home system in the US and to restructure and improve other community-based recovery settings. These improvements could lead to better outcomes such as clients receiving adequate treatment doses to effect meaningful changes and prepare them for a successful transition to independent living in the community.

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TABLE I

Indicators of Timing of Individual Improvement—Oxford House Condition

Indicator	Baseline	6 Months	12 Months	18 Months	24 Months
Self-Efficacy-Median	81.5	91.0	94.5	97.5	98.5
%Unemployment Rate	80%	28%	18%	23%	21%
% Sober Network-Median	75%	100%	100%	100%	100%

TABLE II

Mediation Path Model Logistic Regression Coefficients and Significance Tests for the Relationship Between Network Characteristics and Usage at 6 Months

Variable	Estimate	SE	*t*	*p*(2-tailed)	Odds Ratio
Condition	−0.589	0.443	−1.330	0.183	0.555
Network Size	−0.402	0.164	−2.449	0.014	0.669
OH Relationships	−2.129	0.667	−3.194	0.001	0.119
Change in Heavy Users	0.059	0.317	0.186	0.852	1.061

TABLE III

Mediation Path Model Regression Coefficients and Significance Tests for the Relationship Between Usage at 24 Months and Usage at 6 Months and the Mediated Path Coefficients

Variable	Estimate	SE	*t*	*p*(2-tailed)	Odds Ratio
Usage @ 6 Months	2.278	0.430	5.293	0.000	9.755
Mediation Paths:					
Network Size	−0.916	0.412	−2.223	0.026	
OH Relationships	−4.850	1.773	−2.735	0.006	

TABLE IV

Logistic Regression Model of Future Abstinence as Predicted by Network Size, Change in Network Size, and Proportion of Network Who are Oxford House Residents

Variable	Estimate	SE	*t*	*p*(2-tailed)	Odds Ratio
Length of Stay	−0.182	0.076	−2.398	0.016	0.833
Proportion OH Residents	−1.628	0.668	−2.436	0.015	0.196
Network Size	0.070	0.047	1.474	0.141	1.072
Change in Network Size	−0.004	0.042	−0.093	0.926	0.996

Exhibit J

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REVIEW

Benefits of peer support groups in the treatment of addiction

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Objective: Peer support can be defined as the process of giving and receiving nonprofessional, nonclinical assistance from individuals with similar conditions or circumstances to achieve long-term recovery from psychiatric, alcohol, and/or other drug-related problems. Recently, there has been a dramatic rise in the adoption of alternative forms of peer support services to assist recovery from substance use disorders; however, often peer support has not been separated out as a formalized intervention component and rigorously empirically tested, making it difficult to determine its effects. This article reports the results of a literature review that was undertaken to assess the effects of peer support groups, one aspect of peer support services, in the treatment of addiction.

Methods: The authors of this article searched electronic databases of relevant peer-reviewed research literature including PubMed and MedLINE.

Results: Ten studies met our minimum inclusion criteria, including randomized controlled trials or pre-/post-data studies, adult participants, inclusion of group format, substance use-related, and US-conducted studies published in 1999 or later. Studies demonstrated associated benefits in the following areas: 1) substance use, 2) treatment engagement, 3) human immunodeficiency virus/hepatitis C virus risk behaviors, and 4) secondary substance-related behaviors such as craving and self-efficacy. Limitations were noted on the relative lack of rigorously tested empirical studies within the literature and inability to disentangle the effects of the group treatment that is often included as a component of other services.

Conclusion: Peer support groups included in addiction treatment shows much promise; however, the limited data relevant to this topic diminish the ability to draw definitive conclusions. More rigorous research is needed in this area to further expand on this important line of research.

Keywords: behavioral treatment, mentorship, substance use, alcohol, drugs, recovery

Introduction

Peer support can be defined as the process of giving and receiving nonprofessional, nonclinical assistance from individuals with similar conditions or circumstances to achieve long-term recovery from psychiatric, alcohol, and/or other drug-related problems. Historically, peer support has been shown to be a key component of many existing addiction treatment and recovery approaches such as the community reinforcement approach,[1–11] therapeutic communities,[12,13] and 12-step programs;[14,15] the community reinforcement approach has demonstrated the importance of valued social roles in maintaining abstinence, which is the foundation of the peer support relationship.[16–18]

Varying approaches that include a mixture of services such as peer support groups, individual counseling, and case management have emerged as a highly effective and

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empowering method to manage the social context of health issues and are particularly popular in the substance abuse and mental health fields.[19] As it relates to substance abuse recovery for individuals and families, addiction peer support services have emerged across time due to the shift from a biopsychosocial approach to a sustained recovery management approach to treat addictions.[20] While in many cases, peer support groups do not replace the need for formal treatments or supervisory clinical guidance due to peers not having sufficient training to manage psychiatric conditions or high-risk situations, they still offer an augmentation to treatment that provides many benefits to individuals with substance use disorders.[21]

Terminology

Various terminologies are used interchangeably within the literature to describe peer-related support and contexts. For the purposes of this article, we attempted to utilize consistent language wherever possible. However, in certain instances, a term may be part of a broader term such as mentorship is a type of peer support, but mentorship is specific to an individual in later recovery providing peer support to someone in earlier recovery, which requires additional specification.[21] We adapted and built upon White's[20] definition of peer support to include individuals with similar conditions or circumstances and inclusion of recovery from psychiatric problems in addition to substance use disorders. We also included this broadened scope in our definition of peer mentorship. Table 1 provides key peer support terms used throughout this review article and definitions.[22–24]

Table 1 Key terms and definitions related to peer support

Terms	Definitions
Peer support	The process of giving and receiving nonprofessional, nonclinical assistance from individuals with similar conditions or circumstances to achieve long-term recovery from psychiatric, alcohol, and/or other drug-related problems
Recovery	A process of change through which individuals improve their health and wellness, live self-directed lives, and strive to reach their full potential[22]
Peer support group	Where people in recovery voluntarily gather together to receive support and provide support by sharing knowledge, experiences, coping strategies, and offering understanding[23]
Peer provider (eg, certified peer specialist, peer support specialist, mentor, and recovery coach)	A person who uses his or her lived experience of recovery from mental illness and/or addiction, plus skills learned in formal training, to deliver services in behavioral health settings to promote mind–body recovery and resiliency[24]
Peer mentorship	Where individuals in later recovery provide nonprofessional, nonclinical assistance to individuals in earlier recovery with similar conditions or circumstances to achieve long-term recovery from psychiatric, alcohol, and/or other drug-related problems

Residential and sober living

Since the 1960s, a variety of residential options have emerged to help people with alcohol and drug addictions. These programs based on the social model of recovery provide support for people in recovery from alcohol addiction in a residential environment that focuses on Alcoholics Anonymous (AA) philosophy and practices.[25] AA practice follows the 12-step guidelines based on spiritual principles and the assumption that addiction is a disease.[26] Prior work utilizing social model programs can be found as early as the 1940s.[27–29] The types of social model programs available include social setting detoxification, residential social model recovery programs, neighborhood recovery centers, and sober living houses.[27]

Sober living houses are alcohol- and drug-free living environments for a group of peers in recovery. Utilizing a peer-oriented social model modality, sober living houses rely on mutual sobriety support, self-efficacy, and resident participation. California Sober Living Houses and Oxford Houses are two variations of sober living houses.[30–32] Previous studies have shown sober living houses to be beneficial[33] and effective[34,35] in assisting in the reduction of substance use. For example, Jason et al[35] conducted a randomized study to test the efficacy of an Oxford House intervention compared to usual care (ie, outpatient treatment or self-help groups) following discharge from inpatient substance abuse treatment. Results demonstrated a significant increase in monthly income with a significant decrease in substance use and incarceration rates among those in the Oxford House condition compared with the usual-care condition.

12-step

Some of the most popular peer support groups held outside the formal treatment settings for addiction nationwide include 12-step programs such as AA, Narcotics Anonymous, and Cocaine Anonymous. Twelve-step is an intervention for drug abuse and addiction and can include dual recovery from substance abuse problems and co-occurring mental health disorders. Humphreys[36] found 12-step groups to be the most referred adjunct support for professionally treated substance abuse patients. Other studies have demonstrated the effectiveness of 12-step groups for the treatment of substance abuse following treatment,[37–39] and prior research of 12-step groups has shown reductions in alcohol and drug use.[40–42]

AA has been shown to be a highly utilized intervention for individuals with alcohol problems.[43–45] Positive outcomes such as self-efficacy and healthy coping have been associated with AA affiliation, which has been linked to better outcomes.[37,46] For those with drinking problems seen in treatment, certain AA activities such as having a sponsor and doing service might be key components of abstinence.[47]

In a focused review of the literature on AA effectiveness, six criteria were required for establishing causation: 1) magnitude of effect; 2) dose–response effect; 3) consistent effect; 4) temporally accurate effects; 5) specific effects, and 6) plausibility. The evidence for all criteria except specific effects was very strong. For magnitude, rates of abstinence within AA were approximately twice as high. For dose–response, higher rates of abstinence were related to higher levels of attendance. For consistency, the effects were found for different follow-up periods and different samples. For temporal, prior AA attendance is predictive of subsequent abstinence. For plausibility, mechanisms of action predicted by behavioral change theories were present in AA. However, for specificity of an effect for 12-step facilitation or AA, experimental evidence was mixed, with evidence for both positive and negative effects in addition to no effect.[48]

Although the peer support groups within 12-step approaches have provided benefits to select populations, some individuals with substance use disorders find the religious nature of 12-step approaches and often lack of integration in the treatment setting to be a deterrent.[49–51] Alternatives to 12-step approaches are needed to more closely integrate peer support services within treatment and to provide more options to benefit from peer support groups.

Treatment and community settings

Recently, there has been a dramatic rise in the adoption of alternative forms of peer support services within treatment and community settings to assist recovery from substance use disorders, because of the potential benefits offered to patients.[52] However, often peer support has not been separated out as a formalized intervention component and rigorously empirically tested, making it difficult to determine its effects.[53]

Peer support is delivered in a variety of modalities, including, but not limited to, in-person self-help groups, Internet support groups, peer run or operated services, peer partnerships, peers in health care settings who serve as peer advocates, peer specialists, and peer case managers.[54] Among peer support services available today, peer support groups are considered an important aspect of the addiction recovery process.[55–58]

Previous studies have shown positive outcomes from participating in peer support groups. Active engagement in peer support groups has shown to be a key predictor of recovery,[56,59,60] and sustaining recovery.[61–63] In addition, evidence demonstrates that one's belief in their own ability can increase and influence one's behavior by watching other peoples' behaviors (ie, performing activities).[64] There is a mutual benefit between the members and facilitators of peer support groups. Oftentimes, peer support groups are facilitated by peer workers who themselves are in recovery and benefit positively from peer support groups.[21] Benefits for the peer worker include increased self-esteem, confidence, positive feelings of accomplishment, and an increase in their own ability to cope with their challenges.

Existing systematic peer support reviews

Bassuk et al[65] conducted a systematic review of the evidence on the effectiveness of peer support services for people in recovery from alcohol and drug addiction, which resulted in nine studies meeting the criteria for inclusion in the review. Despite methodological limitations found in the studies, the body of evidence suggested beneficial effects on participants. In another systematic review, Reif et al[66] evaluated peer support services for individuals with substance use disorders resulting in ten studies. The studies demonstrated increased treatment retention, improved relationships with treatment providers and social supports, increased satisfaction, and reduced relapse rates. Similar to the other reviews, there were methodological limitations that included inability to distinguish the effects of peer recovery support from other recovery support activities, small sample sizes and heterogeneous populations, unclear or inconsistent outcomes, and lack of any or appropriate comparison groups. Both of these reviews included peer support services in general without a specific focus on peer support groups and excluded studies with substance-using populations with a primary focus on human immunodeficiency virus (HIV)/hepatitis C virus (HCV) risk behavior outcomes. In addition, 12-step peer support studies were excluded.

This article reports the results of a literature review that was undertaken to assess the use of peer support groups, one aspect of peer recovery support services, in the treatment of addiction. In reporting the outcomes related to this review, the authors intend to: 1) encourage the field to generate further research to more rigorously investigate the effectiveness of

peer support groups and explore the multitude of other specific types of peer recovery support services and 2) provide greater awareness to the advantages of peer support integration within the substance use treatment continuum for adults with addiction problems.

Methods

To effectively complete the review, the authors used a combination of searches on electronic scientific databases and screening results cross-checking the eligibility criteria to reduce the number of studies included in this article. At certain points, the authors independently cross-checked the results. If there was a discrepancy, further information was gathered to make an accurate determination of how to proceed. The process is described later and summarized in Figure 1.

Study identification and screening: Phase I

The authors of this article searched the electronic databases of relevant peer-reviewed research literature including PubMed and MedLINE. Because addiction is a broad term that can be applied to varying types of addiction beyond alcohol- and nonalcohol-related substances (eg, gambling, Internet, sex, and eating) that are unrelated to the scope of this article, "substance use disorders" was the primary terminology used in searches to yield records pertaining to alcohol and drug problems. The initial database search used keywords "substance use disorders and peer support". We also cross-checked our inclusion list by running similar searches containing specific substance names as keywords (eg, cocaine, alcohol, and heroin) to ensure comprehensiveness. This resulted in 2,291 records.

Study identification and screening: Phase II

The following keywords were used to identify all articles associated with several domains: substance use disorders, peer support or peer mentorship, and intervention. Including the keyword "intervention" allowed for higher yielding of treatment studies. While critiquing and critically reviewing results within an article that included a systematic review of studies,[66] we found three additional studies that met our inclusion criteria, which were included.[67–69] Using the keywords "substance use disorders and peer support and intervention", 461 records were found. Using the keyword "substance

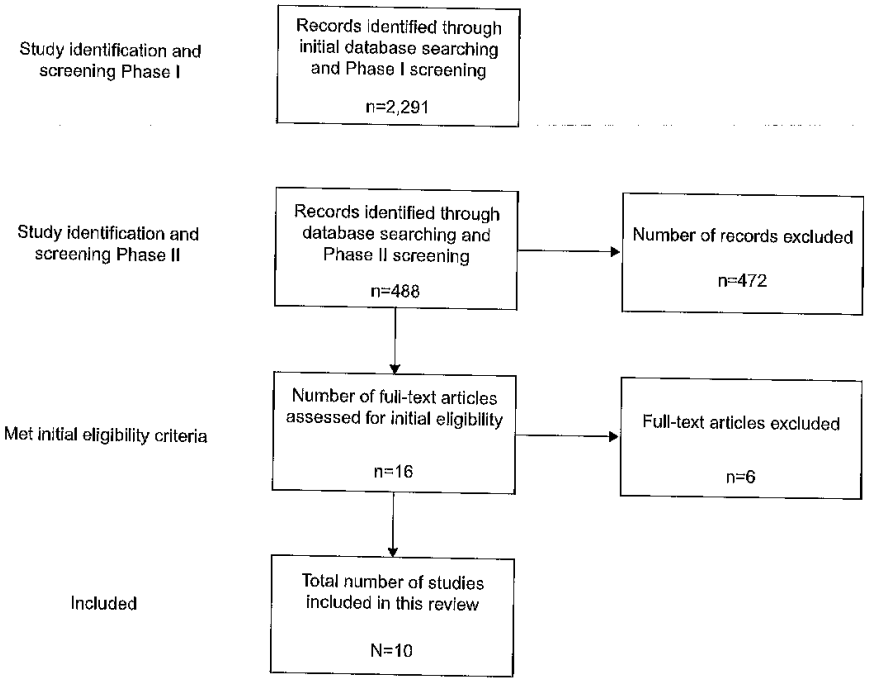

Figure 1 Flow diagram of study selection.

use disorder and peer mentorship", 24 records were found. Including three studies previously mentioned, a total of 488 articles were screened for eligibility.

Initial eligibility

By design, this discussion is limited to studies that included a peer support group component that: 1) had adult participants; 2) focused on addiction-related substance use (ie, alcohol, tobacco, legal/illicit drugs, and prescription drugs); 3) held in any group format; 4) included randomized controlled trials (RCTs) or studies with pre- and post-data results, and 5) US-conducted studies published in 1999 or later. Since certain groups (eg, HIV, HCV, and mental health) are at greater risk of having a substance use disorder, we did not exclude these populations.

As previously noted, the authors used keywords peer support or mentorship and substance use disorders to generate articles on the use of peer support groups within substance use disorder treatment to generate the initial pool of articles. We further narrowed our initial results in the current article to include only studies that focused on peer support group treatments. However, initially, we found that empirical studies assessing peer support groups solely were very limited and that our literature search would be much improved if we included not only peer support groups independently but also studies that integrated peer support groups as a component of a larger spectrum of peer services offered. We also included traditional forms of peer support services such as 12-step in addition to including any recent advancements within the field.

All study types that were not RCTs or quasi-experiments were excluded, including case reports, case series, cross-sectional surveys, and other qualitative studies. Adolescents-focused studies were excluded, because they focused generally on social support and social norms and peers may not have self-identified as having substance use problems. Cost-effectiveness studies were excluded. Article types such as books, editorials, guidelines, commentaries, dissertations, discussions, policy analyses, and newspaper or magazine articles were excluded. Of the 488 records that underwent review to meet the authors' inclusion/exclusion criteria noted earlier, 16 articles met the initial eligibility.

Final selection

Of the 16 records, ten articles were selected to be included in the article. Of the six excluded, three studies had a primary focus of peer support groups to train the peer support staff, two studies did not have consistent or adequately structured peer support groups in the design, and one study's substance use inclusion criteria were too minimal.

Results

The literature search revealed articles that support the use of peer support services that include peer support groups within addiction treatment to address: 1) substance use, 2) treatment engagement, 3) HIV/HCV risk behaviors, and 4) secondary substance-related behaviors. It should be noted, however, that data were limited in finding peer support groups that were a standalone treatment as these groups were largely incorporated into a full array of peer support services being delivered, thereby posing challenges in disentangling the effects. Table 2 provides summaries of each study selected.

Substance use

Armitage et al[67] discussed and evaluated Recovery Association Project's (RAP) Recovery Community Services Program, a funded peer recovery service from 2003 to 2007. Recovery Community Services Program provided a wide range of peer recovery services, which included numerous self-help meetings at the RAP center that became a popular location for self-help meetings (eg, AA, Narcotics Anonymous, Cocaine Anonymous, and Smart Recovery) with several scheduled meetings daily. The outcomes measured were substance use, consumer satisfaction, and progress toward RAP's goals. RAP received participant feedback from the Government Performance Reporting Act survey and a satisfaction questionnaire. There were 152 survey participants included in this outcome evaluation. At 6-month follow-up, most (86%) participants receiving RAP services indicated on the Government Performance Reporting Act survey abstinence from using alcohol or drugs in the past 30 days, which is much higher than typically noted abstinence levels in this population. These results help to demonstrate that RAP services are associated with sustained recovery from substance use. Data from the satisfaction questions administered at 6 months were also high, indicating RAP's services are effectively meeting the needs of participants.

Boisvert et al[70] established and evaluated the effectiveness of a peer support community program. The primary purpose was to determine whether rates of relapse would decrease among addicts in recovery living in permanent supportive housing and increase their perceptions of community affiliation, supportive behaviors, self-determination (ie, proactive steps self-initiated to recovery), and quality of life. The peer support program was implemented by an occupational therapist and addiction professional following

Table 2 Included studies utilizing peer support groups

Authors	Design	N	Population	Findings
Armitage et al[67]	Pre/posttest	152	Individuals in recovery from addiction and their families	86% of participants indicated no use of alcohol or drugs in the past 30 days at the 6-month follow-up 95% of participants reported strong willingness to recommend the program to others, 89% found services helpful, and 92% found materials helpful
Boisvert et al[70]	Pre-/posttest	18	Individuals in addiction recovery living in permanent supportive housing	Substance use relapse rate reduced (24%–7%) for participants in the peer support community Pretest relapse rate was 85%; posttest rate was 33% for tenants returning to homelessness No differences in pre- and post-QOLR The MOS–SSS subscales revealed significant differences and moderate-to-large effect sizes (r) on the MOS–SSS subscales: emotional/informational support (P=0.005; r=0.628), tangible support (P=0.028; r=0.493), and affectionate support (P=0.027; r=0.494)
Tracy et al[21]	Pre-/posttest	40	Individuals with substance use disorders in an addiction treatment program	Feasibility and acceptance data in the domains of patient interest, safety, and satisfaction were promising In addition, mentees significantly reduced their alcohol use (P<0.01) and drug use (P<0.01) from baseline to termination The majority of mentors sustained abstinence Fidelity measures indicated that mentors adhered to the delivery of treatment
Tracy et al[72]	RCT comparing TAU + MAP-engage vs TAU + DRT + MAP-engage vs TAU	96	High recidivism veterans (mostly males) with substance use disorders initially recruited from an inpatient clinic	TAU + MAP-engage alone and TAU + DRT + MAP-engage were associated with increased adherence to post-discharge outpatient appointments for substance use treatment (P<0.05) when compared with TAU only As well as for substance use treatment, general medical, and mental health services (P<0.05 for all appointments combined) when compared with TAU only
Mangrum[68]	Quasi-experimental design comparing ATR and substance use treatment vs substance use treatment	4,420	Consumers with substance use disorders referred from drug courts, probation, or child protective services	Individuals who completed the program were significantly more likely to have received recovery support groups ($t(1)$=65.75, P<0.0001)
Purcell et al[73]	RCT study of peer-mentoring intervention INSPIRE vs a video discussion control group	966	HIV-positive IDU participants	Adherence rates measured at 87%, 83%, and 85% at 3 months, 6 months, and 12 months, respectively Risk behaviors decreased among randomized participants although no significant differences in conditions
Latka et al[74]	RCT study of peer-mentoring intervention vs a time-equivalent attention-control group	418	Individuals who are HCV-positive and IDUs	Compared with the controls, participants in the intervention group were less likely to report distributive risk behaviors at 3 months (OR =0.46; 95% CI =0.27, 0.79) and 6 months (OR =0.51; 95% CI =0.31, 0.83), a 26% relative risk reduction Peer mentoring and self-efficacy were significantly increased in the intervention group, and intervention effects were mediated through improved self-efficacy
Velasquez et al[71]	RCT study of both individual counseling vs peer group education/support	253	HIV-positive men who have sex with men with alcohol use disorders	Treatment effect was demonstrated over each 30-day period with regard to number of drinks consumed (OR =1.38; 95% CI =1.02, 1.86) As well as the number of heavy drinking days (OR =1.5; 95% CI =1.08, 2.10) over each 30-day period Main effect was found in the number of days in which both heavy drinking and unprotected sex occurred over each 30-day period

Authors	Design	N	Population	Findings
Marlow et al[79]	Pre-/posttest	13	Formerly incarcerated men on parole released from prison within the past 30 days	Findings from the assessment of psychosocial variables demonstrated significant improvement on two abstinence self-efficacy subscales, negative affect (P=0.01), and habitual craving (P=0.003) No significant differences in total scores for abstinence self-efficacy or the other measures from baseline to follow-up for the 13 participants who completed the study No significant differences in 12-step participation with regard to attendance, sponsor contact, or belief in 12-step framework
Andreas et al[69]	Pre-/posttest	509	Men and women in recovery from addiction who had been incarcerated, and their families and significant others	Increased self-efficacy and increased family and friend support, quality of life, and feelings of guilt and shame were demonstrated at 12 months from baseline (no data were shown) Peer and staff accessibility were valued

Abbreviations: ATR, access to recovery; CI, confidence interval; DRT, dual recovery treatment; HCV, hepatitis C virus; HIV, human immunodeficiency virus; IDU, injection drug user; INSPIRE, Intervention for Seropositive Injectors–Research and Evaluation; MAP, Mentorship for Alcohol Problem; MAP-engage, Mentorship for Addiction Problems to enhance engagement to treatment; MOS, Medical Outcomes Study; OR, odds ratio; QOLR, Quality of Life Rating; RCT, randomized controlled trial; SSS, Social Support Survey; TAU, treatment as usual.

SAMHSA (Substance Abuse and Mental Health Services Administration) recovery community model. The staff person facilitated the first 10 weeks and then withdrew to a supportive background as the community became self-facilitating. Meetings involved discussions on principles of a peer support recovery or peer-driven community between the therapist and residents. Documents such as handouts and readings were provided to the community members who had interest in being a leader within the community, and supportive meetings were scheduled. The peer support group focused on training in leadership, group communication, and group facilitation with community-elected officers and conducted biweekly meetings and social events, all being organized by members.

Using previous year relapse data to provide a comparison rate, Boisvert et al[70] found significant reductions in relapse rates among participants in the peer support community programs. In addition, return to homelessness was dramatically reduced by assisting participants in managing their recovery. These results imply that peer and community support groups are important in the process of relapse reduction, in particular, groups that focus on self-determination, as it can have a positive impact on recovery from substance abuse and homelessness. As for the main objectives, quantitative findings showed that three subscales (ie, emotional support, tangible support, and affectionate support) on the Medical Outcomes Study–Social Support Survey demonstrated significant differences, although there were no significant differences regarding quality of life from the Quality of Life Rating.[70] In addition, qualitative findings showed that residents' perceptions of community affiliation and supportive behaviors improved.

Another study conducted by Tracy et al[21] investigated a new intervention, mentorship for alcohol problems (MAPs), that included peer support groups and one-to-one mentorship services for individuals with alcohol-use disorders in community-treatment programs. Mentors participated for 6 months until multiple mentees received MAP for 12 weeks. Behavioral and biological measures were conducted in addition to fidelity measures. Feasibility and acceptance data in the domains of patient interest, safety, and satisfaction were promising. In addition, mentees significantly reduced their alcohol and drug use from baseline to termination and the majority of mentors sustained abstinence. Fidelity measures indicated that mentors adhered to the delivery of treatment.

Velasquez et al[71] evaluated the efficacy of a theory-based behavioral intervention that included both individual counseling and peer group education/support to reduce alcohol use among HIV-positive men who have sex with men when compared to a control condition where participants received resource materials. Reported treatment effects occurred in reduction in the number of drinks per 30-day period and number of days drank heavily per 30-day period.

Engagement to treatment

Beyond associated reductions in alcohol and drug use, services that have included peer support groups have been utilized to engage substance-using populations in treatment. Often high recidivism substance-using patients have difficulty connecting to outpatient treatment, contributing to greater functioning disturbances.[72] Approaches to address this problem frequently are staff extensive. Tracy et al[72] evaluated

the impact of peer mentorship, which included, in addition to other peer support services, peer support groups and/or enhanced dual recovery treatment (DRT) on individuals who were inpatients, substance abusing, and had a history of high recidivism. The primary outcome was post-discharge treatment attendance. Within an inpatient Veterans Administration hospital setting, 96 patients with a history of high recidivism and current and/or past diagnosis of substance use disorders were randomized to either: 1) treatment as usual (TAU), 2) TAU + DRT + mentorship for addiction problems to enhance engagement to treatment (MAP-engage), or 3) TAU + MAP-engage. The investigators found that overall MAP-engage was comparable to the DRT + MAP-engage, and both of these conditions were significantly better than TAU alone at increasing adherence to post-discharge substance abuse, and medical and mental health outpatient appointments with participants in MAP-engage being three times as likely to attend their outpatient substance abuse treatment appointments than those in TAU 1 year post discharge. MAP-engage that included peer support groups offered an alternative approach to address lack of attendance to outpatient treatment appointments post discharge that is relatively low in staff reliance.

Similarly, in a large study, Mangrum[68] compared access to recovery + substance use treatment to substance use treatment alone for consumers involved in the criminal justice system who had substance use disorders and were referred from drug courts, probation, or child protective services. Individuals who completed the program were significantly more likely to have received recovery support groups. However, it should be noted that only a relatively small portion of the sample within the completers group, 12%, utilized the support groups as there were multiple treatment options, but this was still over twice as much as in the non-completers group, 5%.

HIV/HCV risk behavior

Intervention for Seropositive Injectors–Research and Evaluation study, an RCT of a peer support intervention designed to assess the reduction in sexual and injecting-related risk behaviors, increased use of HIV care, and increased HIV medication adherence as primary outcomes, was discussed by Purcell et al.[73] The peer support intervention was ten sessions over a 12-month time period, with seven sessions being specifically devoted to peer support groups. The control condition was eight sessions of a video intervention. One out of the ten sessions was a peer volunteer activity during which participants went to a local service organization for 2–4 hours to observe, participate, and practice peer support skills. The topics from the group sessions included setting group rules and the power of peer mentoring, utilization of HIV primary care and adherence, and sex and drug risk behaviors.

Of the participants randomized, 486 were assigned to the peer support condition and 480 were assigned to the video discussion condition, totaling a sample of 966 HIV injection drug users (IDUs). Purcell et al[73] found that randomized participants in both conditions had retention rates of 87%, 83%, and 85% at 3 months, 6 months, and 12 months, respectively. Significant reductions were noted in both groups for reductions from baseline in injection and sexual transmission risk behaviors, but there were no significant differences between conditions. Participants in both conditions reported no change in medical care and adherence.[73]

An RCT with a time-equivalent attention-control group was conducted by Latka et al[74] among 418 HCV IDUs to examine a peer-mentoring behavioral intervention to reduce the distribution of injection practices and equipment among HCV IDUs. Each intervention consisted of six sessions, 2 hours each twice a week. For the peer-mentoring group intervention, participants received information regarding HCV and learned risk reduction skills. By the fifth session, training participants were involved in outreach and delivered information about reducing HCV transmission risk. The control group watched a docudrama TV series about IDUs and participated in a facilitated group discussion focusing on family, education, self-respect, relationships, violence, parenting, and employment. Compared to the control group, participants in the peer support condition had significantly greater reductions in injection practices that could transmit HCV to other IDUs. Self-efficacy was significantly increased in the experimental condition, and post-intervention self-efficacy was a positive mediator between the intervention and distributive risk behaviors.

In the study previously discussed in the substance use section, Velasquez et al[71] also found a reduction in the number of days on which both heavy drinking and unprotected sex occurred among HIV-positive men who have sex with men.

Secondary substance-related outcomes

Craving has been associated with use of substances.[75–78] The authors' search also revealed a recently published pilot study that evaluated a peer support program for formerly incarcerated adults who transitioned back into the community that included investigations of craving among other varriables.[79] This population experiences high rates of substance use. One of the main objectives of this study was to assess program feasibility using a community-based participatory research approach. Participants were 20 men on parole who were

released from prison within the past 30 days, with only 13 completing the 60-day peer mentor intervention. Marlow et al[78] measured 12-step meeting participation using a 13-item questionnaire that assessed participation in 12-step programs, belief in the 12-step framework, and investigated relationships with craving and negative affect. Questions assessing belief in 12-step framework included: I am powerless over my drug and alcohol problem, I believe a higher power plays a role in my recovery, I am not alone with my drug and alcohol problem, I believe in the 12-step faith and spirituality, and I am member of 12-step. Twelve-step meetings were attended by participants on an average of 17 days out of 30 days and participants contacted their sponsor on average ten times. All participants' belief in the 12-step framework was high. Pre- and posttest results on two abstinence subscales, negative affect and habitual craving, showed significant improvement, indicating an improved confidence level in the ability to abstain from substance use.

Andreas et al[69] sought to examine Peers Reach Out Supporting Peers to Embrace Recovery (PROSPER), a peer-driven recovery community that provides a number of peer-driven supports for members to be able to recover from drug use and criminality as they transition back into the community and to provide support to their family members and loved ones. PROSPER provided a strategic mix of services, all planned, implemented, and delivered by peers including peer-run groups and group activities that take place in a light-hearted social environment away from traditional treatment settings. The aims of the program were to: 1) provide peer support environment, 2) build positive self-concept and achievement motivation, 3) reinforce family/significant others' relationships and support, and 4) amplify the treatment continuum.[77] The study outcome measures were self-efficacy, perceived social support, personal feeling, perceived stress, and quality of life. Program effects were evaluated and demonstrated at 12 months from baseline with significant and positive changes in participants' self-efficacy, social support perceptions, quality of life, and feelings of guilt and shame over a 12-month period. The result of this study suggests the importance of peer support among people who are reentering the community, which can promote positive outcomes such as reduced substance use and recidivism.

Discussion

Despite the recent surge in the adoption of peer support services within addiction treatment systems, there are relatively limited data rigorously evaluating outcomes.[21] These data become even more limited when considering one form of peer support services, such as peer support groups as in the case of this review, due to the nature of peer support services being delivered often in a multitude of combined modalities. Thus, we included studies of peer support groups that were delivered often in an array of other peer support treatments, which diminished our ability to disentangle the results. However, this review still provides a useful platform to begin to explore the inclusion of these peer support groups as a component of other peer services and associated benefits thus far to guide the field in the future researching of this area.

Although methodological limitations existed in studies that resulted from previous existing systematic reviews of peer support services, beneficial effects were noted.[65,66] This article builds upon these reviews by the specificity on peer support groups, which is a common platform in treatment. To the authors' knowledge, this is the first article to date to take such an approach reviewing controlled studies. The previous reviews examined a range of peer support services. Moreover, we expanded beyond existing reviews to include substance-related HIV/HCV risk behavior studies due to the high prevalence of substance use disorders in this population. Drug abuse is inextricably linked with HIV due to heightened risk both of contracting HIV and of worsening its consequences, and HCV is one of the most common viral hepatitis infections transmitted through drug-using high-risk behaviors, making reduction of risk behaviors one of the priorities in substance abuse treatment at the National Institute on Drug Abuse.[80] Finally, we also expanded our review to include 12-step studies due to their focus on peer support groups and contributions to the peer support movement.

Our review revealed articles that demonstrated peer support services that include groups delivered to those with substance use problems showing associated benefits in the following areas: 1) substance use, 2) treatment engagement, 3) HIV/HCV risk behaviors, and 4) secondary substance-related behaviors such as craving and self-efficacy.

Those who participated in treatments, including peer support groups, showed higher rates of abstinence than common in substance-abusing populations while also being more satisfied with the treatment.[67] Furthermore, significant reductions in relapse rates were shown in addition to significant reductions in return to homelessness in a challenging population to treat.[70] Reported benefits extended beyond those being the recipient of the peer support groups to those also delivering the services, where significant reductions in alcohol and drug use were shown not only for mentees but also for sustained abstinence in the majority of mentors.[21]

Beyond substance use, peer support groups offer unique advantages to engaging our historically difficult-to-engage populations. Services that included peer support groups were found to be equally comparable to the additive of extensive DRT, and both were significantly better than standard treatment at increasing adherence to post-discharge substance abuse and medical and mental health outpatient appointments for high recidivism individuals with substance use disorders.[72] Moreover, consumers involved in the criminal justice system who had substance use disorders and were referred from drug courts, probation, or child protective services, who completed the program, were significantly more likely to have received recovery support groups.[68] However, it should be noted that only a relatively small sample completed, thus diminishing the impact of these results.

Peer support services that include groups have also been associated with reductions in HIV and HCV risk behaviors in IDUs. One study demonstrated a reduction in injection and sexually transmitted risk behaviors in both conditions, but there was no significant difference between the peer condition and the control condition, which was also an intervention.[73] However, another study showed not just a reduction but significantly greater reductions in injection practices that could transmit HCV to other IDUs when comparing the peer support condition to the control group.[74] Consistent with previous research, the study suggests that this enhanced behavioral intervention of education and counseling was associated with safer injection practices. Thus, providing implications that these components (ie, skill building and education) of peer mentoring provided to HCV-injecting drug users can lead to safer practices of injection drug use and may contribute to reducing the risk in IDUs and the transmission of HCV to other IDUs. Another study demonstrated significant reductions not only in risk behaviors but also in heavy drinking while accomplishing this.[71]

One of the key elements that peer support services significantly positively impact is improvement in participants' self-efficacy, which was also found to be a positive mediator between interventions and distributive risk behaviors in one study.[69] Associated positive changes have also been demonstrated such as improvements in negative affect, social support perceptions, reductions in habitual craving, and feelings of guilt or shame.[69,79] All of these areas play important roles in one's ability to achieve and sustain abstinence from substances. There were conflicting results from studies on whether or not quality-of-life improvements were associated with peer support groups being included in services.[69,70]

Peer support groups included in addiction treatment show much promise in potentially reducing substance use, improving engagement, reducing HIV/HCV risk behaviors, and improving substance-related outcomes. However, even given their widespread use, there are relatively limited empirical data relevant to this topic, which may diminish the ability to draw definitive conclusions, with resulting studies being ten. Although this is similar in number to other reviews in related peer support topics, it is relatively low. We included only US studies due to not having access to other non-English search engines in addition to ruling out language barriers, but this also limits the data. Finally, some investigators note that self-selection into peer support groups and residential recovery homes is important in the process in treatment,[33,81] which then may confound outcomes and limit generalizability in RCTs for those select participants who may be solely interested in gains outside of participation such as participant payment. More rigorous research is needed, including meta-analytic studies as more data surface in this area, to substantiate the results of the studies included in this review and further expand on this important line of research.

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The authors report no conflicts of interest in this work.

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Exhibit K

Declaration of Jason Webb LCSW, ASUDC

I, Jason Webb, LCSW, ASUDC, declare under penalty of perjury under the laws of the State of Utah and the United States that the following is true and correct to the best of my knowledge and do hereby state as follows:

1. I am more than 18 years of age.

2. I am competent to testify concerning the matters stated in this declaration.

3. I have personal knowledge of the matters stated in this declaration.

4. I am a graduate of the University of Utah Social Work program and I am currently a Licensed Clinical Social Worker and an Advanced Substance Use Counselor. A copy of my most recent CV is attached hereto as **Exhibit 1**.

5. I have substantial experience in the area of treatment and recovery from drug and alcohol addictions, including, but not limited to, the following, which spans more than 25 years of experience and training including:

- Licensed Substance Abuse Counselor Intern at the Utah Alcoholism Foundation (1997-1998)
- Licensed Substance Abuse Counselor Intern at the Ark of Little Cottonwood In Sandy Utah (1998-2000)
- Licensed Substance Abuse Counselor at the Utah State Prison In Draper Utah (2000-2002)
- Licensed Clinical Social Worker, Advanced Substance Abuse Counselor, Clinical Director at the Ark of Little Cottonwood in Sandy Utah (2002-2010).
- Board Member of the Association of Utah Substance Abuse Professionals (AUSAP) (2004-2010).

- Owner of The Sober Home in Midvale Utah (2008-2011).
- Licensed Clinical Social Worker, Advanced Substance Abuse Counselor, Clinical Director at Steps Recovery Center in Payson Utah (2010-2014).
- Licensed Clinical Social Worker, Advanced Substance Abuse Counselor, Clinical Director at Inspire Recovery Center in Bluffdale Utah (2014-2016).
- Licensed Clinical Social Worker, Advanced Substance Abuse Counselor, Clinical Director at Annie's House in Draper Utah (2016-2019).
- Board Member and later Chairman of the Substance Abuse DOPL board (2018-2021).
- Licensed Clinical Social Worker, and Advanced Substance Abuse Counselor at the Phoenix Recovery Center (2019-2020).
- Licensed Clinical Social Worker, and Advanced Substance Abuse Counselor at Wasatch Behavioral Health in Provo Utah (2020-Present).
- Supervisor/Hospital Liason – Wasatch Behavioral Health in Provo, Utah (2020-present).

What is Residential Treatment

6. Residential treatment for substance use disorders (SUDs), also known as inpatient rehab or residential rehab, is a comprehensive and structured program designed to help individuals overcome addiction to substances and achieve long-term recovery.

7. Liberty Addiction Recovery Centers' residential program includes social detoxification, which is the medically-supervised withdrawal from substances.

8. Liberty's residential treatment involves thirty to ninety days in a facility that is specifically designed to provide a home-like, supportive and therapeutic environment for individuals seeking intensive professional intervention for a primary diagnosis of substance abuse disorder with secondary or lesser mental health challenges.

9. Liberty's clients primarily receive assistance for substance abuse and, in most cases, also receive therapeutic assistance for low level mental health challenges. Typical mental health challenges include depression and anxiety, with these and deficiencies in coping skills often the underlying causes of addiction.

10. The following are key features of Liberty's residential treatment for substance addiction:

a. Social detoxification: Liberty's social detox program is a subset of its overall residential program. It is an organized service delivered by trained Liberty staff who provide 24-hour supervision, observation, and support for individuals who are experiencing lower-level withdrawal symptoms. These clients are not using prohibited substances and are not in need of the full resources of a medically monitored level of care. While in social detox, clients participate with other clients in full residential treatment in group therapy sessions albeit at a reduced amount due to the higher levels of rest these clients require. Having completed the 3-5 days of care and rest, clients in social detox then transition into Liberty's full clinical program. The benefit of social detox being a component of the Residential program is that clients see the next natural step in their healing process as being clinical residential care, instead of seeing detox as a one-stop quick solution, without addressing the underlying causes of their addiction, and continuing the cycle of detox and relapse.

b. 24/7 residential supervision: Liberty residential treatment offers round-the-clock supervision by trained professionals to ensure the safety and well-being of individuals throughout their recovery journey.

c. Individualized Assessments and Treatment Plans: Each person receives an individualized assessment and treatment plan tailored to their specific needs. This plan is created based on a thorough assessment of their addiction history,

physical and mental health, social history, criminal history (if any), and other factors.

d. Therapy and Counseling: Liberty's residential treatment offers a range of therapeutic interventions, including individual counseling, group therapy, family therapy, and behavioral therapy. These sessions aim to address the underlying causes of addiction, develop coping skills, and promote emotional and psychological healing. All Liberty therapists are state licensed, masters qualified counselors, specializing in social work, mental health and / or substance use disorder.

e. Skill-Building and Education: Liberty's program includes educational sessions and skill-building activities to enhance individuals' understanding of addiction, relapse prevention strategies and life skills development.

f. Peer Support: Liberty's inpatient program provides an opportunity for individuals to connect with peers who are facing similar challenges. Group therapy sessions and shared living arrangements foster a sense of community and provide essential peer support, forming a necessary therapeutic community, as discussed more fully below.

g. Holistic Approach: Liberty's program incorporates a holistic approach to recovery, including clinical therapy, mindfulness practices, connecting with the client's higher power, yoga, recreational therapy, physical exercise, and other complementary therapies. These techniques promote overall well-being and support individuals in developing an ongoing healthier lifestyle.

h. Aftercare Planning: Liberty has a major focus on aftercare planning to support individuals as they transition back to their everyday lives. This includes placement in safe, managed sober living homes at Liberty's expense for up to two months after inpatient treatment; and connecting clients with outpatient counseling, support groups, or other community resources to maintain their recovery progress. Aftercare planning also includes licensed recovery residence living provided by Liberty.

11. Liberty's residential treatment offers a structured and intensive environment that helps individuals focus solely on their recovery. By removing clients from the triggers and temptations of their often-dysfunctional environment, residential treatment can provide a supportive and therapeutic space to break from addiction, learn essential skills, and lay the foundation for a healthier, substance-free life.

What Services does Liberty Provide

12. Liberty provides a clinically managed high intensity residential level of care (rated 3.5 on the ASAM (American Society of Addiction Medicine) scale) for men and women with primary or secondary substance dependence diagnoses.

13. Clients engage in a therapeutic community which involves holding one another accountable in order to work together to change dysfunctional behaviors and thinking. They also participate in psychoeducational groups four to five times a week, step groups (from Alcoholics Anonymous) groups three to four times a week, and process groups twice a week.

14. Psychoeducational groups are designed to educate clients about substance abuse, and related behaviors and consequences and are led by staff in recovery and / or clinical staff. Process groups are the typical groups where clients are given an open forum to process current feelings, situations, concerns, or progress with the support and feedback of the rest of the group and the group facilitator. They are facilitated by a licensed clinician who is trained to help clients process through mental health concerns.

15. Clients also participate in recreational groups five times a week in order to practice healthy hobbies and interests and restore natural dopamine to the brain. On the weekends, clients participate in sober softball, hedonic rehabilitation, spirituality groups, a Big Book (of AA) study group, and deep clean the facility together as a community to practice healthy living and self-care.

What Type of Client Does Liberty Admit

16. Liberty admits those who are served under and have qualifying disabilities under the Americans with Disabilities (ADA) Act. Specifically, those individuals who have a primary

or secondary substance use disorder diagnosis and who have mental health challenges that are clinically diagnosed as primary or secondary. It is a dual diagnosis facility.

17. Liberty's focus is on treating populations who are under-served and who have limited opportunity for quality and effective treatment. These include a significant number of Native American tribe members suffering from substance abuse and mental health challenges. Additionally, many men and women admit to treatment suffering from prolonged emotional, physical and sexual trauma, from varying causes but with similar effects; and many individuals also admit with the co-morbidity of prolonged substance abuse and low-level mental health challenges.

18. Liberty does not admit persons convicted of or being tried for a sexually related crime or violent crime, or persons on the Sexual Offenders Registry. Persons with a serious mental illness will be referred out. Serious mental illness is defined as per the State as being: schizophrenia, paranoid and other psychotic disorders, bipolar disorders (hypomanic, manic, depressive, and mixed), major depressive disorders (single episode or recurrent,) schizoaffective disorders (bipolar or depressive,) pervasive developmental disorders, obsessive-compulsive disorders, depression in childhood and adolescence, panic disorder, post traumatic stress disorders (acute, chronic, or with delayed onset,) bulimia nervosa, and anorexia nervosa.

19. Liberty does not admit persons who are a direct threat to other persons or property, as determined and screened by individual assessments of applicants.

Overview of Liberty's Daily Program

20. A typical day in Liberty's residential treatment begins at 7am, with morning devotional at 7:15am in which clients read a section from the AA Big Book to start the day, set

an intention or goal for the day, share their cravings for drugs/alcohol at the time, and share three hopes for the day.

21. This is followed by breakfast, getting ready for the day, taking care of the assigned morning chores to maintain bedrooms and the facility in a clean condition, and "dailies". Dailies are any combination of personal activities intended to reset the client's mind and emotions to a positive, calm state to best prepare the individual to have a successful day. This includes ten positive affirmations, at least three gratitude's, and some type of self-reflection such as prayer, meditation, or mindfulness.

22. This is followed by the Therapeutic Community meeting where personal conduct and emotional goals are set for the day and clients hold themselves and each other accountable for breaking rules or not keeping commitments or assignments as well as highlighting client achievements.

23. This is followed by a process or step group led by a clinician for ninety minutes. Following lunch, clients participate in a one hour psychoeducational group in order to develop emotional and life skills.

24. Clients then participate in recreational activity such as yoga, cardio or weight-lifting, drawing, writing, or reading. Clients then have one hour to focus on personal homework and assignments from therapists for self-evaluation and reflection.

25. The evening time sees dinner followed by attending a recovery-related meeting in the community. The night ends with Evening Devotional to close the day in which clients share three gratitudes for the day, a low and high moment from the day, and whether or not they met their goal from that morning, followed by lights out at 10pm.

Liberty's Therapeutic Model and Its Necessity for Treatment

26. Liberty's therapeutic model consists of three levels of client support. The first and highest level is clinical intervention from licensed clinicians who are masters qualified, state certified with qualifications in clinical social work or mental health.

27. Liberty's clinicians implement the Liberty therapeutic model, which consists of clinical groups for Native Americans – both coed and gender-based – plus coed and gender based groups for men and women suffering from trauma; plus groups addressing divergences in mental health. All of these clinical groups use evidence-based modalities including Cognitive-Behavioral Therapy (CBT), Dialectical Behavioral Therapy (DBT), Acceptance and Commitment Therapy (ACT), and Eye Movement Desensitization and Reprocessing (EMDR).

28. The second level of Liberty's clinical program are psychoeducational therapy groups. Psychoeducational therapy groups are therapeutic interventions that combine elements of both psychology and education to address various emotional, behavioral, and learning difficulties. These groups are facilitated by a mental health professional or a suitably qualified and experienced staff specialist.

29. The primary goal of psychoeducational therapy groups is to provide support, education and skills training to clients to develop their psychological well-being and recovery capital, meaning their skills, understanding and internal resources to be successful in navigating recovery.

30. Psychoeducational therapy groups typically focus on developing coping strategies, improving social skills, enhancing self-esteem, managing emotions, and learning the tools necessary for life in recovery. The topics covered in these groups may address issues such

as healthy thinking and framing patterns, values, coping strategies, understanding the science of addiction, recovery skills and capital, relationships in recovery, managing mental health challenges and so on. Clients are encouraged to share their experiences, offer support to one another, and learn from the facilitator's guidance and expertise.

31. Overall, psychoeducational therapy groups provide a collaborative and structured environment where individuals can receive support, learn practical strategies, and develop a sense of belonging within a community of peers who are facing similar challenges.

32. The third level of therapeutic support at Liberty is the therapeutic community. In a therapeutic community, group members learn to work together and hold one another accountable. Community members promote self-change by becoming positive role models for one another under the guidance of the staff. A therapeutic community is rooted in the foundation of three principals: responsibility, structure, and accountability.

33. The Liberty therapeutic community (TC) group is managed by a staff-appointed President and Vice President. These positions are given to community members as an opportunity for learning and growth in these positions. The President is responsible for facilitating morning and evening devotionals and TC groups Monday through Friday.

34. The Vice President is responsible for monitoring community and personal chores and holding community members accountable to those chores. The Vice President also conducts devotionals and TC groups when the president is unavailable. Staff members may also give the President and Vice President additional responsibilities as needed.

Group Therapy and the Necessity for Groups in Recovery

35. Group therapy is a treatment approach necessary for individuals in recovery from addiction. Dr Rockville[1] of the USA Substance Abuse and Mental Health Services Administration stated that group therapy gives individuals suffering from substance abuse disorders the opportunity to see the effects of abuse and dependency in themselves and in others; it also gives them an opportunity to experience their success and the success of other group members in an atmosphere of support and hopefulness.

36. Yalom[2] noted that "the curative factors associated with group therapy specifically address such issues as the instillation of hope, the universality experienced by group members as they see themselves in others, the opportunity to develop insight through relationships, and a variety of other concerns specific to the support of substance-abusing clients and their recovery".

37. Here are several reasons why group therapy is necessary for people in recovery:

a. Support and Validation: Group therapy provides a unique supportive and understanding environment where individuals can connect with others who have faced similar challenges. Sharing experiences, struggles, and successes with peers who understand firsthand can provide a sense of validation, reducing feelings of isolation and shame. Knowing that others have gone through similar struggles and have found recovery can inspire hope and motivation.

b. Sense of Belonging: Addiction often leads to a breakdown in relationships, and individuals may feel disconnected and alienated from others. Group therapy provides a sense of belonging and community. It allows individuals to build new relationships, establish trust, and develop a support network with others who share their recovery journey. This sense of belonging can contribute to improved self-esteem and overall well-being.

c. Learning from Others: In group therapy, individuals have the opportunity to learn from the experiences of others. They can gain insights and perspectives that may not have occurred to them on their own. Seeing the progress,

setbacks, and coping strategies of fellow group members can provide valuable lessons and inspire personal growth.

d. Social Skills Development: Addiction often impairs social skills due to the focus on substance use and isolation. Group therapy provides a safe space for individuals to practice healthy communication, empathy, and conflict resolution. Through observing and participating in group interactions, individuals can improve their social skills, which are vital for maintaining healthy relationships and a sustainable recovery.

e. Accountability and Feedback: Group therapy offers a level of accountability that can be instrumental in maintaining sobriety. Sharing one's progress and setbacks with the group fosters a sense of responsibility and encourages individuals to stay committed to their recovery goals. Group members can also provide constructive feedback, challenge unhelpful beliefs or behaviors, and offer support and encouragement when facing challenges.

f. Peer Learning and Role Modeling: Group therapy allows individuals to witness the progress and success of others in their recovery journey. Seeing someone who has achieved sustained sobriety and personal development can serve as a source of inspiration and hope. Additionally, individuals who have progressed further in their recovery can serve as necessary mentors and role models, providing guidance and encouragement to those who are earlier in their recovery process.

g. Emotional Expression and Catharsis: Addiction often involves underlying emotional issues, such as trauma, anxiety, depression, or unresolved conflicts. Group therapy provides a space where individuals can express their emotions, share their struggles, and process difficult experiences in a safe and supportive environment. This emotional expression and catharsis can lead to emotional healing and growth.

38. It's important to note that group therapy is just one necessary component of a comprehensive treatment program for addiction, which may also include individual therapy, medical interventions, educational sessions, and other support services, all of which are provided at Liberty. The combination of these approaches is essential to achieving and maintaining long-term recovery.

39. The two most basic group types in Liberty psychotherapy are homogeneous and heterogeneous groups, each offering different benefits and are effective in different ways.

40. Heterogeneous groups consist of individuals with differing backgrounds, experiences, and perspectives. This diversity brings a range of insights and ideas to the group, expanding participants' understanding and offering alternative perspectives. Different views can broaden horizons, challenge assumptions, and promote personal growth by encouraging individuals to consider alternative ways of thinking and approaching problems.

41. In heterogeneous groups, Liberty clients can learn from others who have faced different challenges or have different coping strategies. This exposure to diverse experiences fosters learning, creativity, and adaptation. Individuals can gain new skills, problem-solving techniques, and coping mechanisms by observing and exchanging knowledge with peers who bring different perspectives to the group.

42. Heterogeneous groups reflect the diversity of the real world, providing an opportunity for participants to practice tolerance, empathy, and acceptance of differences in others. Engaging with diverse individuals in a safe therapeutic setting allows participants to enhance their interpersonal skills, develop cultural competence, and build resilience in navigating various perspectives, all invaluable in sustaining recovery from limited life experiences due to addiction.

43. In contrast, homogenous groups comprise individuals who share similar experiences, challenges, or identities. This shared common background can enable a sense of belonging and validation. It provides participants with the opportunity to connect with others

who truly understand their struggles, which can be particularly valuable in situations where stigma or discrimination are involved (e.g., gender groups, trauma groups, ethnic groups).

44. Homogenous groups allow participants the necessary opportunity to experience a supportive, empathetic environment where individuals feel understood and accepted. Participants provide support, share coping strategies and experiences and insights based on their personal journeys. The sense of solidarity within the group can be empowering and contribute to feelings of validation and hope.

45. In homogenous groups, Liberty therapists can focus on addressing specific issues or needs that are common to the group members. This targeted approach enables therapists to design interventions and techniques that are particularly relevant and effective for the shared experiences or challenges of the group. It allows for a more specialized, tailored and effective therapeutic experience.[4]

46. On the necessity and benefits of homogenous groups in treating certain populations, Söchting (2014) observed: "Like most groups, groups for trauma work best when the group setting feels predictable, contained, and safe. In trauma groups, the group serves the additional purpose of a symbolic community witness to each victim's story. A successful group experience can thus provide a tremendous healing opportunity as people feel believed and stop blaming and silencing themselves as they work through their trauma and its impact."

47. Söchting went on to state that in such groups, "more than any other, people are often moved to tears as they speak about feeling accepted, understood, and validated. Many have been rejected by their home communities or family members. Although the client often

understands and accepts this rejection, their need to belong is strong, and the group can become a healthy temporary surrogate family or community"[5].

48. Liberty's therapeutic model requires the requested necessary minimum census to support a combination of heterogenous groups which reflect the world in which clients must live and provides a wide spectrum of resources to draw on, and to sustain the necessary homogenous groups essential to create safe therapeutic environments for clients with unique and sensitive challenges, such as gender groups, trauma groups, ethnic groups and also groups for AA twelve step groups. Trauma groups in particular for women are a necessity due to the challenges in expressing difficult and painful emotions in front of men who often represent the source of abuse.

49. Covington (1997) has written extensively about the importance of women-specific homogenous groups, particularly in early recovery. She accurately pointed out that the powerful role definitions within our culture tend to be played out in group and are often oppressive to women. In a mixed group, the women quickly become the "emotional containers" for the group and take care of the men. Although such activity is not defined as pathological, it expresses cultural norms wherein women's needs become secondary to those of men, with the women primarily defined as caretakers. In particular, she observed that women are uncomfortable about bringing up issues of sexuality, particularly sexual abuse, given that men have generally been the abusers.[6]

50. Liberty also needs the approved census it has requested to fully implement its homogenous groups to treat members of the Native American tribes for substance abuse and mental health challenges, given the unique origins of this trauma. This oft-discriminated

population's addiction challenges stem from intergenerational trauma caused by the traumatic death and loss of ancestors and the feelings of loss and worthlessness from the dispossession of ancestral lands.

51. Homogenous groups for these disadvantaged and often discriminated populations gives participants exposure to the empathy, safety, understanding and mutual support which is unique and necessary for a more complete healing experience. Liberty sees it as absolutely necessary that its census numbers are expanded to enable enhanced service particularly to this heavily discriminated population.

Why is it Clinically Necessary that Groups be a Minimum Size

52. Leading anthropologists psychologists (Dunbar, R. I. M., & Spoors, M. (1995); Buys, C. J., & Larson, K. L. (1979); Wellman, B., Carrington, P. J., & Hall, A. (1988); Stiller, J., & Dunbar, R. I. M. (2007)) have identified the group sizes that play differing roles and purposes in human social environments. They identified that social groups start at their largest in the "active network" of approximately 150 known people; followed by the "affinity band" of 50 people. The next smallest is the "sympathy group" of 12-15 people, followed by the smallest being the "survival group" of around three to five individuals.[7]

53. Writing in the British Journal of Psychology (2011), Sutcliffe, Dunbar, Binder and Arrow identified that the innermost social layer of five people, the support group, "seems to represent the set of closest intimates, typically immediate family members and best friends, who are most likely to provide a mutual environment for emotional and instrumental (e.g., financial) support."

54. They observed that the sympathy group (typically 12–15 members) represents the group of reliable friends on whom one can depend for a variety of exchange relationships (e.g., friendship in the social sense, protection against harassment, minimizing social stress, childcare, etc.).

55. The empirical data that Sutcliffe et al relied on in their definitions for social group sizes was as follows: Dunbar & Spoors, (1995) and Stiller & Dunbar (2007) identified the support clique or family as being of 4–5 and the sympathy group of 12–15; Wellman, Carrington, and Hall (1988) found an average of 5 intimate ties and 12.5 active or social ties; an extensive survey by Kayahara, Wellman, Boase, Hogan, & Kennedy (2005) determined averages of 16.8 ties for the sympathy group; while Fischer, (1982) & Grossetti (2007) established a consistent mean size of approximately 15 individuals for the sympathy group.

56. Yalom & Leszcz (2005, p.371.), recognized by many as the experts on group therapy, stated that "Larger groups of twelve to sixteen members may meet productively in day hospital settings, because each member is likely to have many other therapeutic opportunities over the course of each week and because not all members will necessarily participate in each group session. To some extent, the optimal group size is a function of the duration of the meeting: the longer the meeting, the larger the number of participants who can profitably engage in the group"

57. They also affirmed the benefits of large group sizes with homogenous groups: "Large homogeneous groups normalize, destigmatize, activate feelings of universality, and offer skills and knowledge that enhance self-efficacy" (2005, p.372.)[8]

58. The 'sympathy group' is the smallest social group outside the survival group or the family. Costello (2018) observed that it is "fifteen people who share a common interest, solve challenges through facilitated conversation to put their own strategies into practice and assess their benefits. Group processes involve a focus for action, iteration, the development of trust and the fulfillment of strategies".[9] It is in the setting of the sympathy group that relationships of the greatest intimacy and mutual care and support outside of the family occur.

59. The sympathy group fits directly with the role of the group in treatment and psychotherapy: a group of people who share a common interest - even more so in the case of the homogenous group - who through dialogue and conversation, shared insights and empathy, encourage and inspire each other in the healing process and provide the necessary support and hope to succeed in recovery.

60. The following identifies the main therapeutical benefits of 12-15 participants in a clinical group:

a. Sufficient Diversity and Perspective: A group of 12-15 participants allows for a diverse range of perspectives, backgrounds, and experiences. This diversity promotes rich discussions and interactions within the group, enabling individuals to gain new insights and learn from different viewpoints. It also helps create a supportive and inclusive environment.

b. Satisfying Interpersonal Dynamics: A group size of 12-15 strikes a balance between having enough participants for dynamic group interactions and avoiding an overwhelming number of people that may inhibit individual participation. With a moderate group size, participants have ample opportunities to speak, listen, and engage with one another, fostering a sense of belonging and connection.

c. Group Cohesion and Safety: A group size of 12-15 facilitates the development of trust and a sense of safety among participants. It is easier to establish rapport and build meaningful connections when there are an adequate number of individuals present. Participants may feel more comfortable sharing

personal experiences and vulnerabilities, which can deepen the therapeutic work and create a supportive atmosphere.

d. Practical Considerations: Group therapy sessions typically have limited time frames, usually lasting between 90 to 120 minutes and repeat the same group membership multiple times per week. With a group size of 12-15, participants have a reasonable opportunity to contribute, share their experiences, and receive feedback within the given time constraints. Larger groups than this number may result in limited time for each participant, hindering the therapeutic process.

61. Liberty's therapeutic model consists, as previously noted, of heterogeneous and homogeneous groups including gender groups, male and female trauma groups, Native American groups and also groups for AA twelve step groups. The minimum participants necessary in *each* sympathetic therapeutic group is twelve and the upper limit being fifteen based on the previously referenced psychological research.

62. Liberty requires a client capacity sufficient to sustain the following groups:

- Male Native American group – minimum of 12 clients
- Female Native American group – minimum of 12 clients
- Female trauma group – minimum of 12 clients
- Male trauma group – minimum of 12 clients

These numbers also ensure that there is close to an equal balance between tribe and non-tribe persons in the facility, to avoid unhealthy bias and marginalization occurring amongst populations.

Does the Structured Environment Model Apply to Treatment

63. The structured environment model is a therapeutic approach commonly used in group homes or residential treatment settings for addiction. Akin to the necessary "affinity band" discussed above, it focuses on providing a larger, overarching structured and supportive environment that promotes stability, consistency, and accountability for individuals in recovery. Here's how the structured environment model applies to groups in addiction treatment:

a. Structure and Routine: The structured environment model establishes structured daily routines and schedules. Consistency in activities, mealtimes, therapy sessions, and recreational opportunities helps individuals develop healthy habits and establish a sense of stability. Predictable routines provide a sense of security and reduce anxiety, creating a conducive environment for recovery.

b. Accountability and Rules: The structured environment model emphasizes accountability by establishing clear expectations and rules for residents. Guidelines regarding substance use, attendance, curfew, chores, and therapy participation help individuals stay on track and take responsibility for their actions. Compliance with rules is typically reinforced through positive reinforcement and consequences, encouraging residents to adhere to healthy behaviors and make progress in their recovery.

c. Supportive Peer Community: The structured environment model fosters a supportive therapeutic community model among residents. By living with others who are also in recovery, individuals have the essential and necessary opportunity to connect with peers who understand their struggles firsthand. Peer support within the facility can provide encouragement, shared experiences, and role modeling, promoting a sense of belonging and reinforcing the commitment to recovery.

   i. The fundamental principle behind the therapeutic community model is that individuals who have gone through similar experiences can offer unique insights, empathy, and support to each other which can complement or enhance traditional professional therapies. Peers can share their own recovery journeys, coping strategies, personal growth experiences, and model those further along the recovery pathway, which can be deeply relatable and empowering for other clients in treatment.

d. Therapeutic Services: The structured environment model integrates various therapeutic services within the treatment setting. This may include individual counseling, group therapy sessions, psychoeducation, and skill-building workshops. By bringing therapy directly into the residential environment, individuals have consistent access to professional support, addressing their needs holistically and facilitating ongoing progress.

e. Life Skills Development: The structured environment model emphasizes life skills development as part of the recovery process. Residents are encouraged to learn and practice essential skills such as cooking, cleaning, laundry, personal hygiene, positive affirmations, goal setting, accountability, time management, and effective communication. These skills are crucial for achieving self-sufficiency, maintaining sobriety, and successfully transitioning back to independent living after leaving treatment.

f. Aftercare Planning: The structured environment model incorporates aftercare planning and relapse prevention strategies. Transitioning out of residential treatment and back into the community can be a vulnerable period for individuals in recovery. Through the structured environment model, residents receive support in developing a comprehensive aftercare plan, which may include ongoing therapy, outpatient services, peer support groups, and community resources. This planning helps ensure continuity of care and ongoing support post-discharge.

64. Having the requested census number is essential for Liberty to fully implement the structured environment model, the aim of the model being to provide a more structured, supportive and accountable environment that enhances the recovery journey. This model provides individuals with the necessary tools, skills, and support to establish a strong foundation for long-term sobriety and overall well-being.

65. A key component of the structured environment model is the therapeutic community. Liberty's therapeutic community model comprises an existing male and female client who are appointed as co-house president, each has demonstrated the ability to model the coping skills and tools necessary in recovery. Additionally, vice-presidents are appointed –male and female - who also have modeled the skills needed in recovery and can support clients with

less experience on the recovery path. Each of the vice -presidents are assigned at least 12 clients to ensure the necessary number to create and sustain a Sympathetic Community or peer group within the larger therapeutic community or affinity band.

66. As part of the Liberty therapeutic community model, clients in the sympathetic peer group who are not in formal leadership positions and who are progressing well in their recovery are assigned to mentor newly admitting clients. This demonstrates trust in the mentor and builds self-confidence, as well as helping new clients to feel supported and guided in the critical early days and weeks of recovery.

67. Having a minimum of twelve males and females in each group, or more, plus vice-presidents and house presidents, is necessary to permit a balance of experienced clients who can support and model recovery strategies for new clients, and also provides adequate numbers of new clients to admit and develop their way into leadership roles.

68. To summarize, Liberty's Structured Environment Model needs a minimum of 118 clients within its peer supported therapeutic community, which needs to operate within the context of the larger affinity band described above.

Why it is Necessary to Avoid Isolation in Treatment

69. Isolation can be particularly harmful to people in recovery from addiction due to several reasons:

a. Lack of Support: Isolation often means limited access to supportive relationships and a lack of social connections. Social support provides encouragement, understanding, and a sense of belonging, which can help individuals navigate challenges and reinforce their commitment to recovery.

b. Increased Vulnerability to Triggers: When individuals are isolated, they may lack positive distractions or healthy outlets for stress and negative emotions. This can make them more susceptible to cravings, as they may resort to old coping mechanisms, including substance use, as a means of escape or self-medication.

c. Limited Accountability: Accountability is essential in recovery as it helps individuals stay committed to their goals, make responsible decisions, and maintain sobriety. Without external support or connections, individuals may have difficulty staying on track and may be more likely to engage in risky behaviors.

d. Negative Self-Talk and Shame: Without external perspectives or support, individuals may dwell on negative thoughts, doubt their abilities, or feel overwhelmed by their challenges. This negative self-talk and shame can undermine self-esteem, motivation, and the belief in one's ability to achieve and sustain recovery.

e. Limited Opportunities for Growth: In recovery, individuals often benefit from engaging in new experiences, learning new coping skills, and expanding their support networks. Isolation limits exposure to different perspectives, learning opportunities, and healthy outlets for self-expression, which are essential for building a fulfilling and meaningful life in recovery.

f. Mental Health Impact: Isolation can have a significant negative impact on mental health. Substance use disorders often co-occur with other mental health conditions such as depression, anxiety, or trauma-related disorders. Isolation exacerbates these symptoms, as individuals may lack the emotional support, understanding, and therapeutic interventions necessary for managing their mental health effectively.

70. Liberty takes the mental health impacts of isolation seriously and ensures that at least two clients are assigned to a bedroom. Additionally, Liberty's therapeutic community model, in which clients play an active role in each other's support and recovery, necessitates that all clients have at least one roommate.

71. The disease of addiction is often manifested in subversive behaviors and distorted thinking when clients are left in an isolated setting. Having at least one roommate while in residential treatment improves both safety and accountability, and decreases the risk of potential

self-harming behaviors, with suicide at the extreme, followed by breaking boundaries such as leaving the facility without approval, smuggling unauthorised items and substances into the facility, substance use leading to overdose etc.

72. A significant benefit that many Liberty clients value from treatment is the ability to connect with other people. Addiction is very isolating and disconnecting and Liberty clients often speak to how much they have been supported and helped in their recovery by roommates with whom they can decompress, connect, and process with at the end of the day.

73. All of the rooms in the proposed American Fork facility are well above average size, capable of accommodating at least two people based on Utah State DHHS group home rules of 60 square feet of bedroom space per resident. This ratio avoids isolation, disconnection, and overcrowding. Seventy percent of bedrooms in the facility can very comfortably sleep two clients and some rooms are large enough to sleep three clients if it was necessary.

74. The proposed Liberty facility can accommodate the following clients per room to ensure that the necessary social interactions, connections and support occur:

Client Capacity per Room at the Liberty Facility

Bedroom Size	Number of Rooms	Client Capacity
Rooms sized for two occupants – at least 120sqft but less than 180 sqft	25	50
Rooms sized for 3 clients – more than 180 sqft	30	93
Total	55	143

Of the existing 55 bedrooms at the facility, a total of 12 rooms will be required for staff offices and / or group therapy rooms, in addition to existing offices in the facility. That leaves 43 rooms for patients/residents, which reduces the client capacity from 143 to 118. Of the existing bedrooms at the facility, some are larger than others. The larger bedrooms will be used to house at least 3 residents. The smaller bedrooms will be used to house 2 residents per room. Residents with more acute addictions (i.e., who need more supervision and support from roommates) will be assigned to the 3-resident minimum rooms. Residents who are less acute will be assigned to the 2-bedroom room. The goal of making room assignments based upon resident acuity is to prevent loneliness and isolation, which is essential to avoid for those recovering from addiction and SUDs.

Other Factors to be Considered in Determining the Necessary Census Count

75. The handicaps and disabilities of Liberty's residents requires a minimum census size of 118 residents due to a number of other factors that are ever-present in a treatment and recovery environment.

76. A census or permitted population of 118 clients allows for the fluctuations caused by varying client schedules which directly impact upon client numbers in groups and availability for daily programming. Available client numbers are affected by necessary commitments such as medical appointments, legal obligations, individual and family therapy sessions with Liberty clinicians and so on.

77. Natural attrition is another real factor that impacts on census numbers and is a major reason why a census of 118 clients is necessary to maintain required group sizes for clinical effectiveness. Clients can choose to leave treatment at any time, and some do due to

mental health reasons, changing priorities, family and work reasons. Additionally, clients sometimes are required to be quickly discharged and placed in a higher level of care due to their individual needs. Some clients are discharged due to breaking fundamental rules of treatment that risk the safety of other clients, and sometimes clients relapse in treatment finding it too difficult to live without the substances they were addicted to.

78. Liberty also has a limited admit window of Monday to Thursday, 9am to 3pm each day, which makes it difficult to always quickly admit a potential client to replace one who left unexpectedly. The reason for the limited window is that admits on a Friday or weekend often leave due to this period having a less intensive clinical program and more time for clients to relax and unwind, which historically has proved difficult for new clients to remain engaged in and instead find themselves wanting to return home.

79. The combination of these factors means that it is very likely that 10%-20% of the client population could be absent at any one time. Therefore it is necessary to receive approval for a minimum census of 118 clients to ensure adequate group and therapeutic community sizes, sufficiently sized numbers in bedrooms to avoid isolation, and to enable peer to peer support, leadership and modeling opportunities.

Miscellaneous Factors to be Considered in Census Count

80. Residents at the facility are always dropped off by loved ones. No client is permitted to leave a vehicle or have their own vehicle on site. Liberty will transport its clients to needed appointments and off-site visits/activities through Liberty's transportation van(s) and/or buses.

81. In terms of staff parking, Liberty expects to have a maximum of 20-24 staff members on site during a weekday. The property has approximately 25 off street parking spots available for staff parking. Liberty will easily accommodate all necessary parking requirements in the on-site off-street parking lot and ensure that there is no congestion added by on street parking.

DATED this 7th day of July, 2025.

/s/ Jason Webb
Jason Webb LCSW, ASUDC
(electronically signed by Daniel J. McDonald with permission)

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Exhibit A - Resume of Jason M Webb, LCSW, ASUDC

Highly qualified individual therapist and clinical director with extensive experience in opening and directing mental health and substance abuse treatment programs in multiple residential and outpatient settings. Inspires youth and adults in dynamic, creative ways and builds positive relationships with colleagues, clients, family members, community resources, legal authorities, court liaisons, and insurance companies.

STRENGTHS AND SKILLS:

- Relates effectively with youth and adults
- Level II Ropes Course facilitator
- Forward-Facing Trauma certified
- 12-Step, Cognitive, and Logotherapy trained
- Vibrant, sought-after public speaker
- Motivational, collaborative leader

EXPERIENCE:

Wasatch Behavioral Health - Supervisor/Hospital Liaison 2020-present

- Supervise CY-Fast (Children, Youth, Family Assessment, Stabilization Team) which consists of about 22 employees including therapists, case managers, peer support specialist and human service workers. Oversee all 988 phone calls for children and youth in Utah County. Provide direct and indirect clinical services; perform individual therapy for a variety of mental health disorders; manage personal case load; perform intake assessments; interview patients, gather psycho-social histories; complete documentation, provide liaison work for Utah hospitals and get clients in and out of the Utah State Hospital, assist to monitor diagnosis, goals and progress notes related to individual clients; assists with document reviews to assure compliance with record keeping requirements, policies; maintain awareness of patient behaviors and reaction to medications as needed to avoid adverse side effects; will call nursing staff for medical instruction, coordinate with supervisors regarding issues and problems, which interfere with assignments, goals, treatment plans, and projects, complete documentation for civilly Committed patients.
- Establish rapport with 10 Nursing Homes to get invited to go into the facility during the Covid-19 pandemic.

The Phoenix Recovery- Therapist 2019-2020

- Sole therapist at all-men's residential center developing curriculum and facilitating individual therapy sessions and process, education and experiential groups
- Assist clients in creating own Master Treatment Plan and qualified in telehealth for both individual and group sessions
- Employ various techniques and therapies to identify and treat the underlying causes and contributing factors to addictive behaviors and mental health challenges

Private Therapist 2008-present

- Provide effective individual, marriage, and family counseling for youth and adults with an emphasis on depression, anxiety, and addiction.
- In-network provider for most major insurance companies in Utah, including Telehealth
- Owned and operated Sober Living Home, including individual client therapy for four years

Annie's House with Steps Recovery Center - Clinical Director 2016-2019

- Recruit, hire, mentor, and supervise all clinical staff and university interns
- Coordinate and supervise residential, day treatment, intensive outpatient, and aftercare programs
- Create and expand mental health and substance abuse prevention public speaking program in local high schools and middle schools in Salt Lake and Utah County
- Uphold Joint Commission accreditation

Inspire Addiction Recovery - Co-founder and Clinical Director 2015-2016

- Co-founded a residential substance abuse treatment facility from the ground up, including origination of policies and procedures and interviewing, hiring, and training all personnel

- Developed and implemented Values-Focused Therapy (an individual standards-based program) which resulted in increased long-term sobriety rates following treatment
- Directed a successful, well-attended aftercare program to ensure clients' continued success

Steps Recovery Center - Clinical Director 2010-2015

- Turned around struggling residential treatment program and grew the company from six clients to over one hundred
- Directed the company expansion into day treatment and sober living programs
- Standardized Steps Recovery programs by implementing uniform policies and procedures across the four residential facilities throughout Utah
- Designed high ropes course and facilitated effective experiential therapy program

The Ark of Little Cottonwood Treatment Center - Co-founder/Therapist/Counselor, Clinical Director 1999-2010

- Opened new residential substance abuse facility, navigated all start-up procedures regarding city and state licensing, legislative requirements, and insurance regulations
- Effectively utilized numerous therapy modalities in individual, group, family, experiential and equine settings
- Doubled the sobriety success rate of graduated clients in first year post-treatment

Utah State Prison - Licensed Substance Abuse Counselor, POST certified 2000-2002

- Provided Individual and Group Counseling in Con-Quest Program, a Therapeutic Community for 120 inmates with substance abuse challenges.
- Performed screenings to admit inmates to Con-Quest Program

- Wrote a paper about the Utah Prison system which resulted in the Utah State Legislature moving the Con-Quest program to a more effective facility

ADDITIONAL EXPERIENCE:

Mental Health Public Speaker 2006-present

- Utah State Prison
- Utah businesses, high schools and middle schools
- Generations Conference Annual Conf. of Friends & Families of Addicts
- Brigham Young University Education Week
- Religious groups, adults and youth

Utah Substance Use Disorder Counselor Licensing Board - Board Member and Chairman 2018-present

- Review and give recommendations for suspending, revoking and reinstating professional licenses

LDS Family Services Social Work Intern 2003

- Co-facilitated group therapy with pregnant teens
- Co-facilitated group therapy with male teen sex offenders

Utah Boys' Ranch Social Work Intern - 2002

- Counseled at-risk children and youth in summer outreach program
- Helped facilitate and supervise outdoor therapy, including a week-long hiking trip

EDUCATION:

- **University of Utah 2001-2003 Master of Social Work**

- **Brigham Young University 1992-1996 Bachelor of Science, Family Science**

Exhibit L

Research Report

A Review of Optimal Group Size and Modularisation or Continuous Entry Format for Program Delivery

Ce rapport est également disponible en français. Pour en obtenir un exemplaire, veuillez vous adresser à la Direction de la recherche, Service correctionnel du Canada, 340, avenue Laurier Ouest, Ottawa (Ontario) K1A 0P9.

This report is also available in French. Should additional copies be required, they can be obtained from the Research Branch, Correctional Service of Canada, 340 Laurier Ave., West, Ottawa, Ontario, K1A 0P9.

2010 N° R-215

A Review of Optimal Group Size and Modularisation or Continuous Entry Format for Program Delivery

Lynn Stewart, Ph.D., C.Psych.
Amy Usher
Kim Allenby

Research Branch

Correctional Service of Canada

June 2009

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Executive Summary

Program mangers and administrators are seeking methods of more efficiently delivering correctional programs while at the same time not compromising program quality or public safety. Two methods of potentially increasing the number of offenders who complete programs that have been proposed is increasing group size and the delivery of programs in a continuous entry or modularised format.

This literature review on group size found that there were very few empirical studies that would provide strong evidence of the optimal group size; however, practitioners from diverse program areas have consistently recommended that group size should not exceed 6-8 participants. Very rarely does a researcher or practitioner recommend a group size above 10 participants.

It is possible that educational or didactic programs may be delivered to larger groups without compromising program quality and effectiveness. With larger groups, administrators should carefully monitor facilitators for the potential of burn out.

Writers recommending the number of participants in a group acknowledge that the optimal size of the group should depend on the goals of the program, the theoretical orientation of the program, the profile of the participants and the requirements of the agency.

Correctional programs are based upon cognitive-behavioural principles and require that participants be actively involved in practicing skills and receiving feedback from facilitators. Large groups make this requirement for practice very difficult.

Correctional programs in CSC address the multiple needs of offenders who have learning and behavioural problems. They come from diverse ethnic and offence backgrounds. Given the challenges of this population, when there is only one facilitator, the group size should not exceed 10 offenders. For very high needs groups, the group size should be smaller than this.

Despite its administrative challenges, the modularised format does provide flexibility and the ability to tailor the program delivery to offender need. Based on interviews and recommendations from program deliverers the following circumstances are those in which the format works best:

- When the group is relatively homogenous, i.e. participants have similar offence histories or similar criminogenic needs. (It should be noted however that the Community Maintenance Program (CMP) is able to integrate offenders from diverse backgrounds into a continuous entry program);
- When the group participants are not high risk or high need;
- When the participants come from a previous program background so that the material is not entirely new to them;
- When the program is offered in the community.

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PRINCIPLES OF EFFECTIVE CORRECTIONAL INTERVENTION

The Correctional Service of Canada (CSC) is responsible for providing federally sentenced offenders with correctional programs that will address needs related to their offending and promote their successful reintegration into the community (CSC, 2003). Interventions which adhere to the principles of risk, need and responsivity have been found to be the most effective in reducing recidivism. These three principles stipulate that the intensity of the intervention should correspond to the offenders' level of risk (that is, higher risk offenders receive high intensity programs; lower risk offenders should receive low intensity programs or no interventions), that programs should target criminogenic needs (i.e., those dynamic factors associated with reducing recidivism), and that programs should be delivered in a style and form that is sensitive to the offenders' culture and gender but also their level of skills and abilities (Andrews & Bonta, 2006).

Various program group characteristics comprise a key aspect of responsivity and as such can have an impact on effective delivery. CSC has a mandate to deliver effective programs to all offenders who require them. This can be challenging and as a result, managers and administrators are constantly trying to identify strategies that improve on program effectiveness and also on efficiency. Their goal is to find more efficient ways to deliver correctional programs that will allow more offenders to complete their program requirements while at the same time not compromise the program quality or public safety. Factors such as group size and the continuous or controlled intake of participants (i.e., entry that is flexible and open throughout the course of the program) may affect the response of offenders to the program material. The purpose of the following paper is to briefly review the literature and the input of stakeholders to determine: (1) the optimal group size for correctional programs; and (2) the advantages and disadvantages of delivering programs applying a continuous entry or modularised format. A third strategy to increase program efficiency by delivering correctional programs twice per day has also been proposed. However, no research could be found on this subject so it is not included in the discussion.

GROUP SIZE

Offering programs in a group format has the benefits of providing an environment in which individuals can appropriately socialize, learn to listen, communicate and handle conflicts. In addition, a group setting gives participants a place where they can share and learn from each other, practice new skills and work through issues together. Group size is a cost effective method of delivering key services that would otherwise be offered by staff to individual offenders, requiring a much larger facilitator staff complement.

The number of participants in a group can have important potential implications for the effective delivery of group programs. Some of the disadvantages of larger treatment and program groups may include less time per participant to work through problems, less time to practice key skills and receive feedback, a tendency for participants to disengage with the material or become disruptive, and increase the potential of the more withdrawn members to not actively express themselves or engage with the group. Group cohesiveness may be a challenge in very large groups. Several authors stress the relationship between group cohesiveness and group efficacy (Oesterheld, McKenna & Gould, 1987; Hartmann, Herzog & Drinkmann, 1992; Mitchell, 1991; Cox & Merkel, 1989), and conclude that a stable membership is difficult to achieve due to higher drop-out rates in larger groups (Yalom & Leszcz, 2005). In agencies with a large demand for services , however, and a mandate to provide programs to offenders who require them, larger groups can increase program capacity and decrease wait times, bed space, and ultimately, reduce costs to the public.

Within the CSC, policy sets limits on the number of participants who can participate in a program at a given time. This is dependent on the number of facilitators (Correctional Program Officers (CPOs) or psychologists) who are delivering the program. The moderate intensity programs are typically facilitated by one staff member; in this case the maximum number of participants is set at ten, while this is increased to twelve if two staff members are facilitating (CSC, 2008). All the high intensity correctional programs are delivered by two facilitators. It is recognised, however, that this policy may not be suitable for all types of correctional programs and the types of offenders for which these programs are geared towards. For example, the Women's Violence Prevention Program (WVPP) is set to a maximum of six participants throughout the pilot phase, with a potential of being brought to a maximum of eight once this

phase is completed. This lower maximum is set due to the nature of the program's intensity and because of the high risk and high needs profile of the target population (CSC, 2008a). In comparison, the violence prevention program designed for male offenders[1] (VPP) is co-facilitated by a CPO and a mental health staff member and can have a maximum of twelve participants (CSC, 2004). In smaller community sites or in some institutional settings where the variable language profile of offenders or the problem of association with other offenders Security has designated as "incompatibles" make it more difficult to load a program with ten or twelve offenders, it is recognised that programs can be started with fewer offenders. Indeed, the latest version of Reintegration Programs' policy does not set a restriction on the minimum number of offenders required to launch a program although site managers may not want to allocate staff resources to very small groups.

Other correctional agencies similarly recommend limiting group size. For example, the US Department of Justice suggests an optimal group size of twelve, with a maximum of sixteen (Linhorst, 2000) while the British Prison Service and Probation set the upper limit on group size at ten and always employ two facilitators. The John Howard Society recommends that groups range in size from eight to twelve members (2004).

Most of the literature on this topic is restricted to observations on ideal group size for group psychotherapy whereas the correctional programs in CSC are based on cognitive-behavioural principles and their effective delivery requires a lot of skills training and practice. The usual recommendation among practitioners is to aim for groups with five to seven clients (Levine, 1979; Yalom, 1975) but the basis for this limitation has not been made clear and there is very little empirical support for their contentions. Erickson's (1982) review of small group psychotherapy noted that recommendations in the literature regarding group size vary, although clinical tradition has settled on about eight members.

Yalom writes that in his experience, groups of five to ten are acceptable with the ideal being around seven. He considers that groups under five lack some of the benefits from the group's dynamics.

Slavson (1957) defines a group as having to consist of three or more persons; he goes on to state that, within therapy groups, a minimal number of individuals is necessary in order to foster meaningful relationships. Ideally, he states, the size of psychotherapy groups often ranges

[1] The VPP became an accredited program in June, 2000.

between five to ten participants. The lower limit is determined by the number of individuals required in order to function cohesively as a group, while the upper limit is determined by the number of participants that the therapist can effectively work with in the given amount of time (Yalom & Leszcz, 2005).

Fulkerson, Hawkins & Alden (1981) surveyed the literature on small groups and reported that groups with a size of five members are reported to be most satisfying to the members. They propose five as the minimum number of members necessary for the therapeutic group process to develop. Groups with more than five members appear to more easily develop cohesion, group identity (perhaps the most important single factor in therapeutic effectiveness) and to form an interactive group process.

Larger groups restrict the amount of "air time" each member of the group can expect. There is evidence that communication in general is attenuated when groups are larger. Castore's (1962) study of the number of verbal interrelationships in inpatient groups of varying sizes demonstrated sharp drops in verbal interrelations when the group reached nine and seventeen members, concluding that five to eight members is optimal for patient participation. Here again, however, the nature and goals of the group in question determine optimal size.

Bond (1984) examined the role group size had on the degree of norm regulation within the group. Group norms are shared understandings among group members regarding appropriate and inappropriate behaviours. Factors that reflect norm regulation include the extent of the diversity of opinion, compliance on issues related to attendance, participation and confidentiality. These factors are related to the degree of normative conflict in a group. Larger groups, owing simply to their greater numbers, are more likely to have a diversity of opinion that can result in conflict. Bond found that in the case of positive regulation, there was a significant nonlinear relationship with group size. The moderate sized groups (five to six) achieved the greatest positive norm regulation. He speculated that a group with five to six is optimal for the development of positive norm regulation, balancing off the inhibiting factor of the awkwardness of a restricted range of behaviour of a small group and exploiting the dynamics of the group form while keeping conflict among participants manageable by the therapist.

Fettes & Peters (1992) considered the impact of group size for the delivery of programs to address bulimia. They found a positive association between outcome and the number of subjects per group, but that association was not significant. They concluded that group

psychotherapy for bulimia can be effective when conducted with high client-to-therapist ratios. They warned, however, that large groups may have a harmful long term effect on service providers by increasing 'burn out', thus reducing efficacy and efficiency in the long term.

Thorn and Kuhajda (2006) suggest that groups for dealing with chronic pain would ideally comprise between five to seven patients. They favour limiting the size to five because they believe it is sufficient to facilitate interaction among group members while providing enough time for each patient to be heard.

In their recommendations for group therapy for depression, Hollon and Shaw (1979) stated that six participants would appear to be the maximum number practical for a single therapist to handle. Other authors support numbers close to this size. Scott and Stradling (1990) examined small group cognitive therapy for depression and compared the results to individual therapy. They found that group therapy was as effective as individual therapy and that treatment gains were still demonstrated after six months. They did not find that increasing the group size from 6 to 8 diminished the effectiveness of the therapy. They calculated that for the average group size of six patients, there was a saving of 42% of therapist time, and for eight patients that figure would be 50%. They concluded that group therapy was more efficient than individual.

In Weis' (2003) review of support groups for cancer patients he noted that the number of members in groups ranges from five to a maximum of twelve members. The optimal group size, he stated, has been shown to be about eight members.

McCaughrin and Price (1992) completed research on the impact of various characteristics of substance abuse treatment programs on outcomes. They reported that smaller groups (lower case loads and smaller patient to staff ratios) was one feature associated with superior treatment outcomes. Similar results were confirmed by Broome, Flynn, Knight, and Simpson (2007) in their large scale study of program characteristics and their impact on program effectiveness. They concluded that larger capacity programs appear to be less productive environments for both clients and staff, as underscored by the lower sense of efficacy ($r = -.26$), professional community ($r = -.14$), and poorer climate ($r = -.08$) that prevails there. This suggests that the barriers to interaction and greater workload may outweigh any potential resource advantage associated with increased size. They advise that the challenge that faces programs is to work toward an optimal size, neither too small nor too large, to balance the benefits of efficiency and social interaction.

An evaluation of a national offender substance abuse program (OSAP) in CSC provided a natural experiment with which to look at the impact of group size on offender outcomes. The researchers were able to capitalize on the fact that the OSAP program was administered to 20 consecutive groups of offenders with groups ranging in size from 9 to 20 offenders. Four categories of group size were created: (1) average group size of 12 (range = 9 to 14); (2) average group size of 16 (range = 15 to 17); (3) average group size of 18 (no combining of other group sizes); and (4) average group size of 20 (range = 19 to 20). The re-admission rates for each of the four groupings increased according to the average size of the group. Average group sizes of between 18 and 20 offenders had re-admission rates of 34% and 33%, respectively, compared to a smaller average group size of 12 (re-admission rate of 27%). Although the differences were not statistically significant, the authors claimed that there was a trend indicating that re-admission rate increased with increasing group size (there is however, the possibility that the lower numbers who completed some of the groups included those who remained after the higher risk or less motivated offenders had dropped out, thus distilling those with outcomes that are more likely to be positive). The authors concluded that the findings suggest that an effort to increase the number of participants in a group will impact negatively on post-release success.

Delivering a group correctional program within a correctional setting presents the challenge of adequately delivering program material to a unique population. Ross et al. (2008) suggest that working effectively with a large group of offenders many of whom may have learning problems, language barriers, brain injury, personality disorders and come from very diverse cultural backgrounds may be beyond the scope of any one therapist. The demands of processing a group with so many multiple learning needs has the potential to adversely affect both the program facilitator and the participating offenders. For this reason, Ross, Polaschek & Ward (2008) have suggested that working with ten offenders may be too many for one therapist to effectively handle. In a recent survey of ten experienced program delivery facilitators in CSC, nine out of ten noted that an ideal group number for a group led by one facilitator is fewer than eight. Most believed that a group should be between six to eight members. Most acknowledged that with two facilitators groups could have ten to twelve members.

Group size: Summary

This brief review looked at recommendations for program group size from various sources. These sources and their recommendations are compiled in Appendix A. With few exceptions, reviewers or researchers recommend groups of fewer than ten participants. Although the empirical literature comparing larger with smaller groups is scant, the consensus of opinion across practitioners is impressive. Optimal group size depends on several variables including the type of program delivered, the length of the program, the profile of the clientele, and the demands placed on the facilitator. The effective delivery of correctional programs requires that each participant must be actively involved in role plays, practice skills and receive feedback from the facilitator. The group content touches on very personal material and requires the application of new ways of thinking and behaving in high risk situations. The participants generally represent a population with multiple problems that affect their learning and come from ethically and linguistically diverse backgrounds. It is recommended, therefore, that for the delivery of these program where there are so many challenges faced by facilitators the number of participants in a group with one facilitator should not exceed ten and should be lower for groups with very high needs offenders. For programs that are educational and didactic, that is, those that are purely information-based, group size can probably be larger without having a negative impact on effectiveness.

CONTINUOUS INTAKE OR MODULARISED FORMAT PROGRAM DELIVERY

Another correctional program characteristic to be considered is the viability of a modular program format. Sometimes referred to as open group programs, this style of delivery offers flexible entry so that offenders are able to start a program when they are ready without having to wait to start at the beginning when the program comes available. This format could include entry at the beginning of a new module or the most flexible version will allow for entry at any point in the program.

The advantage of running open group interventions that allows for the accommodation of participants as soon as they are available for the program is that it potentially results in shorter and more manageable waitlists. Moreover, continuous intake can facilitate participants learning from each other as the experienced participants can assist newcomers as they enter the program (Marshall & Williams, 2001).

Despite these advantages, closed groups (i.e., those programs which do not have flexible entry and whose participants all start and end the intervention at the same time) also offer some advantages. Program entry is often closed in order to maintain a better sense of cohesion amongst group participants (CSC, n.d.). Many of CSC's programs are designed in such a way that learning the concepts and skills is cumulative, with each session building on the previous one. Programs that have not been designed to allow continuous entry but use the format anyway place a lot of demands on the facilitator to help new participants catch up. This can also irritate the existing group participants who have already reviewed the material and can be stressful for the incoming participant. While both formats bring their benefits, unfortunately, there is not enough substantiated evidence to suggest which format is more appropriate in successfully addressing offender risk, need and responsivity (Marshall & Williams, 2001). In the end, the decision to adopt one format over another will depend on a combination of factors including the profile of the participants, the design of the program and the regime at the site.

One example of a CSC program designed with continuous intake is the Women Offenders' Substance Abuse Program (WOSAP). This program consists of three modules, two of which are delivered as continuous intake. The first is a low intensity module that is open to all women offenders and delivered on a frequent basis so there is no immediate necessity to offer this module with continuous intake (Sherri Doherty, personal correspondence, March 25, 2009).

The first cycle of the WVPP was facilitated with continuous intake in order to reduce the length of time women would have to wait for program admission (CSC, 2008a); however, it was found in the first phase of the pilot that adding participants during the program cycle caused disruption, resistance and affected the cohesiveness of the group as the women were not all at the same stages. Overall, it was decided that continuous intake was not beneficial for high risk/high needs women offenders and the program is no longer being offered on a continuous entry basis for the rest of the pilot phase (CSC, 2008b). Similarly, administrative problems were experienced with efforts to launch the Moderate Intensity Violence Prevention (MIVPP) program in a modular format. Consistent with the decisions made by on the Women's Substance Abuse Program, the MIVPP program is now being run only as a closed group program (Yazar, 2008).

Survey of facilitators on modularised program delivery in CSC

Since there is little empirical evidence to commend one format over the other we have designed a brief piece of research that involved interviewing facilitators within CSC who have used both the closed group and open group formats. The description of the survey and the results are presented below.

Method

Ten telephone interviews were conducted with experienced correctional program facilitators. Their responses were coded and later analysed. The questions to be posed were sent to the facilitators prior to the interview to save on interview time. All the facilitators had at least 2 years of experience within CSC and some had over 15 years of program experience (Mean = 8.5 years). All had delivered the standard CSC programs as well as versions of the modularised program format at least twice. All regions were represented although the greatest number of interviews was conducted with facilitators from the Prairie region. Six respondents delivered programs in the institutions and four in the community. The type of programs delivered by respondents that involved a modularised or continuous entry format were: Community Maintenance (4), Violence Prevention Program (2) and Women Offenders' Substance Abuse Program (4).

Results

Table 1 presents the frequencies of the main responses provided by the participating facilitators to the question, "What are the advantages of a modularised format?" The most common advantage cited for the modularised format is the reduction in wait times for offenders (N = 9) and increased flexibility to tailor the program to the specific needs of the offender (N = 4).

Table 1

Advantages of a Modularised Program Delivery Format

Positive features of a modularised program delivery format	Number agreed (%)
1. Reduces wait times/offender can start program right away	9 (90%)
2. Increased flexibility/can better tailor program to meet the needs of the offender (i.e. do not have to assign the entire program, can focus only on necessary modules)	4 (40%)
3. Having new members join group can have positive effect on group dynamics (roles do not become fixed/reduces impact of negative members)	2 (20%)
4. Existing members can model acceptable rules/expectations/skills for new members	2 (20%)
5. Offender can leave the program after a module and then come back at a later date without having to redo entire program	2 (20%)
6. Allows offenders to retake certain modules if needed, without having to retake entire program	1 (10%)
7. New participants joining group increases learning and motivation for others/ seeing older members graduate and succeed is motivating for new members	1 (10%)
8. Having new members join provides opportunity to practice skills of meeting new people and adapting to new environments	1 (10%)
9. Works well in a multilevel facility, as people are continuously rotating anyway	1 (10%)
10. Report writing is spread out, does not need to be completed all at once	1 (10%)

Table 2 presents the most common problems that facilitators noted with the modularised format. The most frequently cited problems are: Increased workload/report writing (N = 9); Disruptive to group dynamics/group cohesion (N = 8) and Challenge to constantly repeat information and bring new members up to speed when they join (N = 6).

Table 2

Disadvantage of a Modularised Program Delivery Format

	Issues with delivery of a modularised program delivery format	Number agreed (%)
1.	Increase in workload/report writing	9 (90%)
2.	Disruptive to group dynamics and cohesion/reduces trusts/reduces level of sharing and participation	8 (80%)
3.	Must repeat information every time new member joins/challenge to bring new members up to speed quickly	6 (60%)
4.	Modules build on each other and are not self-contained	2 (20%)
5.	Harder to accommodate different skill levels/different needs of the group when members constantly change	2 (20%)
6.	Building motivation is more challenging	1 (10%)
7.	OMS does not accommodate for modular report writing/not able to track modules in OMS	1 (10%)
8.	"Sunset clause" (whereby all modules need to be completed within a specified period of time) should be changed. Not always feasible/realistic for offender to complete in timeframe/can lead to higher incompletion rates	1 (10%)
9.	Increased risk of burnout for facilitators	1 (10%)
10.	Hard to track completions if not on top of referrals	1 (10%)
11.	Hard to stop program as new members are constantly joining	1 (10%)
12.	Format is confusing for offenders/ hard for them to keep track of where they are in their program	1 (10%)

When asked which format they prefer delivering, 50% of the facilitators said they prefer the standard format; 30% said that both formats had their strengths and 20% preferred the modularised or continuous entry format. Although this was a small sample size there appeared to be clear difference in preference of format based on site. Facilitators working in the institutions

preferred the standard closed entry format (67%) while those in the community were ready to deliver either format.

Program format: Summary

Despite its challenges, the modularised format does provide flexibility and the potential to tailor program delivery to individual offender need. Based on interviews and recommendations from facilitators the following circumstances are those in which the format works best:

1. When the group is relatively homogenous, i.e., participants have similar offence histories or criminogenic needs. (It should be noted, however, that the CMP is able to integrate offenders from diverse background into a continuous entry program);
2. When the group participants are *not* high risk or high need;
3. When the participants come from a previous program background so that the material is not entirely new to them;
4. When the program is offered in the community.

Obviously, when all four criteria are met the continuous entry or modularised format has ideal conditions in which to be implemented. Using a modularised program delivery format in the institutions in CSC has proven to be very difficult. Administratively, it is unlikely that an offender who completes one of the modules at one institution and is transferred out can expect to pick up the same program at the right time to complete the next module. Monitoring of compliance on report writing and program completion rates is also difficult. Continuous entry in the institutions poses another set of problems when high risk or high needs offenders react negatively to the constant integration of new participants. It should be noted that there are successful exceptions to this. For example, a continuous entry option (or rolling program) has been offered to sex offenders in the British Prison Service for several years and those practionners find the format manageable. Sex offenders, however, are generally recognised as more motivated and more compliant than offenders with other offence patterns. One alternative to a complete modularised program format is a modified modularisation that could be implemented in an institutional setting. This would involve offenders in an initial generic module common to all program approaches and offence patterns. Such a module would introduce

offenders to the group program process, the vocabulary of programs and help them acquire a basic understanding of their offence patterns. Similar brief interventions to build motivation to participate in further programming has been reviewed in the literature and found to improve later program completions (Burke, Arkowitz & Mencola, 2003).

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APPENDIX A

GROUP SIZE

Author	Report	Date	Group size recommendation
CSC	Specific guidelines for methadone maintenance treatment. Section F: Substance abuse intervention http://www.csc-scc.gc.ca/text/pblct/methadone/f-eng.shtml	2003	-maximum group size of 10
McKisack,C. & Waller, G.	Factors influencing the outcome of group psychotherapy for bulimia nervosa. International Journal of Eating Disorders, 22(1), 1-13	1996	-group psychotherapy for eating disorders can be effective with large group numbers if conducted in efficient manner -however, large group size may negatively affect attendance rates and group cohesion
Linhorst, D.	Summary of key findings of a process evaluation of the Ozark Correctional Center drug treatment program. U.S. Department of Justice http://www.ncjrs.gov/pdffiles1/nij/grants/181647.pdf	March 8, 2000	-optimal group size 12, maximum 16
John Howard Society	Perspectives on Canadian Drug Policy http://www.nald.ca/library/research/drugs/perspect/volume2/volume2.pdf	2004	-group size should be linked to program intensity, characteristics of participants, and experience of deliverers. -groups size should be no less than 8 and no more than 12
CSC	The offender substance abuse program pre-release program: Analysis of intermediate and post-release outcomes http://www.csc-scc.gc.ca/text/rsrch/reports/r40/r40e_e.pdf	1995	-program facilitators trained by CSC are trained to limit group size to 10 offenders -offender rates of re-admission back into custody increased according to program group size.
Morrison, N.	Cognitive group therapy: Treatment of choice or sub-optimal option? Behavioural and Cognitive Psychotherapy, 29, 311-332	2001	-group size should range from 6 to 12 -in larger group sizes, care must be taken to avoid development of sub-groups
Satterfield, J.	Integrating group dynamics and cognitive-behavioural groups: A hybrid model. Clinical Psychology: Science and Practice, 196	1994	-therapy group should typically consist of 6 to 10 members, based on clinical experience of therapist and pragmatic limitations -research not yet verified optimal number of group members
Bond, G.	Positive and negative norm regulation and their relationship to therapy group size. Group, 8(2), 35-44.	1984	-small groups achieved more norm regulations than larger groups.
Erickson, R.	Inpatient group psychotherapy: A survey. Clinical Psychology, 2, 137-151	1982	-clinical custom is 8 members
Yalom, I	Theory and Practice of Group Psychotherapy (3rd ed.) New	1985	-8 is optimal number of group members

	York: Basic Books		
Weis, J.	Support groups for cancer patients. Supportive Care in Cancer, 11, 763-768	2003	-optimal group size is 8, but can range from 5 to 12
Fulkerson, C., Hawkins, D. & Alden, A.	Psychotherapy groups of insufficient size. International Journal of Group Psychotherapy, 31, 73-81.	1981	-groups of 5 were most satisfying to members -5 proposed as minimum number needed to foster therapeutic group process -group should not exceed 10
Rutan, J. & Stone, W.	Psychodynamic group therapy. Lexington, MA: Collamore	1984	-optimal groups size will depend on considerations of therapist comfort, meeting length, room size, theoretical orientation.
Broome, K.M., Flynn, P. M, Knight, D.K.& Simpson, D.D	Program Structure, Staff Perceptions, and Client Engagement in Treatment. *Journal of Substance Abuse Treatment.* 33(2), 149--158.	2007	- larger capacity programs appear to be less productive environments for both clients and staff, -
Castore, G. F	Number of verbal interrelationships as a determinant of group size. *Journal of Abnormal and Social Psychology*, 64(4), 56-8.	1962	-demonstrated sharp drops in verbal interrelations when the group reached nine and seventeen members, -five to eight members is optimal for patient participation.
Hollon, S.D. & Shaw, B.F.	Group Cognitive Therapy for Depressed Patients. In, A.T. Beck, A.J. Rush, B.F. Shaw and G. Emery (eds), *Cognitive Therapy of Depression*, Guilford Press, New York.	1979	-six participants is maximum number practical for a single therapist to handle
Levine, B.	*Group Psychotherapy: Practice and Development.* Englewood Cliffs, NJ: Prentice-Hall.	1979	-5 to 7 clients per group
McCaughrin W.C. & Price R.H	Effective outpatient drug treatment organizations: Program features and selection effects. *International Journal*	1992	-smaller groups are associated with superior treatment outcomes

	of the Addictions, 27(11), 1335–1358.		
Ross, E.C., Polaschek, D.L.L., & Ward, T	The therapeutic alliance: A theoretical revision for offender rehabilitation. *Aggression and Violent Behavior, 13,* 462-480.	2008	-working effectively with a large group of offenders many of whom may have learning problems, language barriers, brain injury, personality disorders and come from very diverse cultural backgrounds may be beyond the scope of any one therapist.
Scott, M. J., & Stradling, S. G	Group cognitive therapy for depression produces clinically significant change in community-based settings. *Behavioural Psychotherapy, 18,* 1–19.	1990	-group therapy was as effective as individual and treatment gains were still demonstrated at 6 months. -increasing the group size from 6 to 8 did not diminish the effectiveness of the therapy. -for the average group size of six patients, there was a saving of 42% of therapist time, and for eight patients that figure would be 50%
Slavson, S. R.,	Are there "group dynamics" in therapy groups? *International Journal of Group Psychotherapy, 7,* 131-154.	1957	-defines a group as having three or more members - a minimal number of individuals is necessary in order to foster meaningful relationships. -the size of psychotherapy groups often ranges between five to ten participants
Thorn, B. & Kuhajda, M	*Group cognitive therapy for chronic pain;* Journal of Clinical Psychology, 62(11), 1355-1366.	2006	-5 to 7 patients per group

Exhibit M

Center for Substance Abuse Treatment. Brief Interventions and Brief Therapies for Substance Abuse. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); 1999. (Treatment Improvement Protocol (TIP) Series, No. 34.)

Chapter 9—Time-Limited Group Therapy

Group psychotherapy is one of the most common modalities for treatment of substance abuse disorders. Group therapy is defined as a meeting of two or more people for a common therapeutic purpose or to achieve a common goal. It differs from family therapy in that the therapist creates open- and closed-ended groups of people previously unknown to each other. The lessons learned in therapy are practiced in the normal social network. Although efficacy research on group therapy for substance abuse disorder clients has been limited, there is substantial anecdotal and clinical evidence that it can have a dramatic impact on participating clients. In TIP 8, *Intensive Outpatient Treatment for Alcohol and Other Drug Abuse* (CSAT, 1994a), group therapy is cited as the treatment modality of choice for a variety of reasons. In clinical practice, group psychotherapy offers individuals suffering from substance abuse disorders the opportunity to see the progression of abuse and dependency in themselves and in others; it also gives them an opportunity to experience their success and the success of other group members in an atmosphere of support and hopefulness. The curative factors associated with group psychotherapy, defined by Yalom, specifically address such issues as the instillation of hope, the universality experienced by group members as they see themselves in others, the opportunity to develop insight through relationships, and a variety of other concerns specific to the support of substance-abusing clients and their recovery (Yalom, 1995). For many years, Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) have recognized the importance of breaking the isolation associated with substance abuse, while at the same time connecting individuals with others whose common purpose is to dramatically change their lives through connection and community. From these perspectives, time-limited group psychotherapy offers potent opportunities to maximize the treatment energies of both therapist and client.

Research suggests that most client improvement as a result of group therapy occurs within a brief span of time--typically, 2 or 3 months (Garvin et al., 1976). This research implies that short-term therapy can be as successful as long-term therapy in promoting change. Short-term group therapy should be more goal-oriented, more structured, and more directive than long-term group therapy. Some therapists also believe the experience should be intensified through the use of high-impact techniques such as psychodrama (see discussion later in this chapter).

Appropriateness of Group Therapy

Groups can be extremely beneficial to individuals with substance abuse problems. Levine and Gallogly have noted that groups for alcohol-dependent clients

- Help reduce denial, process ambivalence, and facilitate acceptance of alcohol abuse
- Increase motivation for sobriety and other changes
- Treat the emotional conditions that often accompany drinking (e.g., anxiety, depression, hostility)
- Increase the capacity to recognize, anticipate, and cope with situations that may precipitate drinking behavior
- Meet the intense needs of alcohol-dependent clients for social acceptance and support (Levine and Gallogly, 1985)

Many beneficial effects happen more easily in groups than in one-on-one therapy. Group members confront each other, do "reality checks," practice reflective listening, mirror each other, and help each other reframe key issues. Individuals in earlier stages of dependence can witness what later stage experiences are like (and by inference where they could progress if they do not reduce their use). Often, group members can be more effective than the therapist in confronting a participant who is not facing an important issue (e.g., the client who believes she can quit drinking and still smoke marijuana).

Group Effects

One Consensus Panelist recalls a therapy session in which a member arrived, furious and hostile, shouting, "How much longer do I have to do this stupid program? None of it works anyway!" Another group member immediately asked, "So, how does the anger keep things going for you?" In the ensuing conversation, the group learned that the angry member's ex-wife had just sent him a bottle of expensive whiskey with the following note: "Dying to get together again." This revelation, and the supportive group listening that followed, occurred largely without verbal involvement from the therapist.

Group Therapy Approaches

Several kinds of groups fall under the spectrum of time-limited group therapy. In the broadest sense, two fundamental models help define categories of group interventions: the process-sensitive approach and the directive approach. The *process-sensitive* group approach finds its direction in the traditions of analytical theory and has a significant range of expression. Depending on the theoretical base and leadership style of the facilitator, a process-sensitive group can examine the unconscious processes of the group as a whole, utilizing these energies to help individuals see themselves more clearly and therefore open up the opportunity for change. This "group-as-a-whole" approach is best exemplified by the work of Bion, who sees healing as an extension of the individuals within the group as the group comes to terms with a commonly shared anxiety (Bion, 1961).

Yalom offers a significant contrast to these group-as-a-whole interventions through his interactional group process model (Yalom, 1995). By attending to the relationships within the group and helping individuals understand themselves within the relational framework, an interactional group process provides individuals with significant information about how their behavior affects others and how they are in turn affected by other members. In addition, focusing energy on the relationships within the context of group, the leader is careful not to assume a central role but, rather, recognizes that the group itself becomes the agent of change, with the leader supporting the process but not initiating it. Attention is focused on the nature and growth of the relationships manifested in the "here and now" as the group takes place.

The second approach, and one better known to alcohol and drug counselors, is a dramatically different form of group therapy, often referred to as a *directive approach.* It offers structured goals and therapist-directed interventions to enable individuals to change in desired ways. A short-term directed group may be used to address major issues of concern for clients with substance abuse disorders and to facilitate self-discovery and growth through appropriately sequential activities. Because the therapist is "central" and in charge, this type of group depends less for success on group members and their ability to create a cohesive sense of belonging.

Compared with the process-sensitive group, which sees the cohesive power of the group as a primary curative factor, the directive approach addresses specific agenda items in a logical order with greater emphasis on content as the primary source of effective change. The directive approach, therefore, is perhaps more likely to be effective with those in early recovery. A potent example of directive, time-limited group experience, developed by Maultsby and Ellis, is known as Rational Behavioral Training (RBT) (Maultsby, 1976). This cognitive-behavioral therapy takes place over 13 weeks, one session per week. It uses fundamental cognitive-behavioral interventions and the clients' growing awareness of their ability to control their own belief systems and self-talk and thus control their affective states. Clients are asked to share homework assignments and bring real-life situations into the group for exploration and examination. There is little effort in this group modality to analyze or direct energy to the relationships within the room. RBT affords a short-term intervention to develop the client's skill in controlling emotions. The inference is that individuals who experience their emotional world as controllable will no longer need to use substances to exert "external" control.

It is important to note that in any kind of group therapy, relationships are formed and process issues experienced. Even within the context of a cognitive-behavioral approach such as RBT, which is more educational than therapeutic, issues of process invariably arise. The experienced therapist can use the relationships within the group even in a psychoeducational framework to support and enhance the treatment experience. Whenever the opportunity arises, the group facilitator should help connect members to members. When shared histories are acknowledged, the sense of belonging is increased, and greater cohesion takes place. Cohesion may seem less important in a directive psychoeducational group. However, because of the very nature of substance abuse disorders, a feeling of belonging to a group committed to its own health rather than its own destruction is an important motivator for many clients.

There has been significant debate within the field regarding the pros and cons of heterogeneous and homogeneous groups. The heterogeneous group, in which members have a variety of diagnoses, offers greater complexity and more opportunities for a wide range of relationships, which can be extremely helpful to many clients. However, the homogeneous group, particularly when composed of clients with substance abuse disorders, tends to lend itself more quickly to issues of cohesion and safety. For this reason, homogeneity has particular utility in the time-limited group intervention.

An important issue within the context of the homogeneous substance abuse disorder group, whether time limited or not, is the group's tendency to bond around its history of substance abuse rather than its commitment to recovery. Although the general focus of substance abuse treatment is on the abuse itself, the focus also must include issues of living within the context of the group. Through modeling and gentle persuasion, the group facilitator can broaden the scope of a substance abuse treatment group to include relationships, concerns about daily living, and newly discovered personal integrity. Such are the struggles of all people in all circumstances. The movement from "what is wrong with us" to "how do we build better lives?" is an important transition in the time-limited group, whether psychoeducational or process sensitive.

Group therapy can be conducted within the context of almost any theoretical framework familiar to the therapist and appropriate to group goals. Often the therapist will work with two or more models at the same time. The theoretical bases supporting both process-sensitive groups and a more directive style can be combined effectively to address substance-abusing clients.

Theories of Group Therapy

The following group therapy models are discussed in this section:

- Brief cognitive group therapy
- Cognitive-behavioral group therapy
- Strategic/interactional therapy
- Brief group humanistic and existential therapies
- Group psychodynamic therapy
- Modified dynamic group therapy (MDGT)
- Modified interactional group process (MIGP)

The first five are summarized below and discussed at greater length in Chapters 4 though 7 of this TIP. MIGP, considered a highly effective type of brief group treatment for substance abusers, is discussed in detail in this section. The 11 therapeutic factors identified by Yalom as the basis of successful group therapy are presented at the end of this section (Yalom, 1995).

Brief Cognitive Group Therapy

Cognitive techniques work well in group therapy. The group is taught the basics of the cognitive approach, then individual members take turns presenting an event or situation that tempted them to abuse substances. Other members assist the therapist in asking for more information about the client's thoughts on the event and how it did or did not lead to substance abuse (or to negative feelings that might have led to use). Finally, the group members provide the client with alternative ways of viewing the situation. Chapter 4 discusses brief cognitive therapy in more depth.

Cognitive-Behavioral Group Therapy

The cognitive-behavioral approach focuses the group's attention on self-defeating beliefs, relying on group members to identify such beliefs in each other. The therapist encourages group members to apply behavioral techniques such as homework and visualization to help participants think, feel, and behave differently. Chapter 4 discusses brief cognitive-behavioral therapy in more depth.

Strategic/Interactional Therapies

The strategic therapist uses techniques similar to those used in family therapy to challenge each group member to examine ineffective attempted solutions. The therapist encourages group members to evaluate and process these attempted solutions and recognize when they are not working, then engages the group in generating alternative solutions. The therapist also works, where appropriate, to change group members' perceptions of problems and help them understand what is happening to them. Typically, the therapist guides the process, while members offer suggestions and encouragement to each other as they identify and implement effective solutions. To address the problem of substance abuse, the group will often be directed to examine problems that might result in substance abuse and reframe their perceptions of these problems.

The principles of solution-focused therapy are the same for group treatment as for individual therapy. These include client goal-setting through the use of the "miracle" question, use of scaling questions to monitor progress, and identification of successful strategies that work for each client. (These techniques are defined in Chapter 5 of this TIP.) The therapist works to create a group culture and dynamic that encourages and supports group members by affirming their successes. At the same time, the therapist works to restrain client digressions ("war stories") and personal attacks. The therapist tries to challenge group members--all of whom, unlike in family therapy, are seen as "customers"--to take action to create positive change. Chapter 5 discusses brief strategic/interactional therapies in more depth.

Brief Group Humanistic and Existential Therapies

Several approaches fall within this category. The transpersonal approach is useful in meditation, stress reduction, and relaxation therapy groups and can be adapted for clients who have substance abuse disorders. In dealing with issues of religion or spirituality, it is helpful to have other people talk about their perspectives. In this way, past degrading or punitive experiences related to organized religion can be redefined in a more meaningful and useful context.

Gestalt therapy in groups allows for more comprehensive integration in that each group member can provide a piece of shared personal experience. Each group member plays a role in creating the group, and all of their perceptions must be taken into account in making a change. Role-playing and dream analysis in groups are practical and relevant exercises that can help clients come to terms with themselves.

One of the most influential contemporary experts on group therapy, Irvin D. Yalom, considers himself an existentialist because he is not concerned with past behavior except as it influences the "here and now." A summary of his existential approach is presented in *The Yalom Reader* (Yalom, 1997) and consists of three sections: (1) therapeutic factors in group therapy, (2) a description of the "here and now" core concept, and (3) therapy with specialized groups, including a chapter on group therapy and alcoholism. This last chapter details specific techniques to diminish anxiety but still permit the group to maintain an interactional focus--for example, writing a candid summary of the session and mailing it to members before the next meeting. Yalom has worked closely with the National Institute on Alcohol Abuse and Alcoholism to apply basic principles of group therapy to alcohol abusers, and his ideas are

applicable to those with other substance abuse disorders as well. See Chapter 6 for more discussion of humanistic and existential therapies.

Group Psychodynamic Therapy

Group psychodynamic therapy enables the group itself to become both the context and means of change through which its members stimulate each other to support, strengthen, or change attitudes, feelings, relationships, thinking, and behavior--with the assistance of the therapist.

The context sought is one in which the group becomes an influential reference group for the individual. Participation of members according to their abilities leads to some degree of involvement of each in pursuing individual and group goals. The process of goal-setting and clarification for expectation provides an agreed upon framework for meeting of mutual needs. This, in turn, contributes to the building of cohesive forces (Roberts and Northen, 1976, p. 141).

Chapter 7 discusses psychodynamic therapy in more depth.

Modified Dynamic Group Therapy

On the basis of psychodynamic theory, a modified dynamic group therapy approach was defined for substance-abusing clients (Khantzian et al., 1990). Viewing substance abuse disorders as an expression of ego dysfunction, affect dysregulation, failure of self-care, and dysfunctional interpersonal relationships, MDGT falls in the intermediate length of time-limited group psychotherapy, with its basic structure defined by two meetings per week over a 26-week format. Based primarily on interventions to address cocaine addicts, MDGT focuses energy on the individuals within the group and conceptualizes the basic origins of substance abuse disorders as expressions of vulnerabilities within the characterological makeup of the client (Khantzian et al., 1990). As a supportive, expressive group experience, MDGT provides substance-abusing clients the opportunity to evaluate and change their vulnerabilities in four primary areas: (1) accessing, tolerating, and regulating feelings; (2) problems with relationships; (3) self-care failures; and (4) self-esteem deficits. Congruent with this understanding of the origins of substance abuse, MDGP emphasizes safety, comfort, and control within the group context. Group facilitation is defined primarily by the therapist's ability to engage and retain substance abusers in treatment by providing structure, continuity, and activity in an empathic atmosphere.

This supportive approach creates an atmosphere of safety, allowing the client to move away from the safety of the known behavior associated with substance abuse and into the less known world of recovery. As in other group experiences, this group theory encourages issues of universality as a means of overcoming isolation, while at the same time dealing with a common shame so often encountered in the substance-abusing client. Unlike interpersonally focused process groups, which look more at relational concerns, MDGT places greater emphasis on the clients' growing understanding of their characterological difficulties and/or deficits, not entirely dissimilar to issues identified in self-help groups such as AA and NA.

Modified Interactional Group Process

Time-limited MIGP is a synthesis of the work of several theorists (Flores, 1988; Khantzian et al., 1990; MacKenzie, 1990; Yalom, 1995). MIGP is distinguished in a variety of ways from the psychoeducational groups so important in substance abuse treatment. As referenced in TIP 8, *Intensive Outpatient Treatment for Alcohol and Other Drug Abuse* (CSAT, 1994a), both process-sensitive and psychoeducational group learning experiences are often necessary for the substance-abusing client. Even in a short-term, intensive treatment experience, combining a psychoeducational group and a process group has significant clinical impact. The psychoeducational group is more directive, with the therapist as the central figure. However, as will be explained, it is important to utilize the energy of group process itself, even in a psychoeducational format, to enable clients to make connections and build relationships that will support their recovery.

The features that distinguish MIGP from a more traditional interactive process are the greater activity of the leader and the sensitivity to the development of a safe atmosphere that allows group members to examine relational issues

without excessive emotional contagion. The atmosphere of safety is greatly enhanced by the therapist's adherence to group agreements or group norms and by the continued reinforcement of these agreements throughout the group process. The importance of confidentiality, the group's accepting responsibility for itself, and self-disclosure are all supported by the facilitator. Procedural agreements, including beginning and ending the group session on time and ensuring that each member has a place within the circle, with any absences addressed, are part of the development of the safe environment.

In this process, the therapist helps the clients recognize that they are the primary change agents. The group becomes a safe place both to give and to receive support. Although traditionally substance abuse groups tend to be confrontative, MIGP is far more supportive. This stems from the belief that denial and other defense mechanisms become more rigid when a person is attacked. Consequently, group members are encouraged to support one another and look for areas of commonality rather than use more shame-based interactive styles that attempt to "break through denial."

Intellectualization and MIGP

Many therapists are told that clients should get in touch with their feelings and experience "what is in their gut." Although awareness of the affective life is important to everyone, it is precisely the regulation of emotions that many substance-abusing clients have difficulty addressing. Consequently, although emotional exploration is encouraged within the context of MIGP, the facilitator is constantly monitoring the affective energy within the group, taking steps to break emotional contagion should it begin. In a particularly intense group experience, the therapist may ask the group as a whole to take a step back and look at what just took place. In this way, the group not only learns from its shared life but also experiences its ability to control intense emotional responses. This consistent effort to reduce high levels of anxiety or emotional catharsis and to prevent them from dominating the group is another hallmark of MIGP.

General issues in MIGP

Following the insights of Flores and Mahon, MIGP focuses special attention in four areas of the client's life: gratification and support, vulnerability of self, regulation of affect, and self-care (Flores and Mahon, 1993). These four areas receive particular attention because they represent areas of vulnerability within the substance-abusing client that can easily lead to relapse and undermine recovery.

Gratification and support

Many clients come to treatment with profound issues of guilt and shame. Therefore, they lack the ability to give themselves gratification and support in the face of change. The active leadership style of MIGP allows group members to openly support one another and at the same time provides each group member with attention from the leader that leads to higher levels of gratification. Affirming group members' willingness to share and support one another is an essential ingredient in time-limited group work. It creates a positive atmosphere and increases levels of safety and cohesiveness, which further supports the change process.

Vulnerability of self

Substance-abusing clients often enter treatment with shattered self-esteem. Defending against this internal vulnerability can become damaging, because clients project their fears onto others. They may try to hide internal vulnerability by appearing hostile and overly self-confident. An atmosphere of safety and empathy enables clients with profound vulnerabilities to enter the process of self-disclosure, through which they become accessible not only to the group but also to themselves. The group facilitator actively encourages such self-disclosure but at the same time emphasizes that individual members need not disclose any issue they are not yet ready to discuss. Clear boundaries and clear group agreements further support the possibility for self-disclosure.

Regulation of affect

Substance abuse disorders can be perceived as the consequences of trying to control one's emotional life with external substances. This points to a failure of internal regulation that makes the client uncomfortable when feeling emotions

that others might consider commonplace. Issues of grief, loss, sadness, and joy can be so affectively charged and linked to the client's past alcohol and drug use that they threaten the client's continued recovery. As mentioned above, the leader's sensitivity to the levels of affective energy in the group is particularly important. Supporting group members to both feel what they are experiencing and at the same time move to a safer and more objective viewpoint regarding those feelings is inherent in MIGP.

Self-care

Substance-abusing clients often present to treatment unaware of internal stresses and pain, having lost sensitivity to physical cues that lead others to the normal self-care functions of daily living. These functions may be as simple as basic hygiene or more complex in terms of boundary setting and relational definitions. Setting boundaries within the group and encouraging heightened sensitivity to self-care are ways in which MIGP addresses this issue. Clients must hear a consistent message that they are worthy of the group's support and, therefore, worthy of their own attention in regard to self-care. All of the above can comfortably be addressed within the context of MIGP, with the leader actively connecting members to members, who support one another on the importance of self-monitoring and care.

Use of Psychodrama Techniques in a Group Setting

Psychodrama has long been effectively used with the substance-abusing client population in a group setting. Wegscheider-Cruse effectively integrated psychodrama as a means to heal family-of-origin issues within the context of addictive behaviors (Wegscheider-Cruse, 1989). The utility of such an intervention seems to be clinically well established. The techniques can help the group move more quickly in terms of self-understanding and relational awareness. The insights gained from the experience of family sculpting (illustrated below) can be worthwhile and potent. However, it is important to stress that psychodrama and other similar expressive therapeutic interventions bring with them a clinical potency that needs to be understood. These interventions can raise anxiety and shame to the point where some clients may be pushed toward relapse or even feel the need to leave treatment to escape the internal conflicts encountered. As with any therapeutic technique, therapists should not utilize such techniques unless they are thoroughly trained and well supervised. Any intervention that has a powerful potential for growth almost always has an equal potential for damage if poorly conducted. Training and appropriate supervision are particularly important with expressive techniques because of their clinical potency.

Psychodrama can be used with different models of group therapy. It offers persons with substance abuse disorders an opportunity to better understand past and present experiences--and how past experiences influence their present lives. This approach encourages clients to relearn forgotten skills, imaginatively change apparent problems that block progress, rehearse new behaviors, practice empathy, and expand their emotional range by confronting feelings that have never been properly dealt with. As clients act, important concepts become real, internalized, and operational that might otherwise be purely theoretical. Changes experienced through acting become accessible to the psyche as part of the lived history of the individual.

Some therapists use psychodrama to help transform internal dynamics that maintain old patterns relevant to substance abuse. For example, one therapist invites group members to list "rules" in their family of origin. These rules may be related to substance abuse (e.g., "Don't ever say that Mother is drunk. She is taking a nap."). After a client describes a situation in which the rule would be invoked, he assigns family roles to other participants, giving them instructions for how they would behave in this situation. The client is encouraged to break the rule--in the case of the "napping" mother, by insisting on bringing the truth into the open--with the verbal encouragement of all remaining group members who are not playing assigned roles. The client's victory--which can be a transformative, powerful experience--is celebrated as the achievement it is. In this example, the individual experiences himself as a powerful truth-speaker rather than the powerless and voiceless participant he perceived himself to be in the past. This new experience can enhance his sense of self-efficacy and help foster change in his own pattern of substance abuse.

In another example of psychodrama, group participants explore "character defects" such as grandiosity or isolation associated with their pattern of substance abuse. The defects are dramatized, with half the group engaged in the dramatization and half sitting as an audience. For example, persons who experience themselves as isolated sit in the

corner or under a table with a "sponsor." The therapist gives them sentences to complete, such as, "I like this corner because..." or "The first time I remember isolating is..." Finally, they are asked to complete the sentence, "I have to get out of this corner because..." The sponsors then gather in a circle and invite the persons they have been supporting to join them, saying, "I want you to join this circle because..." This experience of connection often enhances participants' motivation and ability to change.

A common use of psychodrama in treatment for substance abuse disorders is "sculpting" family members in typical roles and enacting significant situations related to substance abuse patterns. In this process, developed by Papp, family members enact a scene to graphically depict the problem (Papp, 1977, 1983). The physical arrangement of the family members illustrates emotional relationships and conflicts within the family. For example, a family may naturally break up into a triad of the mother, sister, and brother, and a dyad of the father and another sibling. In that case, the therapist might highlight the fact that the mother and father communicate through one of their children and never talk to each other directly.

In yet another form of psychodrama, one person in the group may be asked to give voice to different aspects of her own self that either help maintain dependency or speak for change (sometimes called the "disease" and "recovery" selves). The client might speak from a different chair or position for each of these voices. The intensity of psychodrama often helps compensate for the shorter time span now commonly funded for treatment. Although many participants express concern about acting, the barrier of shyness often drops completely as they enter the process with the assistance of a dynamic and committed facilitator.

Therapeutic Factors

In his classic work, *Theory and Practice of Group Psychotherapy*, Irvin Yalom identified 11 primary "therapeutic factors" in group therapy (Yalom, 1995). Each of these factors has particular importance for clients with substance abuse disorders and can be used to help explain why a group works in a particular way for this client population. These curative factors are present in all group interventions and are listed below.

Instillation of Hope

Many clients come to a treatment setting feeling defeated by life and overwhelmed by their failure to control their use of substances. They feel they have nowhere to go and no possibility for a better outcome in life. When individuals with this life view join a group of people struggling with similar problems, they have the remarkable opportunity of witnessing change in others while at the same time having their own small victories acknowledged and celebrated by group members. Through this process, hope begins to emerge. The energy of hope and the focused attention on this curative factor receive specific attention in the MIGP model.

A variety of exercises can be utilized to further instill hope within substance-abusing clients. Clients can be asked to participate in a visualization exercise where they see themselves in a life without substance use, envisioning particularly how life would be different and better under such circumstances. The group energy fuels this experience and adds the intensity of other clients' support. As with all "guided imagery exercises," the group leader must move with caution. Many substance-abusing clients may not have a picture of life without substances, and consequently such an exercise can be humiliating if not handled sensitively. If the client is unable to visualize, he once again perceives failure. To guard against such potential shaming, the group facilitator can take an active role in the creation of the image, monitoring it for issues of safety with all members of the group as the exercise develops.

Universality

Substance abuse disorders tend to impede relationships and force clients into increased isolation. In a brief group experience, the clients encounter other individuals who have faced similar problems. They become aware that they are not alone in life and can feel tremendous satisfaction in this connection. The sense that their pain is not exclusive or unique and that others with similar problems are willing to support them can be profoundly healing. It helps clients move beyond their isolation, and it gives further energy to hope, which helps to fuel the change process.

Imparting Information

The inevitable exchange of information in a group setting helps members get from one day to the next. Particularly in conjunction with formal psychoeducational groups, MIGP affords group members the opportunity to reflect on what they have learned and at the same time apply that learning within the group setting. The information shared is personal and tends to be experienced as motivational. The client struggling with issues of substance abuse can hear from others how they have dealt with difficult concerns and how they have experienced success. This mutually shared success gives positive energy to the group and encourages change.

Altruism

Fundamental to the human condition is the desire to help others when they are in trouble. Clients struggling with substance abuse disorders tend to be focused on their own difficulties and have a hard time reaching out to help those in need. Group therapy offers the members opportunities to provide assistance and insight to one another. Particularly within the model of MIGP, the facilitator pays great attention to altruistic moves on the part of members. They are celebrated and acknowledged. As individuals recognize that they have something of value to give their fellow group members, their self-esteem rises as change and self-efficacy are supported.

Corrective Recapitulation of the Primary Family Group

This therapeutic factor pertains to the importance of relationships within the client's family of origin, which invariably finds expression within the group experience. "Recapitulation of the family group" happens when a client--both consciously and unconsciously--relates to another group member as if that person is a member of his family of origin with whom he has struggled in the past. This occurrence is clearly a projection, but it can be identified by the leader, and both group members involved can benefit as they investigate new ways of relating that break the old dysfunctional patterns of the family of origin. In a way, the group begins to serve as a substitute family. The group members are the siblings, and the group facilitator is in a parental role. Even in a time-limited group, issues of transference and countertransference may require attention. However, MIGP tends to dilute the transference by "spreading it throughout the group" rather than concentrating it within the dyadic counseling relationship.

Development of Socializing Techniques

Many substance abusers are "field-sensitive" or "field-dependent" individuals who are keenly conscious of the network of specific relationships as opposed to principles or generalizations that apply regardless of context. Group therapy can take advantage of this trait and use the energy of the relationships to facilitate change. As participants engage in relationships, they learn new social skills that can help them break through their isolation and connect with others in more meaningful ways. They also learn how to disconnect, which is equally important given the anxieties often associated with relational loss and grief. The group facilitator may at times deliberately focus on these social skills through role-playing or modeling exercises within the context of the group itself. The healing takes place as the clients take what they have learned and experienced in group and actively generalize it in their lives outside of the group.

Imitative Behaviors

Imitative behaviors are an important source of learning in group therapy. The process of modeling can be particularly important as clients learn new ways to handle difficult emotions without resorting to violence or drug use. Therapists must be acutely sensitive to the important role they play within this context; clients often look to the therapist to model new behaviors as they encounter new situations within the group context. Group members can also learn by imitating other members who are successfully dealing with difficult relational issues. It is helpful for a new group member to witness an ongoing group where people are confronting their problems appropriately, moving beyond old dysfunctional patterns, and forming new relationships that support change. The group becomes a living demonstration of these new behaviors, which facilitates and supports insight and change.

Interpersonal Learning

Groups provide an opportunity for members to learn about relationships and intimacy. The group itself is a laboratory where group members can, perhaps for the first time, honestly communicate with individuals who will support them and provide them with respectful feedback. This interpersonal learning is facilitated by the MIGP model, in that special attention is given to relational issues within the context of group.

Group Cohesiveness

Often misunderstood, group cohesion is a sense of belonging that defines the individual not only in relation to herself but also to the group. It is a powerful feeling that one has meaning in relationships and that one is valued. Development of group cohesion is particularly important in the MIGP model, so that group members feel safe enough to take the risks of self-disclosure and change. The experience of belonging is both nurturing and empowering.

Catharsis

Sometimes group participants will gain a sudden insight through interaction with others, which can cause a significant internal shift in the way they respond to life. Such insights may be accompanied by bursts of emotion that release pain or anger associated with old psychological wounds. This process happens more easily in a group where cohesion has been developed and where the therapist can facilitate a safe environment in which emotions can be freely shared. It is important to recognize, however, that although catharsis is a genuine expression, it is not seen as curative in and of itself. High levels of emotional exchange not addressed in the group can become potential relapse triggers, which endanger the success of individual members. The therapist acknowledges the powerful emotions after the member has shared them but asks the group as well as the member to give those emotions meaning and context within the group. Thus, both the experience of the emotion and the understanding of how that emotion either interferes or supports relationships are healing.

Existential Factors

Existential factors of loss and death are often issues of great discomfort in the substance-abusing population. The brevity of a time-limited group experience forces these issues to the surface and allows members to discuss them openly in a safe environment. Time itself represents loss and also serves as a motivator, as the members face the ending of each group session and of the group treatment experience. As they become more aware of the frustrations of reality and the limits they face, clients can receive support from the group in accepting "life on life's terms" instead of their past patterns of escape.

Using Time-Limited Group Therapy

The focus of time-limited therapeutic groups varies a great deal according to the model chosen by the therapist. Yet some generalizations can be made about several dimensions of the manner in which brief group therapy is implemented.

Assessment and Preparation

Client preparation is particularly important in any time-limited group experience. Clients should be thoroughly assessed before their entry into a group for therapy. In terms of exclusionary issues, persons with severe disorders or those who cannot accept support may need to be given more individual time before a group experience. Also, persons with significant deficits in cognition may not benefit as much from a time-limited group.

Group participants should be given a thorough explanation of group expectations. For an MIGP group, for example, they need to understand their responsibility for speaking within the group and that the primary focus of the group is relationships. A brief explanation of a "here and now" encounter is helpful--the group can become a place where feedback takes place in the "here and now," as members learn how they are affected by the others and how they in turn affect other members. This "here and now" focus brings clients into the present and allows them to deal with real

issues within the group that they can then apply in their daily lives. It also distinguishes MIGP from self-help support groups, which traditionally discourage relational "here and now" interactions.

If time permits, it is particularly effective for group members as they are being assessed and prepared for group to either watch or participate in a practice group as a trial experience. A variety of group tapes are available; however, any program can videotape one of its own groups, with appropriate releases for client permission, to use for instructional purposes. This enables new clients to see what will happen in the group session and lowers anxiety. This intentional effort to make the group safe and reduce its inherent anxiety distinguishes MIGP from a more traditionally interactive process group. Introductions to group can also be provided in a psychoeducational format. Clients learn not only what is going to take place in the group but also why and how the group process brings about healing. The importance of relationships and open communications through self-disclosure and support can be explained.

It is important to recognize that although a significant amount of client preparation takes place before the client ever enters a group, client preparation itself is also a process and not an event. Through continual references to the group agreements and group contracts, the therapist continues to prepare clients as they move into the experience.

Initial Session

Opening sessions for group therapy differ according to the type of group, its specific goals, and the personal style of the therapist. In homogeneous, problem-focused groups, for example, less time is needed to define what group members have in common. Opening sessions typically include the following:

- New group members introduce themselves at the opening session, responding to a simple request such as, "Tell us what led you here." Research suggests that if groups do not explicitly address the reason for each member's participation, more members will drop out (Levine, 1967). In the context of substance abuse treatment, the therapist should therefore initially discuss with group members how substance abuse issues will be addressed so as to ensure that focus is maintained.
- The "locus of control" for the group is clarified. Clients explore whether they believe they have the ability to choose effective actions or if they think of themselves as helpless victims of circumstance. For directive groups, in which the therapist exercises greater control, this process will be shorter than for group process groups, in which group members take turns as leaders.
- Goals for the group (and often for individuals) are clarified.
- The therapist seeks to establish a safe, warm, supportive environment. There may be a need to establish rules to increase safety--for example, that members will not engage in physical contact, will not discuss what was said outside the room, and will give feedback to each other in an agreed-upon manner.
- The therapist helps group members establish connections with each other, pointing out common concerns and problems.

Some therapists ask the group to evaluate the opening session. This may be done orally or in writing. The group's success can be measured through the following questions:

- Was substance abuse discussed?
- Did group members listen to each other?
- Did members cooperate and support each other?
- Did they give feedback?

Later Sessions

Often, to enhance continuity, the therapist will begin the next session by recalling the previous one and ensuring that "leftover" items are addressed. The therapist may ask group members how lessons learned in the group have affected their daily lives. Members may have tried to implement suggestions and found they did or did not work, or they may not have tried to do so at all, which is also an important topic of discussion.

On an inpatient unit with clients going through withdrawal or struggling with coexisting psychiatric disorders, instilling hope is particularly important. For the newest clients on the unit, connecting with others who have just been through a similar difficult experience can be inspirational. Such a therapeutic encounter can also reduce issues of shame, as clients connect with others who both share and understand their journey. In addition, the inpatient group can serve as an example of what treatment will be like after discharge and allow the client to "practice" being in a group. Clients can experience the supportive nature of the group, which will reduce their anxiety about future group involvement. Underscoring the impact of brief group interventions, the inpatient process treatment group remains one of the cornerstones of continued change.

Duration of Therapy and Frequency of Sessions

The preferred timeline for time-limited group therapy is not more than two sessions per week (except in the residential settings), with as few as six sessions in all, or as many as 12, depending on the purpose and goals of the group. Sessions are typically 1 1/2 to 2 hours in length. Residential programs usually have more frequent sessions.

Given the dramatically shortened inpatient and residential stays available under managed health care, some have questioned the utility of a process-sensitive treatment group and are focusing on directive educational groups. Even though clients often do not stay more than 3 to 5 days on an inpatient unit, much can be accomplished in this brief timeframe. As mentioned before, directive educational groups are necessary but not always sufficient. Groups with active facilitation, but adhering to process sensitivity, can build cohesion quickly and act as powerful motivators for clients to follow through with the next level of care.

Group process therapy is most effective if participants have had time to find their roles in a group, to "act" these roles, and to learn from them. The group needs time to define its identity, develop cohesion, and become a safe environment in which there is enough trust for participants to reveal themselves. (The exception is an educational group, which relies less on group process factors.) Consequently, prematurely terminated groups relying on group process may be less effective than they could be in promoting long-term change. Furthermore, participants may have to clear their systems of the most serious effects of substances before they can fully participate. Because of such factors, arbitrary time limits for groups, as opposed to timelines set according to the therapeutic goals of the particular group, can be ill advised.

Gender and Cultural Issues Within Groups

Researchers at Cornell University found that social contact with persons who have gone through the same crisis is highly beneficial (Manisses Communications Group, 1997a). Therefore, a common gender, culture and/or sexual preference will help clients in group therapy share difficulties they may have encountered because of that common background.

Participation in group therapy may be less effective for women than men, perhaps because groups are often dominated by men and reflect their issues and style of interaction (Jarvis, 1992). At this time, however, little research is available on the relative efficacy of women-only rather than mixed-gender groups. Weitz argues that women may have to be empowered in order to remain abstinent (Weitz, 1982). Group cognitive-behavioral therapy has been found to be an effective treatment for women with posttraumatic stress disorder and a substance abuse disorder (Najavits et al., 1996) as well as for women with both a substance abuse disorder and a history of physical or sexual abuse (Manisses Communication Group, 1997).

Covington has written extensively about the importance of women-specific groups, particularly in early recovery. She accurately pointed out that the powerful role definitions within our culture tend to be played out in group and are

often oppressive to women (Covington, 1997). In a mixed group, the women quickly become the "emotional containers" for the group and take care of the men. Although such activity is not defined as pathological, it expresses cultural norms wherein women's needs become secondary to those of men, with the women primarily defined as caretakers. They are uncomfortable about bringing up issues of sexuality, particularly sexual abuse, given that men have generally been the abusers (Covington, 1997).

The creation of gender-specific groups, particularly in small agencies or private practice, may pose logistical difficulties. However, there is growing consensus among therapists that, whenever possible, women need to have their own groups, particularly during early recovery (Byington, 1997). This does not suggest that women should be fully segregated from men. Participation in mutually shared psychoeducational experiences and multifamily groups is a therapeutic way of addressing gender issues (Byington, 1997).

Concerns of ethnicity and race should be handled with sensitivity. This is not to suggest that in a time-limited group, the potency of homogeneity is such that each and every ethnic or racial subgroup should be segregated in order to reap the benefits of this intervention. However, cultural issues need to be addressed openly and with sensitivity.

Cost-Effectiveness

The clinical utility of time-limited groups has clearly been demonstrated, but the cost factor is not irrelevant to a consideration of the value of these groups. Although individual work and family work will likely always remain a part of even the briefest time-limited treatment experience, acceptance and use of group interventions are slowly growing. From a cost-management perspective, the benefits are obvious. Not only can the therapist use the power of the group to support change within all group members, but one well-trained group therapist can meet the clinical needs of 8 to 12 clients in roughly the same amount of time as an individual session. When these numbers are enlarged to include more directive approaches such as cognitive-behavioral or psychoeducational groups, the cost-benefit ratio increases.

Bookshelf ID: NBK64936

Exhibit N

the four modalities.[48] In a study in which subjects were randomly assigned to short-term group treatment and short-term individual treatment, the investigators found significant improvement in both groups and no significant differences between them—except that *subjectively* the members preferred brief individual to brief group treatment.[49]

In sum, research demonstrates the effectiveness of brief group therapy. However, there is no evidence that brief therapy is superior to longer-term therapy.[50] *In other words, if brief groups are necessary, we can lead them with confidence: we know there is much we can offer clients in the brief format. But don't be swept away by the powerful contemporary press for efficiency. Don't make the mistake of believing that a brief, streamlined therapy approach offers clients more than longer-term therapy. One of the architects of the NIMH Collaborative Treatment of Depression Study, one of the largest psychotherapy trial conducted, has stated that the field has likely oversold the power of brief psychotherapy.*[51]

Size of the Group

My own experience and a consensus of the clinical literature suggest that the ideal size of an interactional therapy group is seven or eight members, with an acceptable range of five to ten members. The lower limit of the group is determined by the fact that a critical mass is required for an aggregation of individuals to become an interacting group. When a group is reduced to four or three members, it often ceases to operate as a group; member interaction diminishes, and therapists often find themselves engaged in individual therapy within the group. The groups lack cohesiveness, and although attendance may be good, it is often due to a sense of obligation rather than a true alliance. Many of the advantages of a group, especially the opportunity to interact and analyze one's interaction with a large variety of individuals, are compromised as the group's size diminishes. Furthermore, smaller groups become passive, suffer from stunted development, and frequently develop a negative group image.[52] Obviously the group therapist must replace members quickly, but appropriately. If new members are unavailable, therapists do better to meld two small groups rather than to continue limping along with insufficient membership in both.

The upper limit of therapy groups is determined by sheer economic principles. As the group increases in size, less and less time is available for the working through of any individual's problems. Since it is likely that one or possibly two clients will drop out of the group in the course of the initial meetings, it is advisable to start with a group slightly larger than the preferred size; thus, to obtain a group of seven or eight members, many therapists start a new group with eight or nine. Starting with a group size much larger than ten in anticipation of dropouts may become a self-fulfilling prophecy. Some members will quit because the group is

Exhibit O

Utah Department of
Health & Human Services
Licensing & Background Checks

LICENSE FOR ASSISTED LIVING - TYPE II

Name of Facility:	Bel Aire Senior Living
Address:	1088 East 390 South, American Fork, UT 84003
Administrator:	Sherry Hornbuckle
Owner/Licensee:	Anchor Bel Aire, LLC
Approved Capacity:	61 Secure Unit Beds: 15
Date Issued:	October 23, 2023 **Date of Expiration:** August 31, 2026
License No:	2024-ALII-F23-106492
Variance Granted:	No

Shannon Thoman-Black
Office of Licensing
Director

Our Vision: *Quality health and safety services for People in Utah!*

Utah County Parcel Map

Parcel Map

1 inch equals 94 feet

Date: 6/3/2025

This cadastral map is generated from Utah County Recorder data. It is for reference only and no liability is assumed for any inaccuracies, incorrect data or variations with an actual survey.

Exhibit P

Utah County
HEART OF UTAH

Exhibit Q

Utah County
SYSTEM MAP

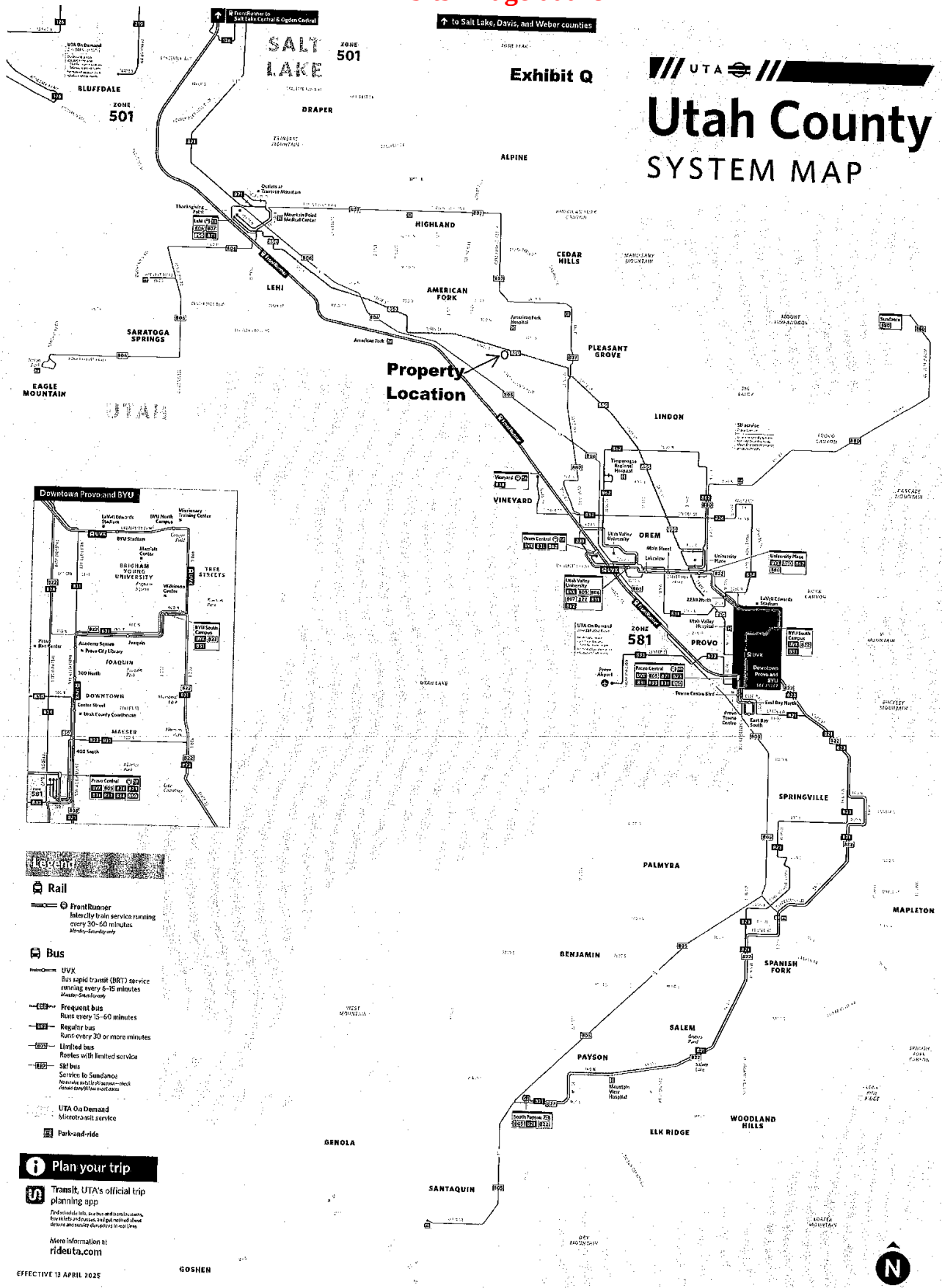
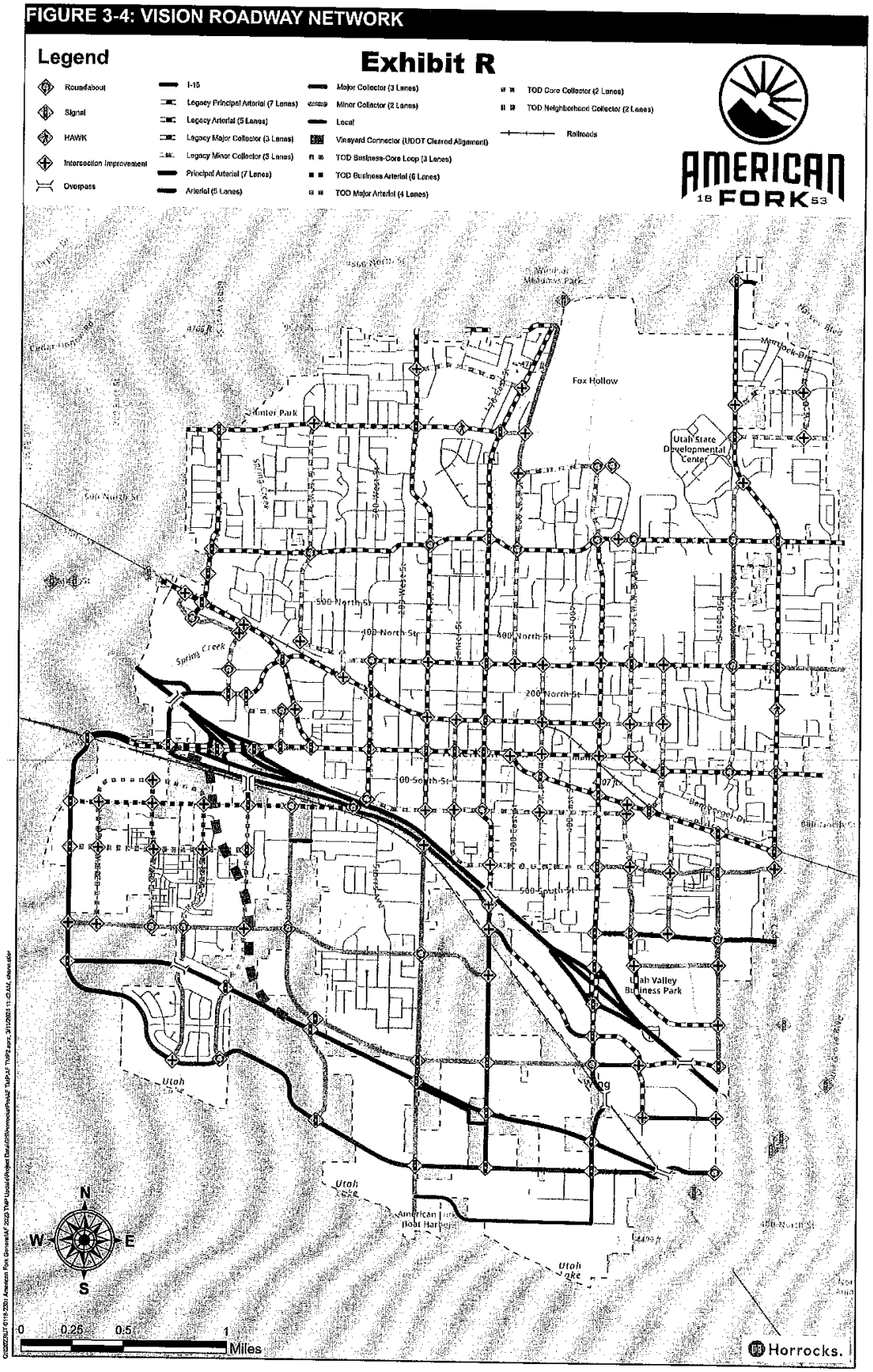


FIGURE 3-4: VISION ROADWAY NETWORK



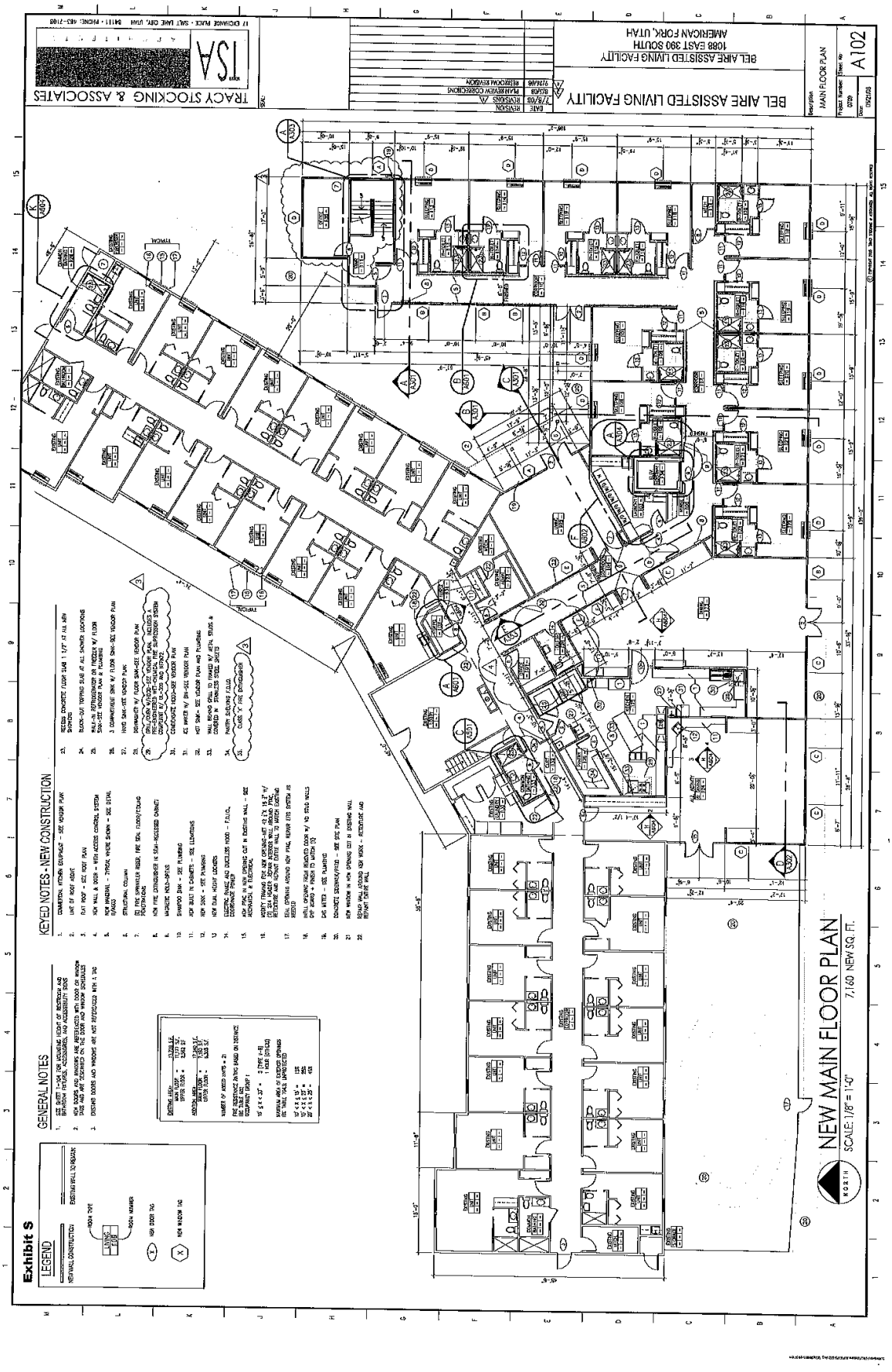
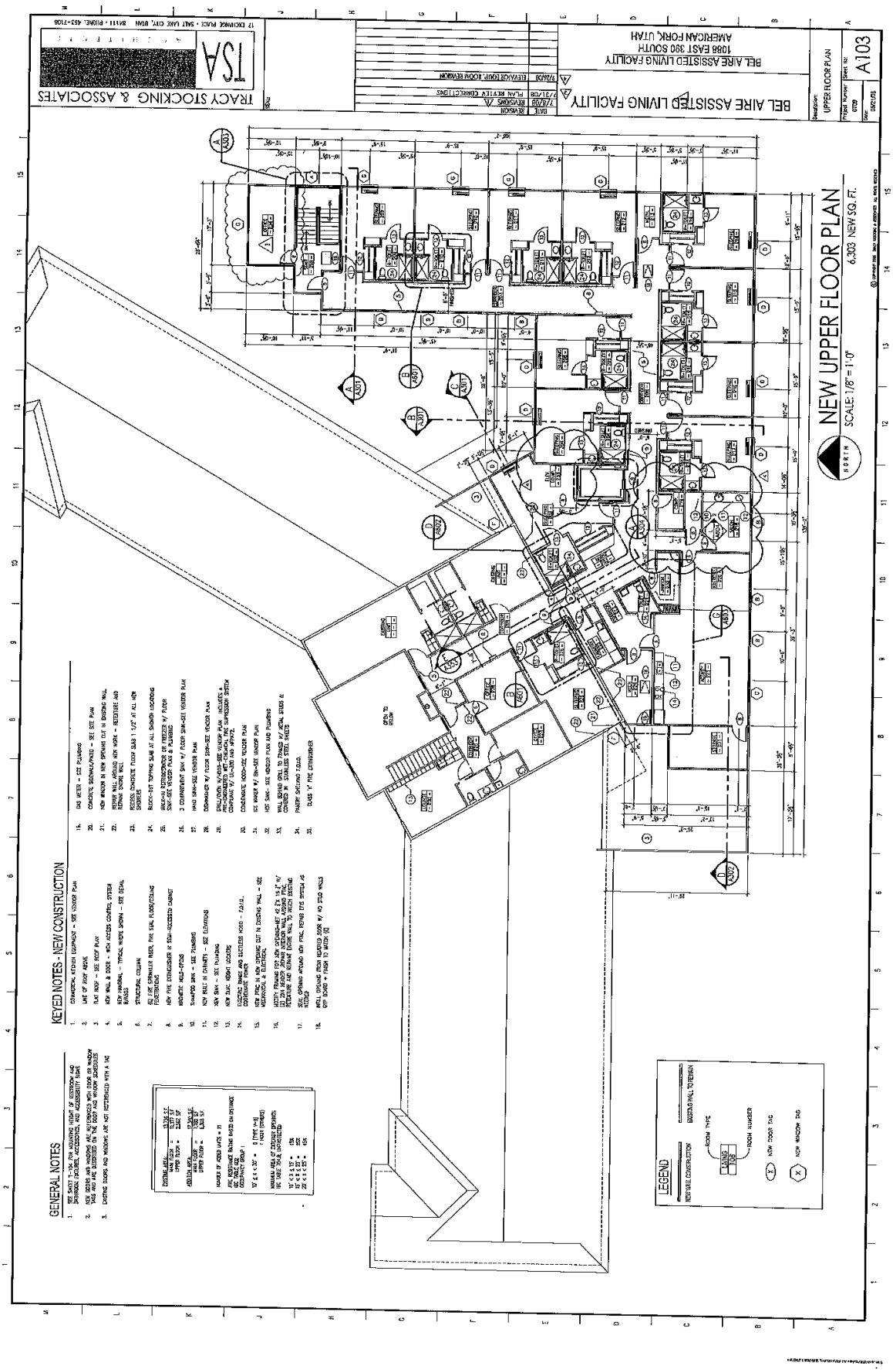


Exhibit S
LEGEND
GENERAL NOTES
KEYED NOTES - NEW CONSTRUCTION
NEW MAIN FLOOR PLAN
SCALE: 1/8" = 1'-0"
7,160 NEW SQ. FT.
NORTH
BEL AIRE ASSISTED LIVING FACILITY
1088 EAST 390 SOUTH
AMERICAN FORK, UTAH
TRACY STOCKING & ASSOCIATES
ISA
MAIN FLOOR PLAN
A102


NEW UPPER FLOOR PLAN
SCALE: 1/8" = 1'-0"
6,303 NEW SQ. FT.
NORTH
BEL AIRE ASSISTED LIVING FACILITY
1086 EAST 390 SOUTH
AMERICAN FORK, UTAH
TRACY STOCKING & ASSOCIATES
GENERAL NOTES
KEYED NOTES - NEW CONSTRUCTION
LEGEND

Planning Commission Staff Report
Meeting Date: August 6, 2025

Agenda Topic

Review and action on an application for a Commercial Site Plan, known as AT&T Tower Upgrade UTL04060 Site Plan, located at 1175 East 50 South, American Fork City. The Commercial Site Plan will be on approximately 2.14 acres and will be in the Professional Office PO-1 zone.

BACKGROUND INFORMATION		
Location:		1175 E 50 S American Fork, UT 84003
Project Type:		Commercial Site Plan, Equipment Upgrades
Applicants:		Jill Drake, Smart Link Group
Existing Land Use:		Professional Office
Proposed Land Use:		N/A
Surrounding Land Use:	North	Professional Office
	South	Pleasant Grove City
	East	Pleasant Grove City
	West	Professional Office
Existing Zoning:		PO-1
Proposed Zoning:		N/A
Surrounding Zoning:	North	PO-1
	South	Pleasant Gove City Residential
	East	Pleasant Gove City
	West	PO-1
Square Footage (By Use)		3,445
Total Number of Units		N/A
Parking Requirement		N/A

Background

The applicant has applied for a Commercial Site Plan to make upgrades to the existing cellular equipment. The project looks to perform equipment upgrades to the 3,445 square feet of space on the roof that is currently being used for equipment.

Section 17.6.101 – Administrative Site Plan Review

Wherever the terms of this code require submission and approval of a site plan, such review shall be conducted in accordance with the following provisions.

1. Planning commission to approve. The planning commission, acting in an administrative capacity, shall have the function, duty and power to approve or disapprove a project plan and to attach such modifications or conditions as may be deemed appropriate to improve the layout, to ensure that the project will not pose any detrimental effect to persons or property, or to protect the health, safety, and general welfare of the citizens of the city.
2. Application required. Application for site plan approval shall be submitted on forms provided by the city and shall be accompanied by maps and drawings showing the following:
    a. The location of all existing and proposed buildings and structures on the site, with full dimensions showing the distance between buildings and distances from buildings to adjacent property lines.
    b. The location of all parking spaces, driveways, and points of vehicular ingress and egress.
    c. A landscaping plan showing the location, types, and initial sizes of all planting materials to be used together with the location of fences, walls, hedges, and decorative materials.
    d. Preliminary elevations of main buildings showing the general appearance and types of external materials to be used.
    e. The locations of solid waste receptacles and trash pick-up areas.
3. Appeals permitted. Any person aggrieved by a determination of the planning commission may request a hearing before the city council who shall have the authority to reverse, affirm or modify any decision of said commission. Any such appeal shall be filed within ten days of the determination of the planning commission.
4. Issuance of a permit. A building permit shall not be issued for any building or structure or external alterations thereto until the provisions of this section have been complied with. Any construction not in conformance with an approved site plan shall be considered a violation of this code. Any building permit issued shall ensure that development is undertaken and completed in conformity with the plans as approved.
5. Expiration of Site plan approval. A site plan approval issued pursuant to this section shall expire and have no further force or effect if the building, activity, construction, or occupancy authorized by the approval is not commenced within two (2) years of the date

of the approval. Up to a twelve (12) month extension may be approved by the land use authority subject to payment of an extension fee equal to one-half of the current filing fee.

Project Conditions of Approval

1. Address all outstanding DRC Comments

Findings of Fact

1. The Commercial Site Plan meets the requirements of Section Sec 17.6.112 Low Power Radio Service Antenna Facilities (Cellular Phone Transmission Towers And Facilities)

Project Map


3,445.21 ft²
14:022:0279
14:022:0281
14:022:0221
14:022:0547
S0°68'22"W 128.00
N0°36'22"E 128.00
S0°00'01"W 283.12
128.00
128.00
S0°00'01"W 329.00
N0°00'00"E 612.09
S89°22'26"E 284.00

Standards Conditions of Approval

APPLICANT is responsible and shall submit/post/obtain all necessary documentation and evidence to comply with these Standard Conditions of Approval prior to any platting, permitting, or any other form of authorization by the City including plat recording or other property conveyance to the City and prior to scheduling a pre-construction meeting. All recording shall take place at the Utah County Recorder's Office.

1. **Title Report:** Submit an updated Title Report not older than 30 days or other type of appropriate verification that shows all dedications to the City are free and clear of encumbrances, taxes, or other assessments.
2. **Property Taxes and Liens:** Submit evidence that all the property taxes, for the current and/or previous years, liens, and agricultural land use roll over fees have been paid in full.
3. **Water Rights:** Submit evidence that all the required water rights have been conveyed to American Fork City.
4. **Performance Guarantee:** Post a performance guarantee for all required public and essential common improvements.
5. **Easements and Agreements:** Submit/record a long-term Storm Water Pollution Prevention Maintenance Agreement signed and dated by the property owner and any required easement documentation.
6. **Land Disturbance Permit:** Obtain a Land Disturbance Permit.
7. **Compliance with the Plan Review Comments:** All plans and documents shall comply with all the Technical Review Committee comments and the City Engineer's final review.
8. **Commercial Structure:** Record an Owner Acknowledgment and Utility Liability Indemnification if the proposed building is a multi-unit commercial structure served by a single utility service.
9. **Sensitive Lands:** Record all applicable documents required for compliance with the City's Sensitive Lands Ordinance.
10. **Utility Notification Form:** Submit a Subdivision Utility Notification Form.
11. **Professional Verification:** Submit final stamped construction documentation by all appropriate professionals.
12. **Fees:** Payment of all development, inspection, recording, streetlight, and other project related fees.
13. **Mylar:** Submit a Mylar. All plats will receive final verification of all formats, notes, conveyances, and other items contained on the plat by City staff (recorder, legal, engineer, GIS, planning).

Staff Recommendation

The Commercial Site Plan meets the requirements of Section 17.6.101. Staff recommends APPROVING the application WITH CONDITIONS.

Potential Motions – Commercial Site Plan

Approval

I move to approve the proposed Commercial Site Plan, located at 1175 E 50 N, American Fork City, in the Professional Office (PO-1) Zone, subject to any conditions found in the staff report.

Denial

I move to deny the proposed Commercial Site Plan, located at 1175 E 50 N, American Fork City, in the Professional Office (PO-1) Zone.

Table

I move to table action of the proposed Commercial Site Plan, located at 1175 E 50 N, American Fork City, in the Professional Office (PO-1) Zone, and instruct staff/developer to……..

Re-Submittal Acknowledgment Statement
The Applicant is responsible for reviewing all documents to ensure all comments have been addressed.

_____ [Applicant Initial] I understand that a Review Cycle is not complete unless and until the applicant replies to all of the required modifications and requests for additional information noted on the previous submittal.

_____ [Applicant Initial] I hereby acknowledge that this re-submittal addresses all required modifications and requests for additional information noted on the previous submittal.

_____ [Applicant Initial] This is the _____ [Ex: 1st] complete re-submittal of the subdivision constituting the start of the _____ [Same Number] Review Cycle.

Next Step
Post Entitlement Review Required.
Revise and resubmit following the DRC meeting to address remaining comments

Please include Zoning Designation (PO-1) and Land Use (Professional Office) in Site information so that the zoning at time of approval is recorded.

ST AMERICAN FORK
UTL04060

AT&T

CELL SITE RF MODIFICATIONS
WSUTH0039466
FA #: 10115113
ROOFTOP

See comments on T 1 and C 1.1

American American Fork City Development Review

Sewer/Storm Drain Division Reviewed ahardy 07/21/2025	Water/PI Division Reviewed jbrems 07/22/2025
EC/LID Reviewed tmezenen 07/22/2025	Fire Department Reviewed M. Sacco 07/21/2025
Planning and Zoning Reviewed Areed 07/22/2025	Engineering Division Reviewed rburkhill 07/23/2025
Public Infrastructure Reviewed dhoward 07/22/2025	
Communications Reviewed MHunsaker 07/23/2025	Streets Division Reviewed ehyde 07/21/2025

Next Step:
Proceed to Planning Commission 08/06/2025

PROJECT DESCRIPTION

AT&T WIRELESS PROPOSES TO MODIFY AN EXISTING WIRELESS INSTALLATION. THE SCOPE WILL CONSIST OF THE FOLLOWING:

ROOFTOP WORK:
- REMOVE (9) ANTENNAS
- REMOVE (15) REMOTE RADIO HEADS (RRHS)
- INSTALL (6) NNH4-65C-R6-U.P.M. AMTENNAS
- INSTALL (9) REMOTE RADIO UNITS (RRUs)
- INSTALL – MODIFICATIONS AS DETAILED IN MODIFICATION DESIGN DRAWINGS

GROUND WORK:
- REMOVE (3) C48/24-1500 CONVERTERS
- INSTALL (1) 7100 RETROFIT CONVERSION KIT
- INSTALL (9) -58V CONVERTERS
- INSTALL (1) -48V TO +24V CONVERTER KIT
- INSTALL (1) GENERIC E\\\ BBU @ DRM

ENGINEERING

UTAH STATE CONSTRUCTION CODE (2021 IBC)
UTAH STATE CONSTRUCTION CODE (2020 NFPA 70 (NEC))
UTAH STATE FIRE CODE (2021 IFC)
TIA-222-G – 2016

SITE INFORMATION

PROPERTY OWNER:	AF INVESTMENT PROPERTIES LLC
ADDRESS:	1005 NO 500 W PROVO, UT 84604
SITE ADDRESS:	1175 EAST 50 SOUTH AMERICAN FORK, UT 84003
FA:	10115113
ROOFTOP OWNER:	AF INVESTMENT PROPERTIES LLC
CELL SITE RF MODIFICATIONS IWM #:	WSUTH0039466
COUNTY:	UTAH
LATITUDE (NAD83): LONGITUDE (NAD83):	40° 22' 36" N (40.3766666) 111° 46' 1.5" W (-111.767083)
GROUND ELEVATION:	4,599' AMSL
ZONING JURISDICTION:	CITY OF AMERICAN FORK
ZONING DISTRICT:	TBD
PARCEL NUMBER:	140220281
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	IDAHO POWER
TELEPHONE COMPANY:	CENTURY LINK
SITE ACQUISITION MANAGER:	ANNIE ZOCCO (954) 243-5536
CONSTRUCTION MANAGER:	JOHN VAUGHAN (303) 517-3652
RF ENGINEER:	DAVID BLACK (303) 217-1477

Is this correct?

CONTACT INFORMATION

ENGINEER:	GPD GROUP, PROFESSIONAL CORPORATION 520 SOUTH MAIN STREET, SUITE 2531 AKRON, OH 44311
CONTACT:	CHAD BURTON
PHONE:	(614) 859-1623

VICINITY MAP

© GOOGLE EARTH 2024

LOCAL MAP

© GOOGLE EARTH 2024

NO SCALE

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

DRAWING INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
C-1	SITE PLAN
C-1.1	ENLARGED SITE PLAN
C-2	EQUIPMENT LAYOUTS
C-3	ELEVATIONS
C-4	ANTENNA SCHEDULE & LAYOUTS
C-5	EQUIPMENT DETAILS
C-6	EQUIPMENT DETAILS
G-1	GROUNDING ONE-LINE DIAGRAM
G-2	GROUNDING DETAILS
GN-1	LEGEND & ABBREVIATIONS
GN-2	GENERAL CONSTRUCTION NOTES
GN-3	GENERAL SITE WORK & DRAINAGE NOTES
GN-4	GENERAL CONCRETE WORK NOTES
GN-5	GENERAL STRUCTURAL STEEL NOTES
GN-6	GENERAL ELECTRICAL NOTES
GN-7	BATTERY SAFETY NOTES
REF	MODIFICATION DRAWINGS

This needs to be updated to precisely indicate the sheets in this plan set if these are submitted as one PDF document.

Several are omitted from this index.

11"X17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

CALL UTAH ONE CALL
(800) 662-4111
CALL 3 WORKING DAYS
BEFORE YOU DIG!

AT&T
7670 S CHESTER ST
ENGLEWOOD, CO 80112

ANSCO
Address comments
1220 OLD ALPHARETTA ROAD
SUITE 380
ALPHARETTA, GA 30005

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

GPD JOB #:	2024723.02/ 86662.01
DRAWN BY:	KNM
CHECKED BY:	MRL
RFDS:	5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW

NAL STRUCTURAL ENGINEER
No. 8043047-2203
JOHN N. KABAK
STATE OF UTA
03/26/25

VIOLATION OF LAW FOR ANY PERSON, HEY ARE ACTING UNDER THE DIRECTION LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. SITE PLAN DISCLAIMER: THE EXISTING INFORMATION SHOWN IN THESE PLANS HAVE BEEN BASED ON EXISTING SITE INFORMATION PROVIDED BY OTHERS. THE GPD GROUP HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

SITE PLAN

AT&T
7670 S CHESTER ST
ENGLEWOOD, CO 80112

ANSCO
1220 OLD ALPHARETTA ROAD
SUITE 380
ALPHARETTA, GA 30005

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
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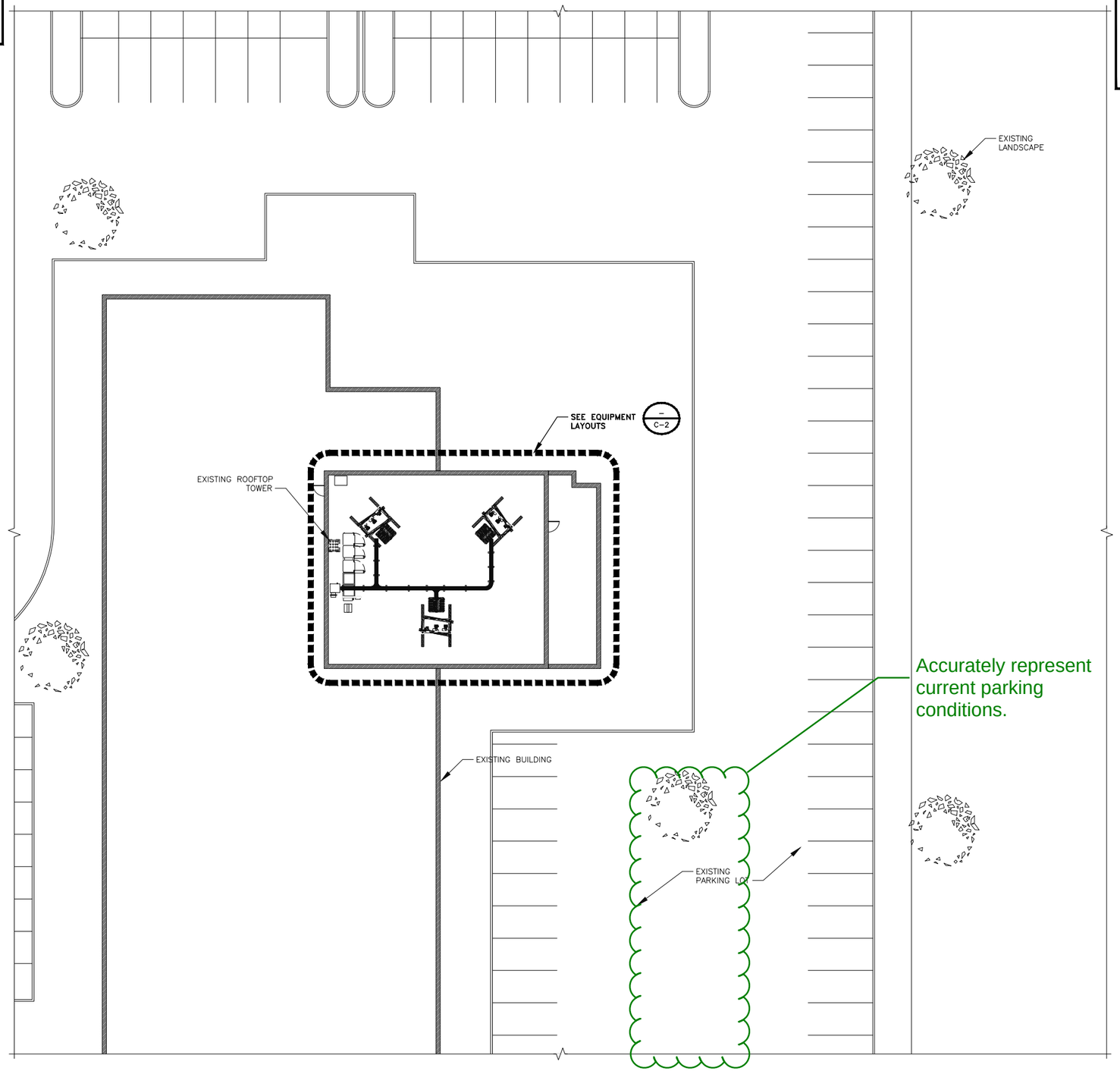
SHEET TITLE
SITE PLAN

SHEET NUMBER
C-1

COAX & CABLE INFORMATION

- ALL EXISTING CABLES/COAX TO REMAIN UNLESS NOTED OTHERWISE
- (3) EXISTING 18-PAIR FIBER TRUNK
- (6) EXISTING #8 AWG DC POWER TRUNKS
- (6) EXISTING 7/8" COAX ROUTED WITHIN EXISTING ROOFTOP



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EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
ENLARGED SITE PLAN

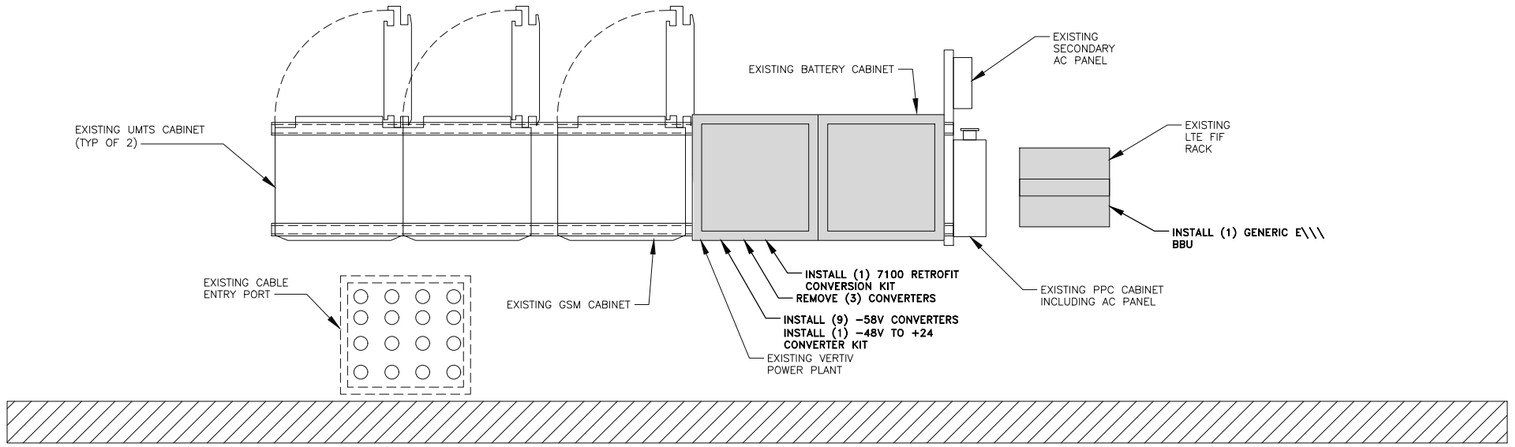
SHEET NUMBER
C-1.1

ENLARGED SITE PLAN

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. SITE PLAN DISCLAIMER: THE EXISTING INFORMATION SHOWN IN THESE PLANS HAVE BEEN BASED ON EXISTING SITE INFORMATION PROVIDED BY OTHERS. THE GPD GROUP HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.
3. NO BATTERY SCOPE OF WORK ASSOCIATED WITH THIS PROJECT.



FINAL EQUIPMENT LAYOUT

12" 6" 0 1' 2' 3' 4' 5'
1/2"=1'-0"

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SHEET TITLE
EQUIPMENT LAYOUTS

SHEET NUMBER
C-2

NOTES

1. THIS DRAWING IS INTENDED TO DEPICT THE GENERAL LOCATION AND HEIGHT OF THE NEW EQUIPMENT ON THE EXISTING TOWER.
2. CONTRACTOR TO REFER TO THE TOWER STRUCTURAL ANALYSIS AND COORDINATE COAX LAYOUT WITH THE SITE CONSTRUCTION MANAGER.

STRUCTURAL MODIFICATIONS REQUIRED:

STRUCTURAL MODIFICATION REQUIRED. REFER TO STRUCTURAL MODIFICATION DESIGN BY GPD GROUP PROFESSIONAL CORPORATION, DATED JANURARY 27, 2025. NO ADDITIONAL LOADING TO BE ADDED UNTIL STRUCTURAL MODIFICATIONS ARE INSTALLED.

EQUIPMENT PAINTING / FILMING NOTE:

NEW EXPOSED EQUIPMENT SHALL BE PAINTED WITH AT&T APPROVED, RF TRANSPARENT, UV RESISTANT, OUTDOOR RATED PAINT TO MATCH EXISTING. PAINT SHALL ONLY BE APPLIED AS DIRECTED BY AT&T AND EQUIPMENT MANUFACTURER.

ALTERNATIVELY, EQUIPMENT MAY BE WRAPPED WITH AT&T APPROVED, RF TRANSPARENT, UV RESISTANT, OUTDOOR RATED CONCEALMENT FILM COLORED TO MATCH EXISTING. FILM SHALL ONLY BE APPLIED AS DIRECTED BY AT&T AND EQUIPMENT MANUFACTURER.

REFER TO AT&T MACRO BUILD STANDARDS (ATT-790-202-083), ANTENNA STEALTHING FOR PAINTING AND FILMING REQUIREMENTS.

ALL METAL REMAINING WITHIN THE ANTENNA FIELD MOST BE PAINTED WITH PIM PAINT F.V. THERE ALL METAL OBSTRUCTIONS ARE PAINTED.

COAX & CABLE INFORMATION

- ALL EXISTING CABLES/COAX TO REMAIN UNLESS NOTED OTHERWISE
- (3) EXISTING 18-PAIR FIBER TRUNK
- (6) EXISTING #8 AWG DC POWER TRUNKS
- (6) EXISTING 7/8" COAX ROUTED WITHIN EXISTING ROOFTOP

Is there a missing sentence here? ends in "," and not "."?

Was the intent to list the site construction manager?

FINAL SOUTH ELEVATION

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

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CELL SITE RF MODIFICATIONS

SHEET TITLE
ELEVATIONS

SHEET NUMBER
C-3

COAX & CABLE INFORMATION

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- (6) EXISTING 7/8" COAX

ROUTED WITHIN EXISTING ROOFTOP

SECTOR	TECH.		ANTENNA MODEL		AZIMUTH		ANTENNA TIP HEIGHT		RRH/RRU MODEL & RELATED EQUIPMENT	
	EXIST.	FINAL	EXIST.	FINAL	EXIST.	FINAL	EXIST.	FINAL	EXIST.	FINAL
A1	LTE	**5G**	*XXQLH–654L8H8–IVT	**NNH4–65C–R6–UPM**	55°	**55°**	57'–0"	**57'–0"**	*DUAL RRH 4T4R B12/14 320W AHLBA *DUAL RRH 4T4R B25/66 320W AHFIB	**4490 B5/B12A AIR6419 B77G**
A2	LTE	**5G**	*XXQLH–654L8H8–IVT	**NNH4–65C–R6–UPM**	55°	**55°**	57'–0"	**57'–0"**	*RRH 4T4R B5 160W AHCA *RRH 4T4R B30 100W AHNA *RRH2X40–AWS–RDEM	**AIR 6419 B77D 4494 B14/B29 4890 B25/B66**
A3	LTE	–	*7750	–	55°	–	57'–0"	–	–	–
A4	–	–	–	–	–	–	–	–	–	–
B1	LTE	**5G**	*XXQLH–654L8H8–IVT	**NNH4–65C–R6–UPM**	195°	**195°**	57'–0"	**57'–0"**	*DUAL RRH 4T4R B12/14 320W AHLBA *DUAL RRH 4T4R B25/66 320W AHFIB	**4490 B5/B12A AIR6419 B77G**
B2	LTE	**5G**	*XXQLH–654L8H8–IVT	**NNH4–65C–R6–UPM**	195°	**195°**	57'–0"	**57'–0"**	*RRH 4T4R B5 160W AHCA *RRH 4T4R B30 100W AHNA *RRH2X40–AWS–RDEM	**AIR 6419 B77D 4494 B14/B29 4890 B25/B66**
B3	LTE	–	*7750	–	195°	–	57'–0"	–	–	–
B4	–	–	–	–	–	–	–	–	–	–
G1	LTE	**5G**	*XXQLH–654L8H8–IVT	**NNH4–65C–R6–UPM**	305°	**305°**	57'–0"	**57'–0"**	*DUAL RRH 4T4R B12/14 320W AHLBA *DUAL RRH 4T4R B25/66 320W AHFIB	**4490 B5/B12A AIR6419 B77G**
G2	LTE	**5G**	*XXQLH–654L8H8–IVT	**NNH4–65C–R6–UPM**	305°	**305°**	57'–0"	**57'–0"**	*RRH 4T4R B5 160W AHCA *RRH 4T4R B30 100W AHNA *RRH2X40–AWS–RDEM	**AIR 6419 B77D 4494 B14/B29 4890 B25/B66**
G3	LTE	–	*7750	–	305°	–	57'–0"	–	–	–
G4	–	–	–	–	–	–	–	–	–	–

*TO BE REMOVED

ANTENNA SCHEDULE

NO SCALE

1

AT&T
7670 S CHESTER ST
ENGLEWOOD, CO 80112

ANSCO
1220 OLD ALPHARETTA ROAD
SUITE 380
ALPHARETTA, GA 30005

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

GPD JOB #: 2024723.02/ 86662.01
DRAWN BY: KNM
CHECKED BY: MRL
RFDS: 5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW

PROFESSIONAL STRUCTURAL ENGINEER
No. 8043047-2203
JOHN N. KABAK
STATE OF UTAH
03/26/25

EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

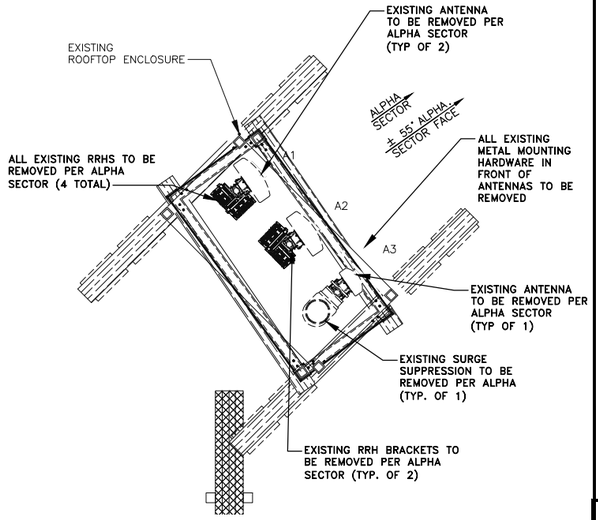
SHEET TITLE
ANTENNA SCHEDULE & LAYOUTS

SHEET NUMBER
C-4

NOTE

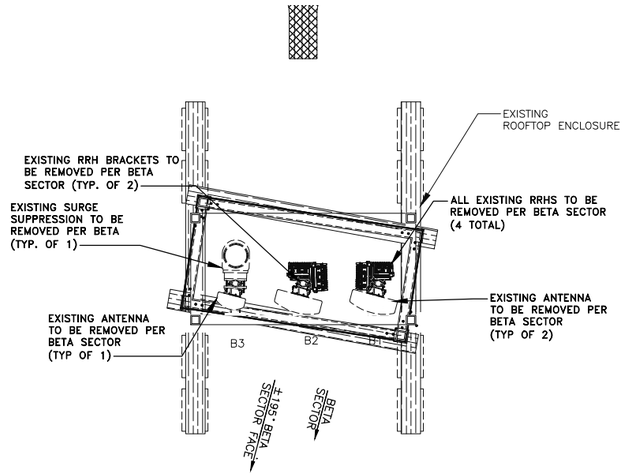
1. ALL EXISTING EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.

ALPHA SECTOR



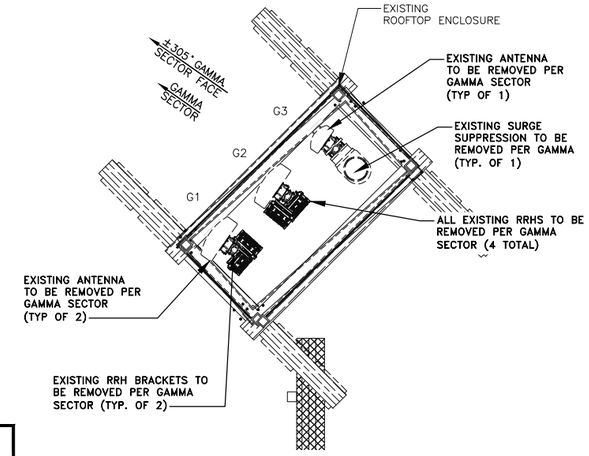
EXISTING ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 1

BETA SECTOR



EXISTING ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 2

GAMMA SECTOR

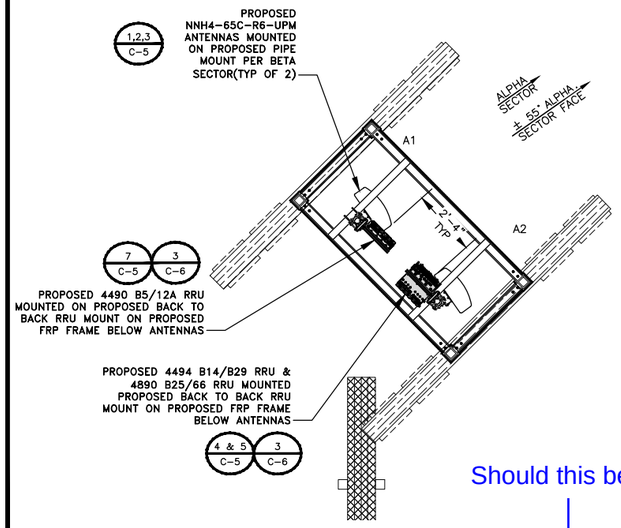


EXISTING ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 3

NOTE

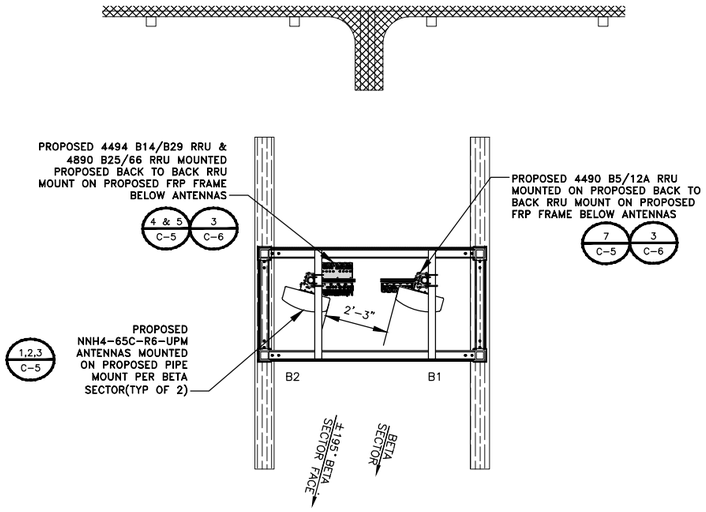
1. ALL NEW AND RELOCATED ANTENNA MOUNT PIPES TO BE REPLACED WITH 2-7/8" ANTENNA PIPES.

ALPHA SECTOR



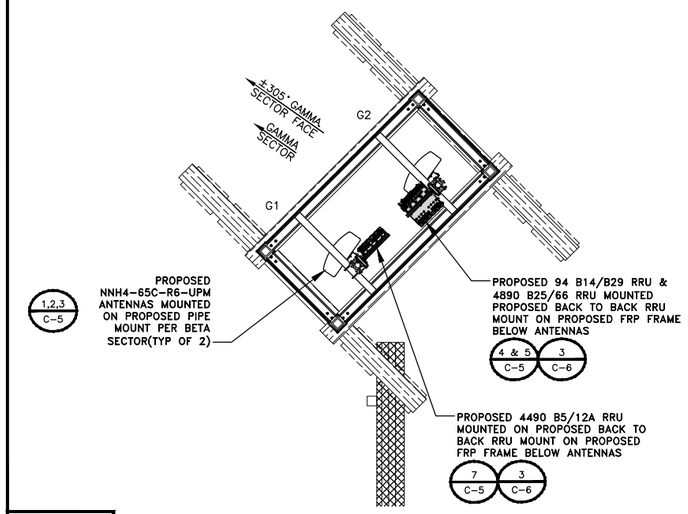
PROPOSED ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 1

BETA SECTOR



PROPOSED ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 2

GAMMA SECTOR



PROPOSED ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 3

Should this be 4?

Should this be 5?

Should this be 6?

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No. 8043047-2203
JOHN N. KABAK
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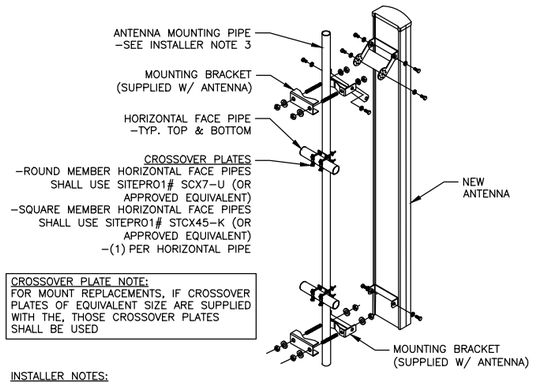
EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
ANTENNA SCHEDULE & LAYOUTS

SHEET NUMBER
C-4.1



CROSSOVER PLATE NOTE:
FOR MOUNT REPLACEMENTS, IF CROSSOVER PLATES OF EQUIVALENT SIZE ARE SUPPLIED WITH THE, THOSE CROSSOVER PLATES SHALL BE USED

INSTALLER NOTES:

1. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.
2. REFER TO ANTENNA MANUFACTURER INSTALLATION MANUAL FOR ASSEMBLY AND BOLT TORQUE SPECS.
3. ANY NEW MOUNT PIPES PROPOSED FOR PASSIVE ANTENNAS, INCLUDING NEW MOUNTS OR MOUNT REPLACEMENTS, SHALL BE P2.5 STD (2–7/8" O.D.) SABRE# C10900802 / ANT.46141 (OR APPROVED EQUIVALENT). PASSIVE ANTENNA MOUNT PIPES FOR EXISTING MOUNTS MAY REMAIN, UNLESS OTHERWISE NOTED IN THE MOUNT ANALYSIS.

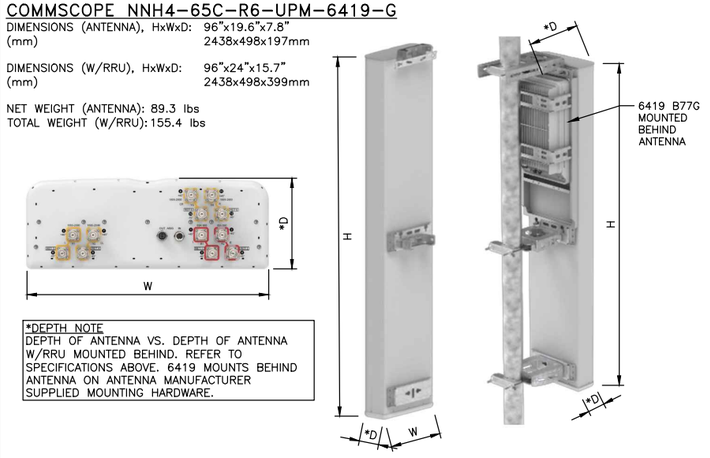
ANTENNA PIPE MOUNTING DETAIL | NO SCALE | 1

COMMSCOPE NNH4–65C–R6–UPM–6419–G

DIMENSIONS (ANTENNA), HxWxD: 96"x19.6"x7.8" (mm) 2438x498x197mm

DIMENSIONS (W/RRU), HxWxD: 96"x24"x15.7" (mm) 2438x498x399mm

NET WEIGHT (ANTENNA): 89.3 lbs
TOTAL WEIGHT (W/RRU): 155.4 lbs



*DEPTH NOTE
DEPTH OF ANTENNA VS. DEPTH OF ANTENNA W/RRU MOUNTED BEHIND. REFER TO SPECIFICATIONS ABOVE. 6419 MOUNTS BEHIND ANTENNA ON ANTENNA MANUFACTURER SUPPLIED MOUNTING HARDWARE.

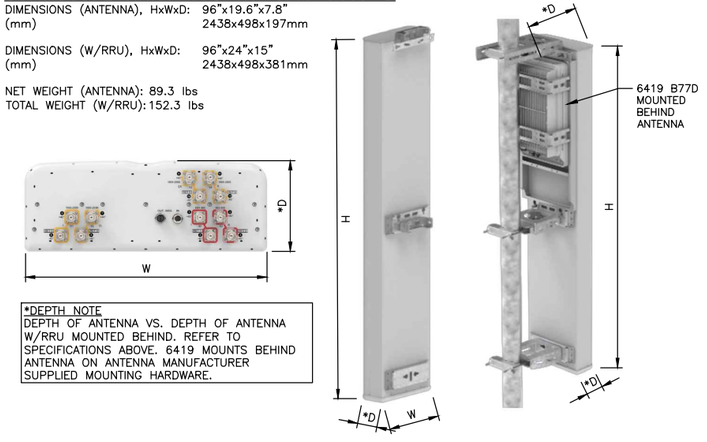
PROPOSED ANTENNA SPECIFICATIONS | NO SCALE | 2

COMMSCOPE NNH4–65C–R6–UPM–6419–D

DIMENSIONS (ANTENNA), HxWxD: 96"x19.6"x7.8" (mm) 2438x498x197mm

DIMENSIONS (W/RRU), HxWxD: 96"x24"x15" (mm) 2438x498x381mm

NET WEIGHT (ANTENNA): 89.3 lbs
TOTAL WEIGHT (W/RRU): 152.3 lbs

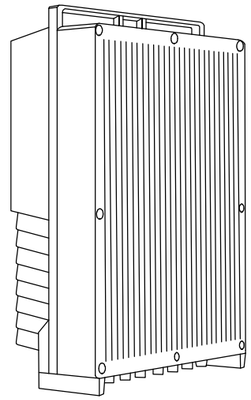


*DEPTH NOTE
DEPTH OF ANTENNA VS. DEPTH OF ANTENNA W/RRU MOUNTED BEHIND. REFER TO SPECIFICATIONS ABOVE. 6419 MOUNTS BEHIND ANTENNA ON ANTENNA MANUFACTURER SUPPLIED MOUNTING HARDWARE.

PROPOSED ANTENNA SPECIFICATIONS | NO SCALE | 3

ERICSSON RADIO 4494 B14/B29

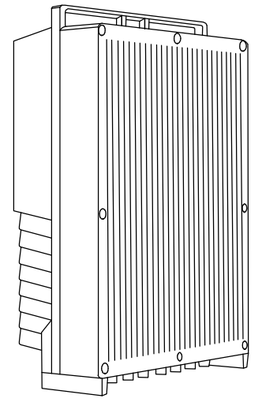
DIMENSIONS, WxDxH: 20.6"x15.6"x5.9" (mm) 522x397x149
TOTAL WEIGHT: 57.3 lbs



RRU SPECIFICATIONS | NO SCALE | 4

ERICSSON RADIO 4890 B25/66

DIMENSIONS, HxWxD: 17.5"x15.1"x6.9" (mm) 444x384x176mm
POWER CONSUMPTION: 480 WATTS
TOTAL WEIGHT: 68 lbs

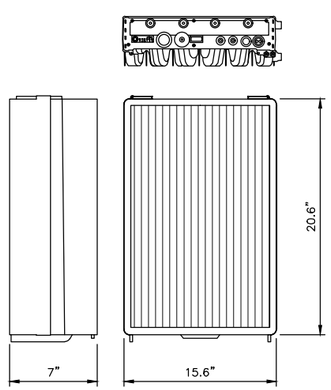


RRU SPECIFICATIONS | NO SCALE | 5

DETAIL NOT USED | NO SCALE | 6

ERICSSON RADIO 4490 B5/12A

DIMENSIONS, HxWxD: 20.6"x15.6"x7" (mm) 524x397x178mm
POWER CONSUMPTION: 480W
TOTAL WEIGHT: 65 lbs



RRU SPECIFICATIONS | NO SCALE | 7

DETAIL NOT USED | NO SCALE | 8

DETAIL NOT USED | NO SCALE | 9

AT&T
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ALPHARETTA, GA 30005

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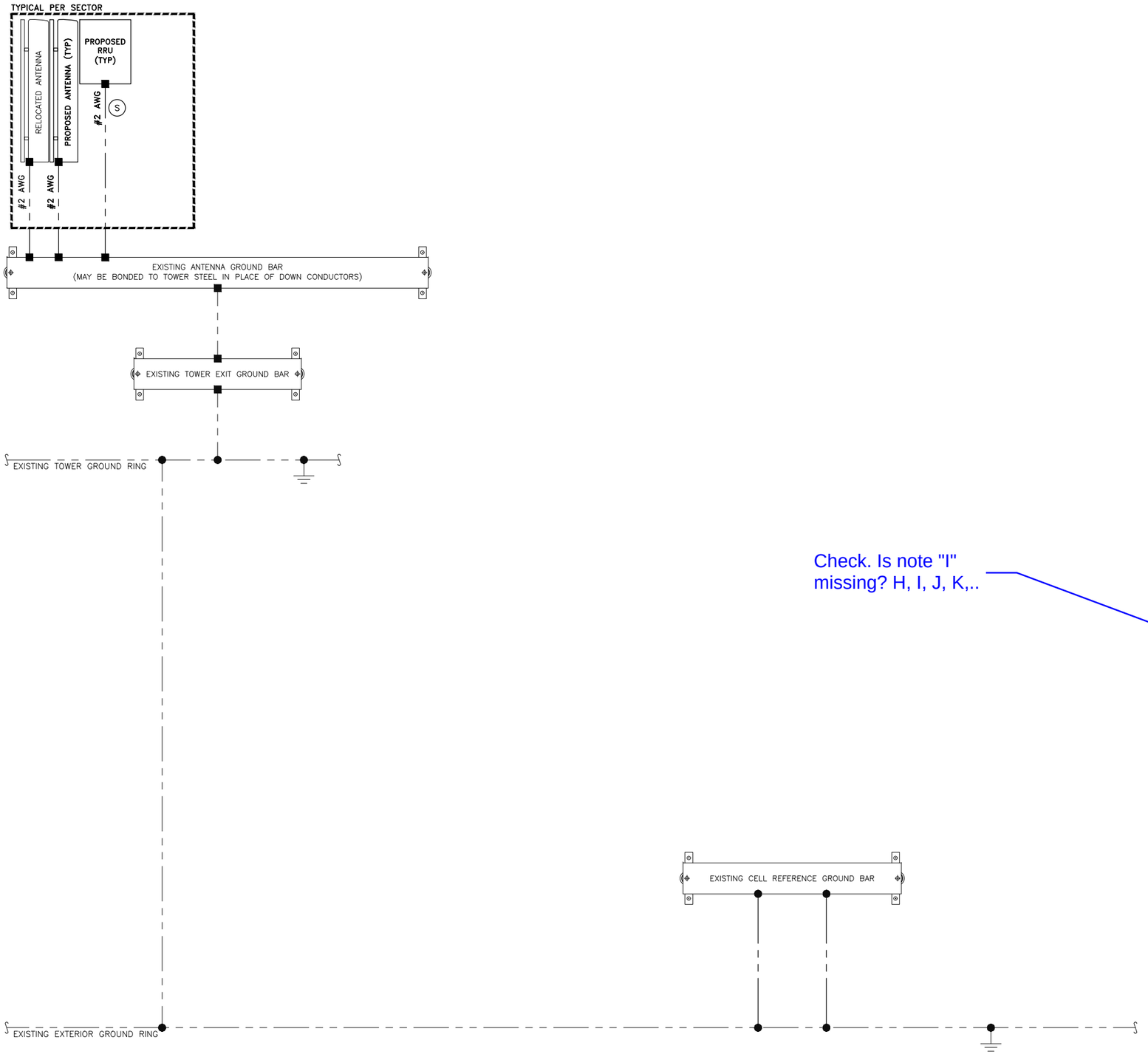
REFERENCE ONLY

EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
C-5



Check. Is note "I" missing? H, I, J, K,..

GROUNDING ONE-LINE DIAGRAM

NO SCALE

● EXOTHERMIC CONNECTION

■ MECHANICAL CONNECTION

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND AT&T GROUNDING AND BONDING REQUIREMENTS (ATT-TP-76416) AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

NOTES

(A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING. (ATT-TP-76416 2.2.3.5 / 7.5.1)

(B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS. (ATT-TP-76416 / 7.5.1)

(C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR. (ATT-TP-76416 / 7.6.4)

(D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING. (ATT-TP-76416 7.5.2.2)

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR. (ATT-TP-76416)

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS. (ATT-TP-76416 / 7.6.7)

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE. (ATT-TP-76416 / 7.6.7.2)

(J) TOWER EXIT GROUND BAR: #2 AWG SOLID TINNED COPPER BOND TO THE TOWER GROUND RING. (ATT-TP-76416 / 7.4.2.6)

(K) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR AND EXTERIOR GROUND RING. (ATT-TP-76416 / 7.6.8)

(L) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK. BOND THE FRAME GROUND TO THE "I" SECTION OF THE CELL REFERENCE GROUND BAR OR SUPPLEMENTARY CONDUCTOR. (ATT-TP-76416 6.5.3 AND 7.8)

(M) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING. (ATT-TP-76416 / 7.12.3.1)

(N) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS. (ATT-TP-76416 / 7.12.2.2)

(P) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. (ATT-TP-76416 7.12.2)

(Q) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING. (ATT-TP-76416 / 7.4.2.6)

(R) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR (CRGB) PER TP76300 SECTION H 6 AND TP76416 FIGURE 7-11 REQUIREMENTS.

(S) OUTDOOR GROUNDING CONDUCTORS: GROUNDING CONDUCTORS INSTALLED OUTDOORS AND RUN ENTIRELY ABOVE GRADE SHALL BE TINNED STRANDED COPPER AND BE SUNLIGHT RESISTANT.

GROUNDING KEY NOTES

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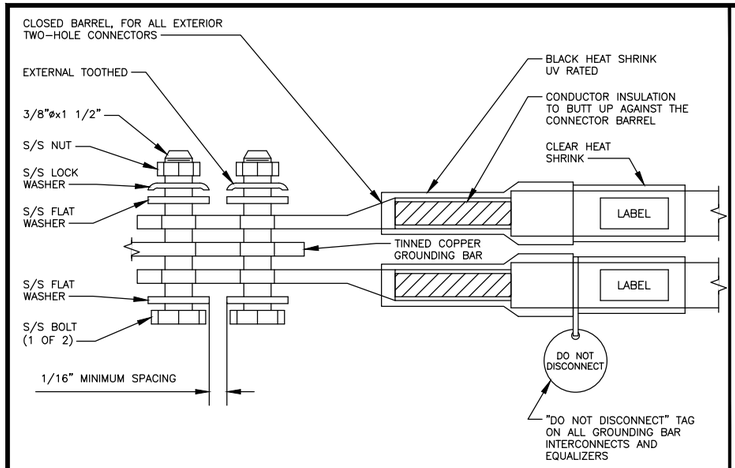
PROFESSIONAL ENGINEER
No. 8684449
STEVEN P. SCHAUB
UTAH
03/26/25

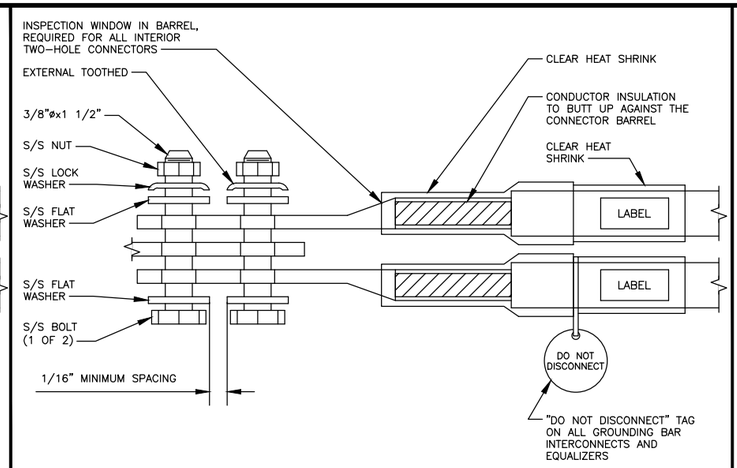
EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
GROUNDING ONE-LINE DIAGRAM

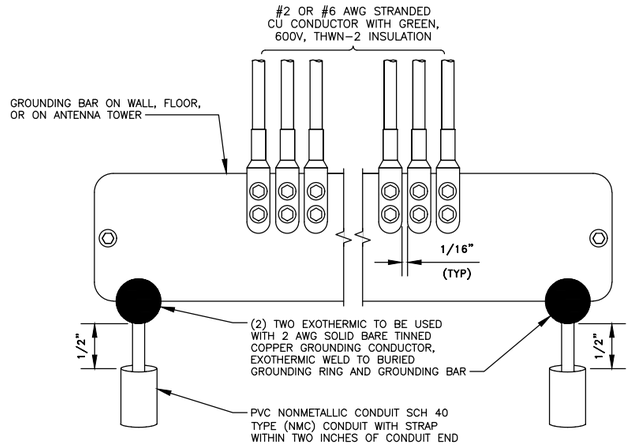
SHEET NUMBER
G-1



INTERIOR TWO HOLE LUG | NO SCALE | 1



EXTERIOR TWO HOLE LUG | NO SCALE | 2



INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR | NO SCALE | 3

NEWTON INSTRUMENT COMPANY, INC. BUTNER, NC			
NO	REQUIRED	PART NUMBER	DESCRIPTION
1	1	1/4"X4"X30"	SOLID GROUND BAR
2	2	A-6056	WALL MOUNTING BRACKET
3	2	3061-4	INSULATORS
4	4	3012-1	5/8"-11X1" H.H.C.S.
5	4	3015-8	5/8" LOCKWASHER

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PROTECTORS
(EC) CABLE ENTRY PORTS (HATCH PLATES) (#2)
(EC) TELCO GROUND BAR (#2)
(EC) COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
(AT&T) CELL SITE +24V POWER SUPPLY RETURN BAR (#2)
(AT&T) CELL SITE -48V POWER SUPPLY RETURN BAR (#2)
(EC) GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
(AT&T) RECTIFIER FRAMES
(AT&T) ANTENNA SUPPRESSION

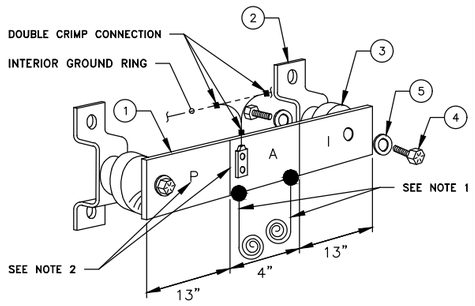
SECTION "A" – SURGE ABSORBERS
(EC) INTERIOR GROUND RING (#2)
(EC) EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
(EC) METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
(EC) BUILDING STEEL (IF AVAILABLE) (#2)

SECTION "I" – ISOLATED GROUNDING ZONE
(AT&T) ALL CELL SITE COMMUNICATIONS EQUIPMENT FRAMES

(MGB) REFERENCE GROUNDING BAR | NO SCALE | 4

DETAIL NOTES

1. EXOTHERMICALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. EC SHALL PERMANENTLY MARK THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "I") WITH 1" HIGH LETTERS.
3. GROUND BAR SHALL BE ENGRAVED PER AT&T SPECIFICATIONS TO PREVENT THEFT.



NOTES | NO SCALE | 5

1. ALL MAIN CABLES WILL BE GROUNDED W/ COAXIAL CABLE GROUND KITS AT:
   A. THE ANTENNA LEVEL.
   B. MID LEVEL IF TOWER IS OVER 200'.
   C. BASE OF TOWER PRIOR TO TURNING HORIZONTAL
   D. OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
   E. INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
2. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE CADWELDED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF FOUR FEET BELOW GROUND BAR.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ANTENNA AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
4. DO NOT ALLOW THE COPPER CONDUCTOR TO TOUCH THE GALVANIZED GUY WIRE AT THE CONNECTION POINT OR AT ANY OTHER POINT. NO EXOTHERMICALLY WELDED CONNECTION SHALL BE MADE TO THE GUY WIRE.
5. SUBCONTRACTOR SHALL GROUND ALL EQUIPMENT INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED PERSONEL IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
6. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUNDING CONDUCTOR DOWN TO GROUNDING BAR.
7. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
8. WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
9. ALL EXTERIOR HEAT SHRINK OR HEAT SHRINK EXPOSED TO U/V LIGHT SHALL BE BLACK. ALL INTERIOR HEAT SHRINK SHALL BE CLEAR.
10. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUNDING BAR AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
11. PROVIDE GROUNDING KIT 6" BEFORE TURN TRANSITION FROM TOWER TO ICE BRIDGE.

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

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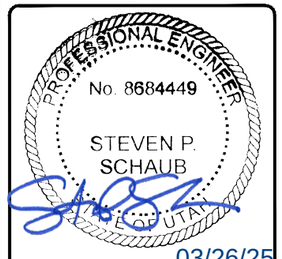
DRAWN BY:	KNM
CHECKED BY:	MRL
RFDS:	5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW



EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

AB	ANCHOR BOLT
ABV	ABOVE
AC	ALTERNATING CURRENT
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
AIC	AMPERAGE INTERRUPTION CAPACITY
ALUM	ALUMINUM
ALT	ALTERNATE
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BTC	BARE TINNED COPPER CONDUCTOR
BOF	BOTTOM OF FOOTING
CAB	CABINET
CANT	CANTILEVERED
CHG	CHARGING
CLG	CEILING
CLR	CLEAR
COL	COLUMN
COMM	COMMON
CONC	CONCRETE
CONSTR	CONSTRUCTION
DBL	DOUBLE
DC	DIRECT CURRENT
DEPT	DEPARTMENT
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
EC	ELECTRICAL CONDUCTOR
EL.	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
EW	EACH WAY
FAB	FABRICATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIF	FACILITY INTERFACE FRAME
FIN	FINISH(ED)
FLR	FLOOR
FDN	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GLB	GLUE LAMINATED BEAM
GLV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE
HDG	HOT DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HVAC	HEAT/VENTILATION/AIR CONDITIONING
HT	HEIGHT
IGR	INTERIOR GROUND RING
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
LTE	LONG TERM EVOLUTION
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NEC	NATIONAL ELECTRIC CODE
NM	NEWTON METERS
NO.	NUMBER
#	NUMBER
NTS	NOT TO SCALE
OC	ON–CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OPNG	OPENING
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PCU	PRIMARY CONTROL UNIT
PRC	PRIMARY RADIO CABINET
PP	POLARIZING PRESERVING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PWR	POWER CABINET
QTY	QUANTITY
RAD	RADIUS
RECT	RECTIFIER
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	REMOTE ELECTRIC TILT
RF	RADIO FREQUENCY
RMC	RIGID METALLIC CONDUIT
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
RWY	RACEWAY
SCH	SCHEDULE
SHT	SHEET
SIAD	SMART INTEGRATED ACCESS DEVICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY
THK	THICKNESS
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
UPS	UNITERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
VIF	VERIFIED IN FIELD
W	WIDE
W/	WITH
WD	WOOD
WP	WEATHERPROOF
WT	WEIGHT

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GPD JOB #: 2024723.02/ 86662.01
DRAWN BY: KNM
CHECKED BY: MRL
RFDS: 5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW

PROFESSIONAL STRUCTURAL ENGINEER
No. 8043047-2203
JOHN N. KABAK
STATE OF UTAH
03/26/25

EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
LEGEND & ABBREVIATIONS

SHEET NUMBER
GN-1

GENERAL CONSTRUCTION NOTES

GENERAL CONSTRUCTION

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   GENERAL CONTRACTOR: OVERLAND CONTRACTING INC. (B&V)
   CONTRACTOR: (CONSTRUCTION)
   OWNER: AT&T
2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.
3. GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE NECESSARY PROVISIONS. PRIOR TO PROCEEDING WITH CONSTRUCTION, GENERAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL CONTRACT DOCUMENTS, SITE CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON PLAN. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
4. MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
5. ALL WORK CARRIED OUT SHALL COMPLY WITH APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS IN ADDITION TO LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS SHOWN ON THE DRAWINGS.
7. PLANS SHALL NOT BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES, UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. IT IS CRITICAL TO FIELD VERIFY ALL DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE PLAN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS. SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THE PLAN, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS, AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
11. GENERAL CONTRACTOR SHALL COORDINATE AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
12. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT, EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
13. SEAL PENETRATIONS THROUGH FIRE RATED AREAS, SHALL BE MADE WITH UL LISTED MATERIALS, APPROVED BY THE LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN AND HAZARD FREE, AND DISPOSE OF ALL DEBRIS DAILY.
14. AS-BUILT CONDITIONS ARE REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
15. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER, 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
16. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING, AND STRUCTURES DURING CONSTRUCTION OPERATIONS. ANY DAMAGED AREAS/ SITE ELEMENTS SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
17. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR THE NOTIFICATION OF TIER-TWO FACILITY/UTILITY OWNERS.
18. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
19. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
20. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS, ON THE PREMISES, AT ALL TIMES.
21. THE CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OT 2-A:10-B:C LOCATED WITHIN 25 FEET OF TRAVEL DISTANCE TO WORK ALL AREAS OR WHERE WORK IS BEING PERFORMED DURING CONSTRUCTION.
22. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. TRAINING SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.
23. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED, OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
24. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT, OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND PROPERLY STABILIZED TO PREVENT EROSION.
25. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE SITE DURING CONSTRUCTION. EROSION CONTROL AND SEDIMENT CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH FEDERAL AND/OR LOCAL JURISDICTIONS.
26. FILL OR EMBANKMENT MATERIAL SHALL NOT BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW, OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
27. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR IN OPEN SPACE. ALL TRENCHES IN THE PUBLIC RIGHT-OF-WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL, PRE-APPROVED BY THE LOCAL JURISDICTION.
28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
29. ALL BROCHURES, OPERATION MANUALS, MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
30. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
31. THE PROPOSED FACILITY WILL BE UNMANNED, DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).
32. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION OF APPROXIMATELY TWO TIMES PER MONTH BY AT&T TECHNICIANS.
33. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
34. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION AT&T MOBILITY GROUNDING STANDARD "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM WIRELESS SITES" AND "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATIONS AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.
35. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
36. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
37. CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
38. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE OBSERVATIONS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
39. WHITE STROBE LIGHTS ARE NOT PERMITTED. IF LIGHTING IS REQUIRED, IT SHALL MEET FAA STANDARDS AND REQUIREMENTS.
40. ALL COAXIAL CABLE CONTRACTOR SHALL INSTALL PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

ANTENNA MOUNTING

41. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
42. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
43. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
44. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
45. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK WASHERS AND/OR DOUBLE NUTS, AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
46. CONTRACTOR SHALL INSTALL ANTENNA AND ASSOCIATED GROUNDING PER MANUFACTURER'S RECOMMENDATIONS.
47. ALL UNUSED PORTS ON ANY ANTENNA OR TMA, SHALL BE COVERED BY CONCEALOR CAP WITH PROPER WEATHER PROOFING OR BE TERMINATED WITH A 50 Ω LOAD.
48. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 3 DEGREES AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5 DEGREES AS DEFINED BY THE RFDS. REFER TO ATT-002-290-210.
49. JUMPERS FROM THE TOWER MOUNTED AMPLIFIERS MUST TERMINATE TO OPPOSITE POLARIZATIONS IN EACH SECTOR.
50. CONTRACTOR SHALL RECORD THE SERIAL NUMBER, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
51. TOWER MOUNTED AMPLIFIERS SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.
52. ANTENNAS SHALL HAVE A 4'-0" MINIMUM CENTER-TO-CENTER HORIZONTAL SEPARATION.

TORQUE REQUIREMENTS

53. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
54. A TORQUE MARK FORMING A CONTINUOUS STRAIGHT LINE IS TO BE MADE IN THE FOLLOWING APPLICATIONS:
    A. RF CONNECTIONS – MARK BOTH SIDES OF THE CONNECTOR
    B. GROUNDING AND ANTENNA HARDWARE – MARK ON THE NUT SIDE OF THE BOLT, STARTING FROM THE THREADS TO THE SOLID SURFACE. SOLID SURFACE EXAMPLES INCLUDE A GROUND BAR OR ANTENNA BRACKET METAL.
55. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
56. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
57. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
58. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 – 29.8 NM).
59. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 – 2.3 NM).

FIBER & POWER CABLE MOUNTING

60. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED IN CONDUITS OR INNERDUCT. WHEN UTILIZING A CABLE TRAY SYSTEM, PLACE FIBER OPTIC TRUNK CABLE INTO AN INTER-DUCT. A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER-DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (6) SIX FEET AND SHALL BE SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ATRICLE 770 RULES SHALL APPLY.
61. TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS OR CABLE TRAYS, AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) FEET. WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS OR CABLE TRAYS THAT ARE SERVICING UTILIZATION EQUIPMENT OR DEVICES. A TRANSITION DISTACE EXCEEDING (6) FEET REQUIRES CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
62. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

63. TYPES AND SIZES OF THE ANTENNA CABLES ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
64. CONTRACTOR SHALL VERIFY THAT THE DOWNTILT OF EACH ANTENNA IS WITHIN +/- 0.5 DEGREES OF SPECIFICATION WITH AN OCI APPROVED DIGITAL LEVEL.
65. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO LASTEST REVISION OF THE "ANTENNA SYSTEM LABELING STANDARD."
66. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE IN AN APPROVED MANNER, NOT TO EXCEED MANUFACTURER'S RECOMMENDATIONS.
67. COAXIAL CABLE SHALL BE SECURED TO THE DESIGNATED SUPPORT STRUCTURE(S) PER MANUFACTURER'S SPECIFICATIONS.

GENERAL CABLE AND EQUIPMENT NOTES

68. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, COAX CONFIGURATION, MAKES, AND MODELS PRIOR TO INSTALLATION.
69. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
70. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
71. AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE, ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED. SELF BONDING TAPE AND PLASTIC ENCLOSURES ARE PERMITTED PER ATT-002-290-041, SECTION 7.
72. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
    A. TEMPERATURE SHALL BE ABOVE 50 DEGREES FAHRENHEIT.
    B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
    C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
    D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
73. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. AT THE FOLLOWING LOCATIONS PER MANUFACTURER'S RECOMMENDATIONS:
    A. THE ANTENNA LEVEL.
    B. THE MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
    C. BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
74. ANTENNA CONTRACTOR SHALL FURNISH AND INSTALL A 12'-0" T-BOOM SECTOR ANTENNA MOUNT INCLUDING ALL HARDWARE, IF APPLICABLE.

SAFETY

75. CONSTRUCTION WORK PRESENTS UNIQUE THREATS TO HEALTH AND SAFETY. THE CONTRACTOR IS RESPONSIBLE TO EDUCATE THEIR WORK FORCE OF THESE DANGERS AND LIMIT THEIR EXPOSURE TO HAZARDS. THIS EDUCATION SHALL INCLUDE BUT NOT BE LIMITED TO APPLICABLE TRAINING COURSES AND CERTIFICATIONS, PROPER PERSONAL PROTECTIVE EQUIPMENT USAGE, DAILY TAILGATE MEETINGS AND ANY OTHER PREVENTATIVE MEASURES WHICH MAY BE REASONABLY EXPECTED. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND ANY PROPERTY OCCUPANTS WHO MAY BE AFFECTED BY THE WORK UNDER CONTRACT. THE CONTRACTOR SHALL REVIEW ALL LANDOWNER, PRIME CONTRACTOR, CARRIER, OSHA, AND LOCAL SAFETY GUIDELINES AND AT ALL TIMES SHALL CONFORM TO THE MOST RESTRICTIVE OF THESE STANDARDS TO ENSURE A SAFE WORKPLACE.
76. TOWER WORK PRESENTS ADDITIONAL THREATS TO HEALTH AND SAFETY. ALL TOWER WORKERS WORKING ON A TOWER MUST BE ADEQUATELY TRAINED AND MONITORED TO ENSURE THAT SAFE WORK PRACTICES ARE LEARNED AND FOLLOWED. AS REQUIRED BY OSHA, WHEN WORKING ON EXISTING COMMUNICATION TOWERS, EMPLOYEES MUST BE PROVIDED WITH APPROPRIATE FALL PROTECTION, TRAINED TO USE THIS FALL PROTECTION PROPERLY, AND THE USE OF FALL PROTECTION MUST BE CONSISTENTLY SUPERVISED AND ENFORCED BY THE CONTRACTOR.

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CHECKED BY: MRL
RFDS: 5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW

PROFESSIONAL STRUCTURAL ENGINEER
No. 8043047-2203
JOHN N. KABAK
STATE OF UTAH
03/26/25

EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
GENERAL CONSTRUCTION NOTES

SHEET NUMBER
GN-2

GENERAL SITE WORK AND DRAINAGE NOTES

PART 1 – GENERAL

CONTRACTOR SHALL PROVIDE CLEARING, GRUBBING, STRIPPING, EROSION CONTROL, SURVEY, LAYOUT, SUBGRADE PREPARATION, AND FINISH GRADING AS REQUIRED TO COMPLETE THE PROPOSED WORK SHOWN IN THESE PLANS.

1.1 REFERENCES:

A. DOT (STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION)

B. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

C. OSHA (OCCUPATION SAFETY AND HEALTH ADMINISTRATION)

1.2 INSPECTION AND TESTING:

A. FIELD TESTING OF EARTHWORK COMPACTION AND CONCRETE CYLINDERS SHALL BE PERFORMED BY AN INDEPENDENT TESTING LAB. THIS WORK SHALL BE COORDINATED BY THE SUBCONTRACTOR.

B. ALL WORK SHALL BE INSPECTED AND RELEASED BY THE GENERAL CONTRACTOR. THE INSPECTIONS SHALL BE CARRIED OUT WITH SPECIFIC CONCERN FOR PROPER PERFORMANCE OF THE WORK AS SPECIFIED AND/OR CALLED FOR ON THE PLAN. IT IS THE SUBCONTRACTOR'S RESPONSIBILITY TO REQUEST THE REQUIRED INSPECTIONS PRIOR TO PROCEEDING WITH FURTHER WORK THAT WOULD MAKE PARTS OF WORK INACCESSIBLE OR DIFFICULT TO INSPECT.

1.3 SITE MAINTENANCE AND PROTECTION:

A. PROVIDE ALL NECESSARY JOB SITE MAINTENANCE FROM COMMENCEMENT OF WORK UNTIL COMPLETION OF THE SUBCONTRACT.

B. AVOID DAMAGE TO THE SITE AND TO EXISTING FACILITIES, STRUCTURES, TREES, AND SHRUBS DESIGNATED TO REMAIN. TAKE PROTECTIVE MEASURES TO PREVENT DAMAGED TO EXISTING FACILITIES THAT ARE NOT DESIGNATED FOR MODIFICATION OR REMOVAL.

C. KEEP SITE FREE OF PONDING WATER.

D. PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH STATE DOT AND EPA REQUIREMENTS.

E. PROVIDE AND MAINTAIN ALL TEMPORARY FENCING, BARRICADES, WARNING SIGNS, AND SIMILAR DEVICES NECESSARY TO PROTECT AGAINST THEFT FROM PROPERTY DURING THE ENTIRE DURATION OF CONSTRUCTION. REMOVE ALL SUCH DEVICES UPON COMPLETION OF THE WORK.

F. DO NOT INTERRUPT EXISTING UTILITIES SERVING FACILITIES OCCUPIED BY THE OWNER OR OTHERS, EXCEPT WHEN PERMITTED IN WRITING BY THE ENGINEER AND THEN ONLY AFTER ACCEPTABLE TEMPORARY UTILITY SERVICES HAVE BEEN PROVIDED.

1. NOTICE TO ENGINEER SHALL BE PROVIDED A MINIMUM OF 48 HOURS PRIOR TO OUTAGE.

PART 2 – PRODUCTS

2.1 SUITABLE BACKFILL: ASTM D2321 (CLASS I, II, III OR IVA) FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN THREE (3) INCHES IN ANY DIMENSION.

2.2 NON–POROUS GRANULAR EMBANKMENT AND BACKFILL: ASTM D2321 (CLASS III, IVA OR IVB) COARSE AGGREGATE. FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN THREE (3) INCHES IN ANY DIMENSION.

2.3 POROUS GRANULAR EMBANKMENT AND BACKFILL: ASTM D2321 (CLASS IA, IB OR II) COARSE AGGREGATE FREE FROM FROZEN LUMPS, REFUSE, STONES, OR ROCKS LARGER THAN THREE (3) INCHES IN DIAMETER, OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.

2.4 SELECT STRUCTURAL FILL: GRANULAR FILL MATERIAL MEETING THE REQUIREMENTS OF ASTM E850–95. FOR USE AROUND AND UNDER STRUCTURES WHERE STRUCTURAL FILL MATERIAL IS REQUIRED.

2.5 GRANULAR BEDDING AND TRENCH BACKFILL: WELL–GRADED SAND MEETING THE GRADATION REQUIREMENTS OF ASTM D2487 (CLASSIFIED AS SE OR SW–SM SOILS).

2.6 COARSE AGGREGATE FOR ACCESS ROAD SUBBASE COURSE SHALL CONFORM TO ASTM D2940.

2.7 UNSUITABLE MATERIAL: HIGH AND MODERATELY PLASTIC SILTS AND CLAYS (LL>45). MATERIAL CONTAINING REFUSE, FROZEN LUMPS, DEMOLISHED BITUMINOUS MATERIAL, VEGETATIVE MATTER, WOOD, STONES IN EXCESS OF 3 INCHES IN DIAMETER, AND DEBRIS. THESE WILL BE SOILS CLASSIFIED BY ASTM AS PT, MH, CH, OH, ML, AND OL.

2.8 GEOTEXTILE FABRIC: MIRAFI 500X OR APPROVED EQUIVALENT.

2.9 PLASTIC MARKING TAPE SHALL BE ACID AND ALKALI RESISTANT POLYETHYLENE FILM SPECIFICALLY MANUFACTURED FOR MARKING AND LOCATING UNDERGROUND UTILITIES, SIX (6) INCHES WIDE WITH A MINIMUM THICKNESS OF 0.004" TAPE SHALL HAVE MINIMUM STRENGTH OF 1,500 PSI IN BOTH DIRECTIONS AND MANUFACTURED WITH INTEGRAL CONDUCTORS, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY A METAL DETECTOR WHEN BURIED UP TO 3 FEET DEEP. THE METALLIC CORE OF THE TAPE SHALL BE ENCASED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. TAPE COLOR SHALL BE RED FOR ELECTRIC UTILITIES AND ORANGE FOR TELECOMMUNICATION UTILITIES.

PART 3 – EXECUTION

3.1 GENERAL:

A. BEFORE STARTING GENERAL SITE PREPARATION ACTIVITIES, INSTALL EROSION AND SEDIMENT CONTROL MEASURES. THE WORK AREA SHALL BE CONSTRUCTED AND MAINTAINED IN SUCH CONDITION THAT IN THE EVENT OF A RAIN EVENT, THE SITE CAN PROPERLY DRAIN AT ANY TIME.

B. PRIOR TO SURVEY, LAYOUT, STAKING, AND MARKING, ESTABLISH AND MAINTAIN ALL LINES, GRADES, ELEVATIONS, AND BENCHMARKS NEEDED FOR EXECUTION OF THE WORK.

C. CLEAR AND GRUB THE AREA WITHIN THE LIMITS OF THE SITE. REMOVE TREES, BRUSH, STUMPS, RUBBISH, OTHER DEBRIS, AND VEGETATION RESTING ON OR PROTRUDING THROUGH THE GROUND SURFACE.

1. REMOVE THE FOLLOWING MATERIALS TO A DEPTH OF NO LESS THAN 12 INCHES BELOW THE ORIGINAL GROUND SURFACE: ROOTS, STUMPS, BRUSH, REFUSE, AND OTHER DEBRIS EMBEDDED IN OR PROTRUDING THROUGH THE GROUND SURFACE. RAKE, DISK, OR PLOW THE AREA TO A DEPTH OF NO LESS THAN 6 INCHES, AND REMOVE MATERIAL TO A DEPTH OF 12 INCHES BELOW THE BOTTOM DEPTH OF ROOTS AND OTHER DEBRIS.

2. REMOVE TOPSOIL MATERIAL COMPLETELY FROM THE SURFACE UNTIL THE SOIL NO LONGER MEETS THE DEFINITION OF TOPSOIL. AVOID MIXING TOPSOIL WITH SUBSOIL OR OTHER UNDESIRABLE MATERIALS.

3. EXCEPT WHERE EXCAVATION TO GREATER DEPTH IS INDICATED, FILL DEPRESSIONS RESULTING FROM CLEARING, GRUBBING, AND DEMOLITION WORK COMPLETELY WITH SUITABLE FILL.

D. ALL DEBRIS RESULTING FROM CLEARING AND GRUBBING OPERATIONS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN AN AUTHORIZED LANDFILL. BURNING OF DEBRIS WILL NOT BE PERMITTED.

E. PRIOR TO EXCAVATING, THOROUGHLY EXAMINE THE AREA TO BE EXCAVATED AND/OR TRENCHED TO VERIFY THE LOCATIONS OF FEATURES INDICATED ON THE DRAWINGS AND TO ASCERTAIN THE EXISTENCE AND LOCATION OF ANY STRUCTURE, UNDERGROUND STRUCTURE, OR OTHER ITEM NOT SHOWN THAT MIGHT INTERFERE WITH THE PROPOSED CONSTRUCTION. NOTIFY THE CONSTRUCTION MANAGER OF ANY OBSTRUCTIONS THAT WILL PREVENT ACCOMPLISHMENT OF THE WORK AS INDICATED ON THE PLANS.

F. SEPARATE AND STOCKPILE ALL EXCAVATED MATERIALS SUITABLE FOR BACKFILL. ALL EXCESS EXCAVATED AND UNSUITABLE MATERIALS SHALL BE DISPOSED OF OFF–SITE IN A LEGAL MANNER.

3.2 BACKFILL:

A. AFTER COMPLETING CONSTRUCTION OF A STRUCTURE, INCLUDING EXPIRATION OF THE SPECIFIED MINIMUM CURING PERIOD FOR CAST–IN–PLACE CONCRETE, BACKFILL THE EXCAVATION WITH APPROVED MATERIAL TO RESTORE THE REQUIRED FINISHED GRADE.

1. PRIOR TO PLACING BACKFILL AROUND STRUCTURES, ALL FORMS SHALL BE REMOVED AND THE EXCAVATION CLEANED OF ALL TRASH, DEBRIS, AND UNSUITABLE MATERIALS.

2. BACKFILL BY PLACING AND COMPACTING SUITABLE BACKFILL MATERIAL IN UNIFORM HORIZONTAL LAYERS OF NO GREATER THAN 8–INCHES LOOSE THICKNESS. WHERE HAND OPERATED COMPACTORS ARE USED, THE FILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 4 INCHES IN LOOSE DEPTH.

3. IF THE DENSITY TESTING INDICATES THAT THE CONTRACTOR HAS NOT OBTAINED THE SPECIFIED DENSITY, THE SUCCEEDING LAYER SHALL NOT BE PLACED UNTIL THE SPECIFICATION REQUIREMENTS ARE MET UNLESS OTHERWISE AUTHORIZED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL TAKE WHATEVER APPROPRIATE ACTION IS NECESSARY, SUCH AS DISKING AND DRYING, ADDING WATER, OR INCREASING THE COMPACTIVE EFFORT TO MEET THE MINIMUM COMPACTION REQUIREMENTS.

B. THOROUGHLY COMPACT EACH LAYER OF BACKFILL TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE STANDARD PROCTOR TEST, ASTM D698.

3.3 TRENCH EXCAVATION:

A. UTILITY TRENCHES SHALL BE EXCAVATED AT LOCATIONS, DEPTHS, AND WIDTHS SHOWN ON PLAN, OR AS DIRECTED BY THE GENERAL CONTRACTOR. EXCAVATION CONTRACTOR SHALL PROVIDE SHORING, SHEETING, AND BRACING AS REQUIRED TO PREVENT CAVING OR SLOUGHING OF THE TRENCH WALLS.

B. THE TRENCH WIDTH SHALL EXTEND A MINIMUM OF 6 INCHES BEYOND THE OUTSIDE EDGE OF THE OUTERMOST CONDUIT.

3.4 TRENCH BACKFILL:

A. NOTIFY THE GENERAL CONTRACTOR 24 HOURS IN ADVANCE OF BACKFILLING.

B. PROVIDE GRANULAR BEDDING MATERIAL IN ACCORDANCE WITH THE PLAN AND THE UTILITY REQUIREMENTS.

C. CONDUCT UTILITY CHECK TESTS BEFORE BACKFILLING. BACKFILL AND COMPACT TRENCH BEFORE ACCEPTANCE TESTING.

D. PLACE GRANULAR TRENCH BACKFILL UNIFORMLY ON BOTH SIDES OF THE CONDUITS IN 6–INCH UNCOMPACTED LIFTS AND TO 12 INCHES OVER THE CONDUITS. SOLIDLY RAM AND TAMP BACKFILL INTO SPACE AROUND CONDUITS.

E. PROTECT CONDUIT FROM LATERAL MOVEMENT, IMPACT DAMAGE, OR UNBALANCED LOADING.

F. ABOVE THE CONDUIT EMBEDMENT ZONE, PLACE AND COMPACT THE BACKFILL MATERIAL IN MAXIMUM 8–INCH THICK LOOSE LIFTS TO RESTORE THE REQUIRED FINISHED SURFACE GRADE.

G. COMPACT THE TRENCH BACKFILL A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE STANDARD PROCTOR TEST, ASTM D698.

3.5 AGGREGATE ACCESS ROAD:

A. CLEAR, GRUB, STRIP, AND EXCAVATE FOR THE ACCESS ROAD AS SHOWN ON PLAN. SCARIFY TO A DEPTH OF 6 INCHES AND PROOF–ROLL. ALL HOLES, RUTS, SOFT PLACES, AND OTHER DEFECTS SHALL BE CORRECTED.

B. THE SUBGRADE OF THE DISTURBED AREA SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST, ASTM D1557.

C. AFTER PREPARATION OF THE ROAD SUBGRADE IS COMPLETE, INSTALL THE GEOTEXTILE FABRIC (MIRAFI 500Xi) AT LOCATIONS INDICATED ON THE PLAN BY ROLLING THE FABRIC OUT LONGITUDINALLY ALONG THE ROADWAY. THE FABRIC SHALL NOT BE DRAGGED ACROSS THE SUBGRADE. PLACE THE ENTIRE ROLL IN A SINGLE OPERATION AND ROLL IT OUT AS SMOOTHLY AS POSSIBLE.

1. GEOTEXTILE FABRIC OVERLAPS THAT ARE PARALLEL TO THE ROADWAY WILL BE PERMITTED ALONG THE CENTERLINE OF THE ROAD AND AT LOCATIONS BEYOND THE ROADWAY SURFACE WIDTH (I.E. WITHIN THE SHOULDER WIDTH) ONLY. NO LONGITUDINAL OVERLAPS SHALL BE LOCATED BETWEEN THE CENTERLINE AND THE SHOULDER. PARALLEL OVERLAPS SHALL BE A MINIMUM OF 3 FEET WIDE.

2. TRANSVERSE (PERPENDICULAR TO THE ROADWAY) GEOTEXTILE FABRIC OVERLAPS AT THE END OF A ROLL SHALL OVERLAP IN THE DIRECTION OF THE AGGREGATE PLACEMENT WITH THE PREVIOUS ROLL ON TOP OF THE NEW ROLL, AND SHALL HAVE A MINIMUM LENGTH OF 3 FEET.

3. ALL GEOTEXTILE FABRIC OVERLAPS SHALL BE PINNED WITH STAPLES OR NAILS A MINIMUM OF 10 INCHES LONG TO INSURE PROPER POSITIONING DURING PLACEMENT OF AGGREGATE. PIN LONGITUDINAL SEAMS AT A MINIMUM OF 25–FOOT INTERVALS AND TRANSVERSE SEAMS AT A MINIMUM OF 5–FOOT INTERVALS.

D. THE AGGREGATE BASE AND SURFACE AGGREGATE SHALL BE CONSTRUCTED IN LAYERS NOT MORE THAN 4 INCHES (COMPACTED) IN THICKNESS. AGGREGATE TO BE PLACED ON GEOTEXTILE FABRIC SHALL BE END–DUMPED ON THE FABRIC FROM THE FREE END OF THE FABRIC OR OVER PREVIOUSLY PLACED AGGREGATE. THE FIRST LIFT SHALL BE BLADED DOWN TO A THICKNESS OF 8 INCHES PRIOR TO COMPACTION. AT NO TIME SHALL EQUIPMENT, EITHER TRANSPORTING THE AGGREGATE OR GRADING THE AGGREGATE, BE PERMITTED ON THE ROADWAY WITH LESS THAN 4 INCHES OF MATERIAL COVERING THE GEOTEXTILE FABRIC.

E. THE AGGREGATE SHALL BE IMMEDIATELY COMPACTED TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D1557. A TAMPING ROLLER, PNEUMATIC–TIRED ROLLER, OR VIBRATORY MACHINE, OR ANY COMBINATION THEREOF MAY BE USED FOR COMPACTION PROCEDURES. THE TOP LAYER SHALL BE GIVEN A FINAL ROLLING WITH A THREE–WHEEL OR TANDEM ROLLER.

3.6 FINISH GRADING:

A. PERFORM ALL GRADING TO PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND SMOOTH SURFACE DRAINAGE OF THE ENTIRE AREA WITHIN THE LIMITS OF CONSTRUCTION. GRADING SHALL PROPERLY BLEND WITH SURROUNDING TOPOGRAPHY AND STRUCTURES.

B. IF DEEMED SUITABLE PER GEOTECHNICAL ENGINEER, UTILIZE FILL MATERIAL RESULTING FROM EXCAVATION FOR THE CONSTRUCTION OF FILLS, EMBANKMENTS, AND FOR REPLACEMENT OF REMOVED UNSUITABLE MATERIALS.

C. ACHIEVE FINISHED GRADE BY PLACING A MINIMUM OF 4 INCHES OF 1/2" – 3/4" CRUSHED STONE ON IF APPLICABLE, TOP OF SOIL STABILIZER FABRIC.

D. REPAIR ALL ACCESS ROADS AND SURROUNDING AREAS DISTURBED DURING THE COURSE OF THIS WORK TO THEIR ORIGINAL CONDITION.

3.7 ASPHALT PAVING: SHALL BE PERFORMED PER COLORADO DEPARTMENT OF TRANSPORTATION (CDOT), DIVISION 400 – CDOT PAVEMENT STANDARDS AND SPECIFICATIONS.

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SHEET TITLE
GENERAL SITE WORK & DRAINAGE NOTES

SHEET NUMBER
GN-3

GENERAL CONCRETE WORK NOTES

PART 1 – GENERAL

1.1 SCOPE:

A. FORM WORK, REINFORCING STEEL, ACCESSORIES, CAST–IN PLACE CONCRETE, FINISHING, CURING, AND TESTING FOR STRUCTURAL CONCRETE FOUNDATIONS.

1.2 REFERENCES:

A. ACI (AMERICAN CONCRETE INSTITUTE)

1. ACI 301 SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS.
2. ACI 304 RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE.
3. ACI 305 RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING.
4. ACI 306 RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING.
5. ACI 308 STANDARD PRACTICE FOR CURING CONCRETING.
6. ACI 309 STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE.
7. ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
8. ACI 347 RECOMMENDED PRACTICE FOR CONCRETE FORMWORK.

B. THE APPLICABLE STANDARDS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) ARE REFERENCED IN THE ACI STANDARDS AND ARE A PART OF THIS SPECIFICATION.

PART 2 – PRODUCTS

2.1 REINFORCING MATERIALS:

B. REINFORCING BARS: ASTM A615, GRADE 60, PROPOSED DEFORMED BILLET–STEEL BARS, PLAIN FINISH.

C. CONTRACTOR SHALL FURNISH CHAIRS, BOLSTERS, BAR SUPPORTS, SPACERS AS REQUIRED FOR SUPPORT OF REINFORCING STEEL AND WIRE FABRIC.

2.2 CONCRETE MATERIALS:

A. PORTLAND CEMENT SHALL BE TYPE II, CONFORMING TO ASTM C–150.

B. AGGREGATE SHALL CONFORM TO ASTM C–33.

1. FINE AGGREGATE SHALL BE UNIFORMLY GRADED, CLEAN, SHARP, AND WASHED NATURAL OR CRUSHED SAND, FREE FROM ORGANIC IMPURITIES.
2. COARSE AGGREGATE SHALL BE NATURAL WASHED GRAVEL OR CRUSHED ROCK CONSISTING HARD, STRONG, DURABLE PIECES, FREE FROM ADHERENT COATINGS.
3. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 3/4 INCH IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM C–33 GRADATION SIZE NO. 67.

C. WATER USED IN CONCRETE MIX SHALL BE POTABLE, CLEAN, AND FREE FROM OILS, ACIDS, SALTS, CHLORIDES, ALKALI, SUGAR, VEGETABLE, OR OTHER DELETARIOUS SUBSTANCES.

D. THE CONCRETE SHALL CONTAIN AN AIR–ENTRAINING ADMIXTURE COMPLYING WITH THE REQUIREMENTS OF ASTM C–260 AND ACI 212. 1R AND A WATER–REDUCING ADMIXTURE COMPLYING WITH THE REQUIREMENTS OF ASTM C–494 AND ACI 212.1R. ADMIXTURES SHALL BE PURCHASED AND BATCHED IN LIQUID SOLUTION. THE USE OF CALCIUM CHLORIDE OR AN ADMIXTURE CONTAINING CALCIUM CHLORIDE IS PROHIBITED. ADMIXTURES SHALL BE OF THE SAME MANUFACTURER TO ASSURE COMPATIBILITY. ACCEPTABLE MANUFACTURERS ARE:

1. W.R. GRACE
2. SIKA CORPORATION
3. MASTER BUILDERS
4. EUCLID CHEMICAL COMPANY

E. CURING COMPOUND SHALL CONFORM TO ASTM C309, TYPE I, ID, CLASS A AND B, AND ASTM C171 AS APPLICABLE.

2.3 CONCRETE MIX:

A. PROPORTION CONCRETE MIX IN ACCORDANCE WITH REQUIREMENTS OF ACI 301. THE STRENGTH OF CONCRETE SHALL BE AS INDICATED ON THE DRAWINGS. WHERE STRENGTH IS NOT CLEARLY INDICATED, CONCRETE OF MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI SHALL BE USED.

B. THE CONCRETE MIX SHALL BE DESIGNED FOR A MAXIMUM SLUMP OF THREE INCHES AT THE POINT OF DISCHARGE. MIXES OF THE STIFFEST CONSISTENCY THAT CAN BE EFFICIENTLY PLACED SHALL BE USED.

C. ALL CONCRETE SHALL HAVE THREE (3) TO FIVE (5) PERCENT ENTRAINED AIR.

D. ALL STRUCTURAL CONCRETE SHALL CONTAIN A WATER–REDUCING AGENT.

PART 3 – EXECUTION

3.1 GENERAL:

A. CONSTRUCT AND ERECT THE FORM WORK IN ACCORDANCE WITH ACI 301 AND ACI 347.

B. COLD–WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 306.

C. HOT–WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 305.

3.2 INSERTS, EMBEDDED COMPONENTS, AND OPENINGS:

A. CONTRACTOR SHALL CHECK ALL CIVIL, ARCHITECTURAL, STRUCTURAL, AND ELECTRICAL DRAWINGS FOR OPENINGS, SLEEVES, ANCHOR BOLTS, INSERTS, AND OTHER ITEMS TO BE INCORPORATED INTO THE CONCRETE WORK.

B. COORDINATE THE WORK OF OTHER SECTION IN FORMING AND SETTING OPENINGS, RECESSES, SLOTS, CHASES, ANCHORS, INSERTS, AND OTHER ITEMS TO BE EMBEDDED.

C. EMBEDDED ITEMS SHALL BE SET ACCURATELY IN LOCATION, ALIGNMENT, ELEVATION AND PLUMBNESS, LOCATED AND MEASURED FROM ESTABLISHED SURVEYED REFERENCE BENCHMARKS.

D. EMBEDDED ITEMS SHALL BE ANCHORED INTO PLACE IN A MANNER TO PREVENT MOVEMENT DURING CONCRETE PLACEMENT AND CONSOLIDATION. COMPONENTS FORMING A PART OF A COMPLETE ASSEMBLY SHALL BE ALIGNED BEFORE ANCHORING INTO PLACE. PROVIDE TEMPORARY BRACING, ANCHORAGE, AND TEMPLATES AS REQUIRED TO MAINTAIN THE SETTING AND ALIGNMENT.

3.3 REINFORCEMENT PLACEMENT:

A. PLACE REINFORCEMENT ACCORDING TO CONSTRUCTION PLAN SET DRAWINGS AND IN ACCORDANCE WITH ACI 301 AND ACI 318.

B. ACCURATELY POSITION, SUPPORT, AND SECURE REINFORCEMENT AGAINST DISPLACEMENT FROM FORM WORK CONSTRUCTION OR CONCRETE PLACEMENT AND CONSOLIDATION. SUPPORT REINFORCING ON METAL CHAIRS, RUNNERS, BOLSTERS, SPACERS AND HANGERS.

C. SPLICES OF REINFORCING BARS SHALL BE CLASS B UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS. SPLICES SHALL BE STAGGERED AND FULL DEVELOPMENT LENGTH SHALL BE PROVIDED ACROSS JOINTS.

D. LOCATE REINFORCING TO PROVIDE CONCRETE COVER AND SPACING SHOWN ON THE DRAWINGS. MINIMUM COVER SHALL BE AS REQUIRED BY ACI 318.

E. WELDING OF AND TO ANY REINFORCING MATERIALS, INCLUDING TACK WELDING OF CROSSING BARS, IS STRICTLY PROHIBITED.

3.4 CONCRETE PLACEMENT:

A. PRIOR TO PLACING CONCRETE, THE FORMS AND REINFORCEMENT SHALL BE THOROUGHLY INSPECTED; ALL TEMPORARY BRACING, TIES, AND CLEATS REMOVED; ALL OPENINGS FOR UTILITIES PROPERLY BOXED; ALL FORMS PROPERLY SECURED IN THEIR CORRECT POSITION AND MADE TIGHT. ALL REINFORCEMENT AND EMBEDDED ITEMS SHALL BE SECURED IN THEIR PROPER LOCATIONS. ALL OLD AND DRY CONCRETE AND DIRT SHALL BE CLEANED OFF AND ALL STANDING WATER AND OTHER FOREIGN MATERIAL REMOVED.

B. CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301 AND ACI 304 AND SHALL BE PLACED AT SUCH A RATE THAT THE CONCRETE PREVIOUSLY PLACED IS STILL PLASTIC AND INTEGRATED WITH THE FRESH CONCRETE. CONCRETE PLACEMENT, ONCE STARTED, SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL THE SECTION IS COMPLETED. COLD JOINTS ARE NOT ALLOWED UNLESS PRE–APPROVED BY ENGINEER.

C. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED AND COMPACTED BY VIBRATION SPACING, RODDING, OR FORKING DURING THE OPERATION OF PLACING IN ACCORDANCE WITH ACI 309. THE CONCRETE SHALL BE THOROUGHLY WORKED AROUND REINFORCEMENT, EMBEDDED ITEMS, AND INTO THE CORNER OF THE FORMS SO AS TO ELIMINATE ALL AIR POCKETS AND VOIDS.

3.5 FINISHING:

A. FINISHING OF THE FLOOR SLABS SHALL BE IN ACCORDANCE WITH ACI 302.1 SECTION 7.2 AND SHALL INCLUDE A MINIMUM OF THREE TROWELINGS. IN ACCORDANCE WITH ASTM E 1155 THE SLAB FINISH TOLERANCE AS MEASURED SHALL HAVE AN OVERALL TEST NUMBER FOR FLATNESS OF Ff= 20 AND Fl = 15. THE MINIMUM LOCAL NUMBER FOR FLATNESS, Ff= 15 AND Fl=10.

B. SURFACE OF FLOOR SLAB SHALL RECEIVE TWO COATS OF CLEAR SEALER/HARDNER.

C. ABOVE GRADE WALL SURFACES SHALL HAVE A SMOOTH FORM FINISH AS DEFINED IN CHAPTER 10 OF ACI 301.

3.6 CURING:

A. FRESHLY DEPOSITED CONCRETE SHALL BE PROTECTED FROM PREMATURE DRYING AND EXCESSIVELY HOT AND COLD TEMPERATURES, AND SHALL BE MAINTAINED WITH MINIMUM MOISTURE LOSS AT A RELATIVELY CONSTANT TEMPERATURE FOR A PERIOD OF TIME NECESSARY FOR THE HYDRATION OF THE CEMENT AND PROPER CURING OF THE CONCRETE.

B. CONCRETE SHALL BE KEPT CONTINUOUSLY MOIST AT LEAST OVERNIGHT, IMMEDIATELY FOLLOWING THE INITIAL CURING. BEFORE THE CONCRETE HAS DRIED. ADDITIONAL CURING SHALL BE ACCOMPLISHED BY ONE OF THE FOLLOWING MATERIALS OR METHODS:

1. PONDING OR CONTINUOUS SPRINKLING.
2. ABSORPTIVE MAT OR FABRIC KEPT CONTINUOUSLY WET.
3. NON–ABSORPTIVE FILM (POLYETHYLENE) OVER PREVIOUSLY SPRINKLED SURFACE.
4. SAND OR OTHER COVERING KEPT CONTINUOUSLY WET.
5. CONTINUOUS STEAM (NOT EXCEEDING 150 DEGREES FAHRENHEIT OR VAPOR MIST BATH.
6. CURING COMPOUND APPLIED IN TWO COATS, SPRAYED IN PERPENDICULAR DIRECTION

C. THE FINAL CURING SHALL CONTINUE UNTIL THE CUMULATIVE NUMBER OF DAYS OR FRACTION THEREOF, NOT NECESSARILY CONSECUTIVE, DURING WHICH TEMPERATURE OF THE AIR IN CONTACT WITH CONCRETE IS ABOVE 50 DEGREES' FAHRENHEIT HAS TOTALED SEVEN (7) DAYS. CONCRETE SHALL NOT BE PERMITTED TO FREEZE DURING THE CURING PERIOD. RAPID DRYING AT THE END OF THE CURING PERIOD SHALL BE PREVENTED.

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RFDS:	5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW

PROFESSIONAL STRUCTURAL ENGINEER
No. 8043047-2203
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03/26/25

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CELL SITE RF MODIFICATIONS

SHEET TITLE
GENERAL CONCRETE WORK NOTES

SHEET NUMBER
GN-4

GENERAL STRUCTURAL STEEL NOTES

PART 1 – GENERAL

1.1 SCOPE:

A. PROVIDE FABRICATION AND ERECTION OF STRUCTURAL STEEL AND OTHER ELEMENTS AS SHOWN ON THE DRAWINGS OR REQUIRED BY OTHER SECTIONS OF THESE SPECIFICATIONS.

1.2 REFERENCES:

A. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC). MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN (ASD).

B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
ASTM A36: STRUCTURAL STEEL
ASTM A53: PIPE, STEEL BLACK AND HOT DIPPED, ZINC–COATED WELDED AND SEAMLESS.
ASTM A108: STEEL BARS, CARBON, COLD FINISHED, STANDARD QUALITY.
ASTM A123: ZINC (HOT–DIPPED GALVANIZED) COATING ON IRON AND STEEL PRODUCTS.
ASTM A307: CARBON STEEL BOLTS AND STUD, 60,000 P.S.I. TENSILE STRENGTH.
ASTM A325: HIGH–STRENGTH BOLT FOR STRUCTURAL STEEL JOINTS.
ASTM A490: HEAT–TREATED, STRUCTURAL STEEL BOLTS, 150 (KSI) (1035MPA) TENSILE STRENGTH.
ASTM A500: COLD–FORMED WELDED AND SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES.
ASTM A563: CARBON AND ALLOY STEEL NUTS.
ASTM B695: COATINGS OF ZINC MECHANICALLY DEPOSITED ON IRON AND STEEL.
ASTM F436: HARDENED STEEL WASHERS.
ASTM F959: COMPRESSIBLE–WASHER–TYPE DIRECT TENSION INDICATOR FOR USE WITH STRUCTURAL FASTENERS.

C. AMERICAN WELDING SOCIETY (AWS):
AWS A5.1: COVERED CARBON STEEL ARC WELDING ELECTRODES.
AWS A5.5: LOW ALLOY STEEL COVERED ARC WELDING ELECTRODES.
AWS D1.1: STRUCTURAL WELDING CODE – STEEL.

D. RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC): "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS OR ASTM A490 BOLTS." AS ENDORSED BY AISC.

E. STEEL STRUCTURES PAINTING COUNCIL (SSPC):
SSPC–SP3: POWER TOOL CLEANING.
SSPC–PAINT 11: RED IRON OXIDE, ZINC CHROME, RAW LINSEED OIL OR ALKYD PAINT.

1.3 SUBMITTALS:

A. SUBMIT THE FOLLOWING FOR APPROVAL:

1. FABRICATION AND ERECTION DRAWINGS SHOWING ALL DETAILS, CONNECTIONS, MATERIAL DESIGNATIONS, AND ALL TOP STEEL ELEVATIONS.

B. WELDERS SHALL BE QUALIFIED AS PRESCRIBED IN AWS D1.1.

PART 2 – PRODUCTS

2.1 STRUCTURAL STEEL:

A. SHAPES, PLATES, AND BARS SHALL CONFORM TO ASTM A36.

B. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B. STEEL PIPE SHALL CONFIRM TO ASTM A53, TYPE E OR S, GRADE B.

2.2 ANCHOR BOLTS:

A. ANCHOR BOLTS SHALL CONFORM TO ASTM A307 WITH HEAVY HEXAGONAL NUTS.

2.3 BOLTS:

A. COMMON (MACHINE) BOLTS SHALL CONFORM TO ASTM A307 GRADE A AND NUTS TO ASTM A563. ONE COMMON BOLT ASSEMBLY SHALL CONSIST OF A BOLT, A HEAVY HEX NUT, AND A HARDENED WASHER.

B. HIGH–STRENGTH BOLTS SHALL CONFORM TO ASTM A325 ONE HIGH. STRENGTH BOLT ASSEMBLY SHALL CONSIST OF A HEAVY HEX STRUCTURAL BOLT, A HEAVY HEX NUT, AND A HARDENED WASHER CONFORMING TO ASTM F436. THE HARDENED WASHER SHALL BE INSTALLED AGAINST THE ELEMENT TURNED IN TIGHTENING. UNLESS NOTED OTHERWISE ON THE DRAWINGS, ALL CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS.

2.4 WELDING ELECTRODES:

A. WELDING ELECTRODES SHALL COMPLY WITH AWS D1.1 USING A5.1 OR A5.5 E70XX AND SHALL BE COMPATIBLE WITH THE WELDING PROCESS SELECTED.

2.5 PRIMER:

A. PRIMER SHALL BE RED OXIDE–CHROMATE PRIMER COMPLYING WITH SSPC PAINT SPECIFICATION NO. 11.

PART 3 – EXECUTION

3.1 FABRICATION:

A. SHOP FABRICATE AND ASSEMBLY MATERIALS AS SPECIFIED HEREIN.

1. FABRICATE ITEMS OF STRUCTURAL STEEL IN ACCORDANCE WITH THE AISC–ASD SPECIFICATIONS, AND AS INDICATED ON THE APPROVED SHOP DRAWINGS.
2. ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED PER ASTM.
3. PROPERLY MARK AND MATCH–MARK MATERIALS FOR FIELD ASSEMBLY AND FOR IDENTIFICATION AS TO INTENDED LOCATION.
4. FABRICATE AND DELIVER IN A SEQUENCE WHICH WILL EXPEDITE ERECTION AND MINIMIZE FIELD HANDLING OF MATERIALS.
5. WHERE FINISHING IS REQUIRED, COMPLETE THE ASSEMBLY, INCLUDING THE WELDING OF UNITS, BEFORE START OF FINISHING OPERATIONS.
6. THE FINISH SURFACE OF MEMBERS EXPOSED IN THE FINISHED STRUCTURE SHALL BE FREE FROM MARKINGS, BURNS, AND OTHER DEFECTS.

B. PROVIDE CONNECTIONS AS SPECIFIED HEREIN:

1. PROVIDE BOLTS AND WASHERS OF TYPES AND SIZE REQUIRED FOR COMPLETION OF FIELD ERECTION. USE 3/4" DIAMETER A325 BOLTS UNLESS NOTED OTHERWISE.
2. INSTALL HIGH STRENGTH THREADED FASTENERS IN ACCORDANCE WITH "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS."
3. WELDED CONSTRUCTION SHALL COMPLY WITH AWS D1.1 FOR PROCEDURES, APPEARANCE, QUALITY OF WELD, AND METHODS USED IN CORRECTING WELDED WORK.
4. THE FABRICATOR SHALL FURNISH AND INSTALL ERECTION CLIPS FOR FIT–UP OF WELDED CONNECTIONS.
5. DOUBLE ANGLE MEMBERS SHALL HAVE WELDED FILLERS SPACED IN ACCORDANCE WITH CHAPTER E4 OF THE AISC–ASD SPECIFICATION.
6. GUSSET AND STIFFENER PLATES SHALL BE 3/8" THICK MINIMUM.

3.2 PRIMING:

A. STRUCTURAL STEEL SHALL BE PRIMED AS SPECIFIED HEREIN, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

B. STRUCTURAL STEEL SURFACE PREPARATION SHALL CONFIRM TO SSPC–SP3, "POWER TOOL CLEANING."

C. SURFACE PREPARATION AND PRIMER SHALL BE IN ACCORDANCE WITH AISC CODE OF STANDARD PRACTICE IN THE ASD MANUAL OF STEEL CONSTRUCTION.

D. MATERIALS SHALL REMAIN CLOSED UNTIL REQUIRED FOR USE. MANUFACTURER'S POT–LIFE REQUIREMENTS SHALL BE STRICTLY ADHERED TO.

E. PRIMER SHALL BE APPLIED TO DRY, CLEAN, PREPARED SURFACE AND UNDER FAVORABLE CONDITIONS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER, PRIMING SHALL NOT BE DONE WHEN AMBIENT TEMPERATURE IS LESS THAN 50 DEGREES FAHRENHEIT, THE RELATIVE HUMIDITY IS MORE THAN 90 PERCENT, OR THE SURFACE TEMPERATURE IS LESS THAN 5 DEGREES FAHRENHEIT ABOVE THE DEW POINT.

F. GENERALLY ALL PRIMER SHALL BE SPRAY APPLIED. BRUSH OR ROLLER APPLICATION SHALL BE LIMITED TO TOUCHUP AND TO AREAS NOT ACCESSIBLE BY SPRAY GUN.

G. PRIMER SHALL BE UNIFORMLY APPLIED WITHOUT RUNS, SAGS, SOLVENT BLISTERS, DRY SPRAY, OR OTHER BLEMISHES. ALL BLEMISHES AND OTHER IRREGULARITIES SHALL BE REPAIRED OR REMOVED AND THE AREA RE–COATED. SPECIAL ATTENTION SHALL BE PAID TO CREVICES, WELD LINES, BOLT HEADS, CORNERS, EDGES, ETC., TO OBTAIN THE REQUIRED NOMINAL FILM THICKNESS.

H. DRY COAT FILM THICKNESS OF THE PRIMER SHALL BE 2.0 MILLIMETERS

I. IF THE PRIMER IS DAMAGED BY WELDING OR IN ANY OTHER MANNER, THE AREA SHALL BE TOUCHED UP AND REPAIRED. THE TOUCHUP PAINT SHALL BE COMPATIBLE WITH THE PREVIOUS APPLIED PRIMER COAT WITH MINIMUM DRY FILM THICKNESS OF 1.5 MILLIMETERS.

3.3 INSTALLATION:

A. INSTALLATION OF STRUCTURAL STEEL SHALL COMPLY WITH AISC "CODE OF STANDARD PRACTICE."

B. STRUCTURAL FIELD WELDING SHALL BE DONE BY THE ELECTRIC SUBMERGED OR SHIELDED METAL ARC PROCESS. WELDED CONSTRUCTION METHODS SHALL COMPLY WITH AWS D1.1.

C. PROVIDE ANCHOR BOLTS AND OTHER CONNECTORS REQUIRED FOR SECURING STRUCTURAL STEEL TO MASONARY WALLS AND TO OTHER IN–PLACE WORK. PROVIDE TEMPLATES AND OTHER DEVICES NECESSARY FOR PRESETTING BOLTS AND ANCHORS TO ACCURATE LOCATIONS.

D. SPLICE MEMBERS ONLY WHERE INDICATED ON THE DRAWINGS.

E. PROVIDE TEMPORARY SHORING BRACING WITH CONNECTIONS OF SUFFICIENT STRENGTH TO BEAR IMPOSED LOADS. REMOVE TEMPORARY CONNECTIONS AND MEMBERS WHEN PERMANENT MEMBERS ARE IN PLACE AND THE FINAL CONNECTIONS HAVE BEEN MADE.

F. BEFORE ASSEMBLY ALIGN AND ADJUST MEMBERS AND OTHER SURFACES WHICH WILL BE IN THE PERMANENT CONTACT, BEFORE ASSEMBLY.

G. AS A MINIMUM, HIGH–STRENGTH BOLTS, SHALL BE TIGHTENED TO A "SNUG–TIGHT" CONDITION AS DEFINED IN THE LATEST AISC SPECIFICATIONS. ALL HIGH–STRENGTH BOLTS SPECIFIED ON THE DESIGN DRAWINGS TO BE USED IN PRETENSIONED OR SLIP–CRITICAL JOINTS SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN SPECIFIED IN AISC TABLE J3.1. INSTALLATION SHALL BE BY ANY OF THE FOLLOWING METHODS: TURN–OF NUT METHOD, A DIRECT–TENSION–INDICATOR, TWIST–OFF–TYPE TENSION–CONTROL BOLT, CALIBRATED WRENCH, OR ALTERNATIVE DESIGN BOLT.

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PROFESSIONAL STRUCTURAL ENGINEER
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SHEET TITLE
GENERAL STRUCTURAL STEEL NOTES

SHEET NUMBER
GN-5

GENERAL ELECTRICAL NOTES

PART 1 – GENERAL

1.1 GENERAL CONDITIONS:

A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO PERFORMING WORK. ANY QUESTIONS ARISING DURING THE BID PERIOD REGARDING THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, PRIOR TO THE AWARD OF THE CONTRACT.

B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION PERFORMANCE OF THE WORK UNDER THIS SECTION.

C. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWING SHALL NOT BE SCALED TO DETERMINE DIMENSIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION.

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES, AND CODES:

A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES, AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

1.3 REFERENCES:

A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE OF CONSTRUCTION. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.

1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
3. ICE (INSULATED CABLE ENGINEERS ASSOCIATION)
4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
7. UL (UNDERWRITERS LABORATORIES. INC.)
8. AT&T GROUNDING AND BONDING STANDARDS TP–76416

1.4 SCOPE OF WORK:

A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND TO ACHIEVE OPERATIONAL STATUS.

B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHING, BACKFILLING, AND REMOVAL OF EXCESS SOIL, FILL, AND DEBRIS.

D. THE CONTRACTOR SHALL FURNISH THE OWNER WITH CERTIFICATES OF A FINAL INSPECTION AND APPROVAL FROM THE JURISDICTIONAL AUTHORITIES.

E. IF APPLICABLE, THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS–BUILT DRAWINGS TO DOCUMENT ALL WIRING EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. THE AS–BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT TO THE APPROPRIATE PARTY.

PART 2 – PRODUCTS

2.1 GENERAL:

A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, UL LISTED, AND FREE FROM DEFECTS.

B. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES (UL) LABEL OF APPROVAL AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

C. ALL ITEMS, MATERIALS, AND EQUIPMENT SHALL BE ACCEPTABLE TO THE JURISDICTIONAL AUTHORITY AND SUITABLE FOR THE USE INTENDED.

D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING OF GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED (10,000 AIC MINIMUM). CONTRACTOR SHALL VERIFY THAT AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

2.2 MATERIALS AND EQUIPMENT:

A. CONDUIT:

1. RIGID METAL CONDUIT (RMC) SHALL BE HOT–DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS, AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
3. CONDUIT CLAMPS, STRAPS, AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE–TIGHT TYPE. GROUNDING BUSHINGS WITH INSULATED THROATS SHALL BE INSTALLED ON ALL CONDUIT TERMINATIONS.
4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC AND INSTALLED USING SOLVENT–CEMENT–TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

B. CONDUCTORS AND CABLE:

1. CONDUCTORS AND CABLE SHALL BE FLAME–RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN–2, 600 VOLT, SIZE AS INDICATED, ON PLANS THE MINIMUM SIZE CONDUCTOR USED SHALL BE #12 AWG.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED. #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS COMPRESSION TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN–RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J–BOXES, EQUIPMENT. CABINETS SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD–FRONT, QUICK–MAKE, QUICK–BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE, INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED, FURNISHED IN NEMA 3R ENCLOSURE, SQUARE–D, OR ENGINEERED APPROVED EQUAL.

D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM:

1. INSTALL CHEMICAL GROUNDING AS REQUIRED. THE SYSTEM SHALL BE ELECTROLYTIC MAINTENANCE FREE ELECTRODE CONSISTING OF RODS WITH A MINIMUM #2 AWG CU EXOTHERMALLY WELDED PIGTAIL PROTECTIVE BOXES, AND BACKFILL MATERIAL. MANUFACTURER SHALL BE LYNCOLE XIT GROUNDING ROD TYPES K2–(*)CS OR K2L–(*)CS (*) LENGTH AS REQUIRED.
2. GROUND ACCESS BOX SHALL BE A POLYPLASTIC BOX FOR NON–TRAFFIC APPLICATIONS, INCLUDING BOLT DOWN FLUSH COVER WITH "BREATHER" HOLES, XIT MODEL #XB–22. ALL DISCONNECT SWITCHES AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS IDENTIFICATION NUMBERING, AND THE ELECTRICAL POWER SOURCE.
3. BACKFILL MATERIAL SHALL BE LYNCONITE AND LYNCOLE GROUNDING GRAVEL.

E. SYSTEM GROUNDING:

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED COPPER. ABOVE–GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AND THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO–HOLE COMPRESSION LUGS WITH CLEAR HEAT SHRINK FOR MECHANICAL CONNECTIONS. USE TWO–HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK FOR INTERIOR AND BLACK HEAT SHRINK FOR EXTERIOR.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE ERICO #615800, COPPER–CLAD STEEL WITH HIGH STRENGTH STEEL CORE AND ELECTROLYTIC GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, AND 5/8"x10'–0". ALL GROUNDING RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES AS SHOWN ON DRAWINGS.
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE AT&T SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.

F. OTHER MATERIALS:

1. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
2. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

PART 3 – EXECUTION

3.1 GENERAL:

A. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. DURING INSTALLATION AND CONSTRUCTION PERIODS EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER, AND CHEMICAL OR MECHANICAL INJURY.

3.2 LABOR AND WORKMANSHIP:

A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN IN A NEAT AND WORKMAN–LIKE MANNER.

B. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED, AND TESTED BY THE CONTRACTOR AS REQUIRED TO CONFIRM THE INTENDED PERFORMANCE.

C. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL NECESSARY LABELS, DEBRIS, CRATING, OR CARTONS, AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

3.3 COORDINATION:

A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER–FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE SCHEDULED WORK.

3.4 INSTALLATION:

B. CONDUIT:

1. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN ¾" TRADE SIZE SHALL BE UTILIZED.
2. PROVIDE RIGID PVC SCHEDULE 80 CONDUITS FOR ALL RISERS UNLESS OTHERWISE NOTED. EMT MAY BE INSTALLED FOR EXTERIOR CONDUITS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
3. INSTALL SCHEDULE 40 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL NON–TRAFFIC APPLICATIONS (REFER TO 2020 OR LASTEST NEC, TABLE 300.5).
4. USE GALVANIZED FLEXIBLE STEEL CONDUIT AT LOCATIONS OF DIRECT CONNECTION TO EQUIPMENT THAT MOVES OR VIBRATES, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORTS TO ALLOW FOR EXPANSION AND CONTRACTION.
5. A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE QUARTER–BENDS. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
6. FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
7. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
8. ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
9. INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
10. INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
11. CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
12. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS TO ALLOW FOR RACEWAYS AND CABLES TO BE ROUTED THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE EFFECTIVELY SEALED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FIRE STOPS AT FLOOR PENETRATIONS SHALL BE INSTALLED TO PREVENT PASSAGE OF WATER, SMOKE, FIRE, AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

B. CONDUCTORS AND CABLE:

1. ALL POWER WIRING SHALL BE COLOR CODED AS FOLLOWS:

DESCRIPTION	208/240/120 VOLT SYSTEMS
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUNDING	GREEN

2. SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAY CONDULETS APPROVED FOR THIS PURPOSE.
3. PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
4. CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES AND EQUIPMENT TO ALLOW FOR A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS AND/OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS ARE PROHIBITED. DAMAGED CABLES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

C. DISCONNECT SWITCHES:

1. INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB, AND CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS REQUIRED.

D. GROUNDING:

1. ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING MANUFACTURER, AT&T GROUNDING AND BONDING STANDARDS TP–76416, TP–76300, AND THE NATIONAL ELECTRICAL CODE.
2. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS, AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
4. AT BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT AND WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWER GROUND RING, TO THE EXISTING GROUNDING SYSTEM. THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN #2 AWG COPPER. ROOFTOP GROUND RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, THE LIGHTNING PROTECTION SYSTEM, AND/OR THE BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). SEE STANDARD 6.3.2.2.
5. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING SPECIFICATIONS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
6. CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE–IN POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION PRIOR TO PERMANENT CONCEALMENT.
8. APPLY CORROSION–RESISTANCE FINISH TO FIELD CONNECTIONS AND AREAS/COMPONENTS WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED.
9. A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
10. BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE #6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
11. DIRECT–BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 30" MINIMUM BELOW GRADE, OR 6" MINIMUM BELOW THE FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
12. ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
13. THE INSTALLATION OF A CHEMICAL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL THE PROTECTIVE BOX FLUSH WITH GRADE.
14. IF COAX ON THE ICE BRIDGE IS MORE THAN 6 FEET FROM THE GROUND BAR AT THE BASE OF THE TOWER, INSTALL A SECOND GROUND BAR AT THE END OF THE ICE BRIDGE TO GROUND THE COAX CABLE GROUNDING KITS AND IN–LINE ARRESTORS.
15. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

3.5 ACCEPTANCE TESTING:

A. CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.

B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND TO BE NON–COMPLIANT WITH THE SPECIFIED REQUIREMENTS, THE NON–COMPLIANT ITEMS/ELEMENTS SHALL BE PROMPTLY REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS.

C. TEST PROCEDURES:

1. ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1,000VOLT DC.
2. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
3. MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES TO APPROPRIATE PARTS.
4. PERFORM GROUNDING TEST TO MEASURE RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3–POINT "FALL–OF–POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

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GPD JOB #: 2024723.02/ 86662.01
DRAWN BY: KNM
CHECKED BY: MRL
RFDS: 5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW

PROFESSIONAL ENGINEER
No. 8684449
STEVEN P. SCHAUB
COMMONWEALTH OF PENNSYLVANIA
03/26/25

EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
GENERAL ELECTRICAL NOTES

SHEET NUMBER
GN-6

BATTERY SAFETY NOTES

PART 1 – GENERAL

1.1 LAWS, REGULATIONS, ORDINANCES, STATUTES, AND CODES:

A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES, AND CODES.

1.2 REFERENCES:

A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE OF CONSTRUCTION. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.

1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
3. ICE (INSULATED CABLE ENGINEERS ASSOCIATION)
4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
7. UL (UNDERWRITERS LABORATORIES. INC.)
8. AT&T GROUNDING AND BONDING STANDARDS TP–76416
9. IFC (INTERNATIONAL FIRE CODE)
10. IMC (INTERNATIONAL MECHANICAL CODE)

1.3 SCOPE OF WORK:

A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND TO ACHIEVE OPERATIONAL STATUS.

B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.

C. THE BATTERY & POWER SYSTEMS ARE EQUIPPED WITH TEMPERATURE SENSORS & ARE PRE–PROGRAMMED WITH THE BATTERY VOLTAGE TEMPERATURE COMPENSATION & BATTERY THERMAL RUNAWAY MANAGEMENT FEATURES ENABLED PER AT&T MOBILITY'S SPECIFICATIONS.

D. DOOR(S) INTO EQUIPMENT ROOM MUST BE PROVIDED WITH APPROVED SIGNS AND APPROPRIATELY MARKED NFPA 704 PLACARD THAT STATE THE FOLLOWING:
- EQUIPMENT ROOM CONTAINS ENERGIZED BATTERY SYSTEMS
- EQUIPMENT ROOM CONTAINS ENERGIZED ELECTRICAL CIRCUITS
- BATTERY ELECTROLYTE SOLUTIONS WHERE PRESENT, ARE CORROSIVE LIQUIDS

E. CABINETS SHALL HAVE EXTERIOR LABELS THAT IDENTIFY THE MANUFACTURER AND MODEL NUMBER OF THE SYSTEM AND ELECTRICAL RATING (VOLTAGE AND CURRENT) OF THE CONTAINED BATTERY SYSTEM. SIGNS WITHIN THE CABINET SHALL INDICATE RELEVANT ELECTRICAL, CHEMICAL, AND FIRE HAZARDS.

PART 2 – PRODUCTS

2.1 GENERAL:

A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, UL LISTED, AND FREE FROM DEFECTS.

B. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES (UL) LABEL OF APPROVAL AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

C. ALL ITEMS, MATERIALS, AND EQUIPMENT SHALL BE ACCEPTABLE TO THE JURISDICTIONAL AUTHORITY AND SUITABLE FOR THE USE INTENDED.

D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING OF GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED (10,000 AIC MINIMUM). CONTRACTOR SHALL VERIFY THAT AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

2.2 MATERIALS AND EQUIPMENT:

A. BATTERIES:

1. BATTERIES SHALL BE VRLA (VALVE REGULATED LEAD–ACID) BATTERIES COMPLYING WITH IFC 1207.
2. CONTRACTOR TO INSTALL ENERSYS POWERSAFE SBS BATTERIES OR ENGINEERING APPROVED EQUIVALENT.

B. POWER PLANTS/CABINETS:

1. POWER PLANTS/CABINETS SHALL BE EQUIPPED WITH TEMPERATURE SENSORS AND ARE PRE–PROGRAMMED WITH THE BATTERY VOLTAGE TEMPERATURE COMPENSATION & BATTERY THERMAL RUNAWAY MANAGEMENT FEATURES ENABLED PER AT&T MOBILITY'S SPECIFICATIONS.
2. CONTRACTOR TO INSTALL POWER PLANTS/CABINETS PER AT&T SPECIFICATIONS; AND COMPLYING WITH IFC 1207 AND IMC 502.4.

C. BATTERY RACKS/CABINETS:

1. BATTERY RACKS/CABINETS SHALL BE EQUIPPED WITH TEMPERATURE SENSORS PER AT&T MOBILITY'S SPECIFICATIONS.
2. CONTRACTOR TO INSTALL BATTERY RACKS/CABINETS PER AT&T SPECIFICATIONS; AND COMPLYING WITH IFC 1207 AND IMC 502.4.

IFC 1207 CODE ANALYSIS & COMPLIANCE INFORMATION

- SAFETY CAPS (IFC 1207.6.4) – VRLA BATTERIES HAVE SELF–RESEALING SAFETY VENTS WITH FLASH ARRESTORS WHICH SATISFY THIS CODE REQUIREMENT.
- THERMAL RUNAWAY MANAGEMENT (IFC 1207.6.5) – POWER PLANTS/CABINETS SHALL BE EQUIPPED WITH TEMPERATURE SENSORS AND ARE PRE–PROGRAMMED WITH THE BATTERY VOLTAGE TEMPERATURE COMPENSATION AND BATTERY THERMAL RUNAWAY MANAGEMENT FEATURES ENABLED. BATTERY RACKS/CABINETS SHALL BE EQUIPPED WITH TEMPERATURE SENSORS.
- SPILL CONTROL (IFC 1207.6.2) – NOT REQUIRED FOR VRLA BATTERIES PER EXCEPTION.
- NEUTRALIZATION (IFC 1207.6.2) – CONTRACTOR TO ENSURE THAT BATTERY SPILL CLEAN–UP KIT IS PROVIDED ON SITE, CAPABLE OF NEUTRALIZING A MINIMUM OF X GALLONS OF SPILLED ELECTROLYTE (WHERE X=3% OF THE TOTAL VOLUME CALCULATED IN THE ELECTROLYTE CALCULATIONS).
- VENTILATION (IFC 1207.6.1) – EXHAUST FAN WILL LIMIT CONCENTRATION TO 1% VIA HYDROGEN SENSOR AND MAKEUP AIR INTAKE. HYDROGEN SENSOR TO ACTIVATE DAMPER/FAN AT 1% CONCENTRATION AND SIGNAL AN ALARM TO A MONITORED FACILITY AT 2% CONCENTRATION.
- SIGNAGE (IFC 1207.4.8) – AT&T WILL PLACE UV–RESISTANT SIGNS ON THE EXTERIOR OF THE SHELTER DOOR CAPABLE OF WITHSTANDING THE HARSH SUNLIGHT OUTDOORS PER IFC 1207.4.8. IN THE CASE THAT BATTERIES ARE INSTALLED IN A CABINET, CONTRACTOR SHALL PLACE SIGNAGE ON THE CABINET DOOR PER IFC 1207.4.8.
- SEISMIC PROTECTION (IFC 1207.4.4) – CONTRACTOR WILL ENSURE THAT ANY NEW BATTERY RACKS HAVE THE REQUIRED BRACING TO MEET SEISMIC ZONE 4.
- SMOKE DETECTION (IFC 1207.5.4) – SMOKE DETECTORS TO BE TIED INTO EXISTING ALARMING SYSTEMS. AT&T TO VERIFY OPERATION OF SMOKE DETECTOR/ALARM.

IMC 502.4 CODE ANALYSIS & COMPLIANCE INFORMATION

- (IMC 502.4) STATIONARY STORAGE BATTERY SYSTEMS.
  STATIONARY STORAGE BATTERY SYSTEMS, AS REGULATED BY SECTION 1207 OF THE INTERNATIONAL FIRE CODE, SHALL BE PROVIDED WITH VENTILATION IN ACCORDANCE WITH IMC 502.4.

  EXCEPTION: LITHIUM–ION AND LITHIUM METAL POLYMER BATTERIES SHALL NOT REQUIRE ADDITIONAL VENTILATION BEYOND THAT WHICH WOULD NORMALLY BE REQUIRED FOR HUMAN OCCUPANCY OF THE SPACE.

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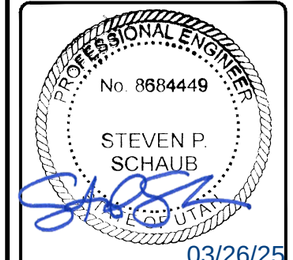
GPD JOB #:	2024723.02/ 86662.01
DRAWN BY:	KNM
CHECKED BY:	MRL
RFDS:	5886502

REV	DATE	DESCRIPTION
0	03/25/2025	EQUIPMENT SWAP
B	02/03/2025	ADDING STRUCTURAL MODS
A	06/10/2024	ISSUED FOR REVIEW



EAST AMERICAN FORK
UTL04060
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003
CELL SITE RF MODIFICATIONS

SHEET TITLE
BATTERY SAFETY NOTES

SHEET NUMBER
GN-7

EAST AMERICAN FORK

FA #: 10115113

CLIENT #: UTL04060

USID #: 86662

AT&T

STRUCTURE INFORMATION:

STRUCTURE MAPPING:	TEP/JOB #: 344056.1019024
STRUCTURE HEIGHT:	48'-0" ROOFTOP
MOUNT TYPE:	FRP ANGLES IN SHROUD
STRUCTURE LOCATION:	
LAT.:	40° 22' 36.0"
LONG.:	-111° 46' 1.5"
STREET ADDRESS:	1175 EAST 50 SOUTH
CITY, STATE ZIP:	AMERICAN FORK, UT 84003
COUNTY:	UTAH
REFERENCED ANALYSIS:	GPD/PROJ. #: 2024723.02.86662.01
ANALYSIS DATE:	1/27/2025

CODE COMPLIANCE:

GOVERNING CODES:	TIA-222-H & 2021 IBC
WIND SPEEDS:	103 MPH 3 SECOND GUST 40 MPH 3 SECOND GUST
ICE THICKNESS:	1/4"
RISK CATEGORY:	II
EXPOSURE CATEGORY:	B
TOPO CATEGORY:	1

SEISMIC CRITERIA:

SITE CLASS:	D
1-SECOND SPECTRAL RESPONSE ACCELERATION (S_1) :	0.491
SHORT PERIOD SPECTRAL RESPONSE ACCELERATION (S_S):	1.333

PROJECT CONTACTS:

CLIENT CONTACT:

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FOR QUESTIONS PLEASE EMAIL:
GPDMODS@GPDGROUP.COM

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM GPD TO ASSIST CONTRACTORS IN CLASS IV CONSTRUCTION PLAN REVIEWS. FOR REQUESTING QUALIFIED ENGINEERING SERVICES PLEASE CONTACT GPD AT GPDMODS@GPDGROUP.COM.

SHEET INDEX:

1/27/25

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AT&T

EAST AMERICAN FORK
FA #: 10115113

DESIGN DRAWINGS PREPARED FOR:

ANSCO

CLIENT #: UTL04060

REV.	DATE	DESCRIPTION
0	1/27/25	INITIAL RELEASE

EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

TITLE SHEET

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

JOB NO.
2024723.02.86662.01

T-01

MODIFICATION INSPECTION CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
	PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING	THIS CHECKLIST SERVES AS A GUIDELINE FOR THE REQUIRED CONSTRUCTION DOCUMENTS AND INSPECTIONS FOR THIS MODIFICATION
X	EOR APPROVED SHOP DRAWINGS	PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS TO THE EOR FOR APPROVAL.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR STATING THAT ALL FABRICATION (I.E. DRILLING, CUTTING, WELDING, SHEARING, MILLING, GALVANIZING, ETC) HAS BEEN DONE ACCORDING TO INDUSTRY STANDARDS AND ALL APPLICABLE ANSI/ASTM STANDARDS.
NA	FABRICATOR CERTIFIED WELD INSPECTION	A CWI SHALL INSPECT ALL FABRICATION WELDS IN ACCORDANCE WITH AWS D1.1 AND A REPORT DETAILING THE RESULTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR ALL MATERIAL USED. MTR'S SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	FABRICATOR NDE INSPECTION REPORT	CRITICAL SHOP WELDS THAT REQUIRE ADDITIONAL TESTING ARE NOTED WITHIN THE MODIFICATION DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION ON ALL PJP, CJP, AND FILLET WELDS >5/16" IN ACCORDANCE WITH AWS D1.1 AND A REPORT DETAILING THE RESULTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NDE OF MONOPOLE BASE PLATE	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	PACKING/SHIPPING LIST FOR ALL MATERIAL USED DURING CONSTRUCTION OF THE MODIFICATION SHALL BE PROVIDED.
	DURING CONSTRUCTION	
NA	PRE-POUR REBAR INSPECTIONS	A 3RD PARTY VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED **BEFORE** PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	POST-INSTALLED REBAR AND/OR DOWEL INSPECTIONS	PHOTOGRAPHIC DOCUMENTATION OF DRILL HOLE SIZES AND DEPTHS SHALL BE RECORDED **BEFORE** SETTING THE POST INSTALLED REBAR AND DOWELS WITH EPOXY/GROUT.
NA	CONCRETE COMP. STRENGTH & SLUMP TEST	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE MI REPORT.
NA	EARTHWORK: LIFT & DENSITY REPORT	REPORT DETAILING SOIL COMPACTION TEST RESULTS TO BE INCLUDED IN THE MI REPORT.
NA	MICROPILE/ROCK ANCHOR	MICROPILES AND ROCK ANCHORS SHALL BE INSPECTED BY A 3RD PARTY. INSPECTION SHALL VERIFY ANCHOR SIZE, STEEL GRADE, AND HOLE DEPTHS. PHOTOGRAPHIC DOCUMENTATION OF ALL MEASUREMENTS ALONG WITH THE PULL TEST RESULTS SHALL BE INCLUDED IN THE MI REPORT.
NA	HELICAL ANCHOR	HELICAL INSTALLER SHALL SUBMIT FINAL SEALED HELICALS DESIGN, TORQUE LOGS, AND FINAL LOAD TEST RESULTS TO BE INCLUDED IN THE MODIFICATION INSPECTION REPORT.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED AND SHALL INCLUDE PHOTO VERIFICATION OF HOLE DEPTH, HOLE CLEANOUT AND ROUGHENING, AND EPOXY LABELING. REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	3RD PARTY FIELD CERTIFIED WELD INSPECTION	A CWI SHALL CONDUCT A VISUAL INSPECTION OF ALL FIELD WELDS IN ACCORDANCE WITH AWS D1.1. CRITICAL WELDS THAT REQUIRE ADDITIONAL TESTING ARE NOTED IN THE MODIFICATION DRAWINGS.
X	ON-SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS.
NA	TENSION TWIST & PLUMB DELIVERABLES	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THE STRUCTURE TWIST AND PLUMB CONDITION AS WELL AS THE WIRE TENSIONS (AS REQUIRED). REPORT SHALL INCLUDE PRE-TENSION, PLUMB & TWIST RESULTS, POST-TENSION REPORT, POST PLUMB AND TWIST REPORT, AND PHOTOS OF THE TENSION GAUGES FOR ALL GUY WIRES.
X	GC AS-BUILT DRAWINGS	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED.
NA	BOLT PRE-TENSION VERIFICATION	TURN-OF-THE NUT METHOD IS THE DEFAULT METHOD FOR PRE-TENSIONING BOLTS. MATCH-MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES AND SHALL BE APPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. ALTERNATIVE PRE-TENSIONING METHODS ARE NOT ALLOWED WITHOUT PRIOR EOR CONSENT.
ADDITIONAL TESTING AND INSPECTIONS:		
NA	MECHANICAL ANCHOR VERIFICATION	INSTALLATION TORQUE SHALL BE VERIFIED FOR THE POST INSTALLED ANCHORS. A REPORT SHALL BE PROVIED FOR INCLUSION IN THE MI INDICATING RESULTS.
	POST-CONSTRUCTION	
X	CONSTRUCTION COMPLIANCE LETTER	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE MODIFICATION DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI INSPECTOR. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	BOLT HOLE INSTALLATION VERIFICATION REPORT	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS OF 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.

*THE MI CHECKLIST SHALL BE REVIEWED PRIOR TO THE START OF CONSTRUCTION. ALL PARTIES TO THE MODIFICATION SHALL UNDERSTAND ALL REQUIREMENTS AND INSPECTION/DOCUMENTATION THAT IS APPLICABLE TO THE SCOPE OF WORK THEY ARE PERFORMING. ERRORS ON THE MI CHECKLIST SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURE/STRUCTURE OWNER AND EOR AS SOON AS POSSIBLE.

MODIFICATION INSPECTION NOTES

GENERAL

1. THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF STRUCTURE MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE INDUSTRY STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.
3. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE STRUCTURE OWNER AND EOR FOR EVALUATION.
4. TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. CONTACT LISTED ON THE TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.

FAILING INSPECTION CORRECTIONS

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MI INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
   - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL MODIFICATION DRAWINGS AND COORDINATE A SUPPLEMENT MODIFICATION INSPECTION.
   - OR, WITH STRUCTURE OWNER'S APPROVAL, THE GC MAY WORK WITH THE ENGINEER OF RECORD TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

SERVICE LEVEL COMMITMENT

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
   - THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
   - THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.
   - IT MAY BE BENEFICIAL TO INSTALL ALL STRUCTURE MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW THE FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
   - PRE-CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
   - ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF THE MODIFICATIONS.
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

PROFESSIONAL STRUCTURAL ENGINEER
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1/27/25

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DESIGN DRAWINGS PREPARED FOR:

ANSCO

CLIENT #: UTL04060

REV	DATE	DESCRIPTION
0	1/27/25	INITIAL RELEASE

EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

MODIFICATION INSPECTION CHECKLIST

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

JOB NO.
2024723.02.86662.01

MI-01

GENERAL NOTES

1. THIS DESIGN IS IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF ALL LOCALLY ADOPTED BUILDING CODES. MATERIALS, FABRICATION, INSTALLATION, AND ALL OTHER SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

2. THIS DESIGN ASSUMES THE EXISTING STRUCTURE HAS BEEN WELL MAINTAINED, IS IN GOOD CONDITION, AND IS WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD.

3. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND NOTE ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS OR THAT INTERFERE WITH THE CONTINUOUS INSTALLATION OF THE MODIFICATIONS. CONTRACTOR SHALL NOTE ALL ATTACHMENT POINTS, ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. GPD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF ANY DEVIATION PRIOR TO ORDERING MATERIAL.

4. ALL MATERIAL SPECIFIED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE REVIEWED BY THE OWNER AND ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER.

5. CONTRACTOR IS RESPONSIBLE FOR ENGAGING A MODIFICATION INSPECTOR AT THE TIME OF AWARD TO COORDINATE AN INSPECTION SCHEDULE AND ENSURE PROPER DOCUMENTATION IS RETAINED THROUGHOUT THE PROJECT. REFER TO SHEET MI-01 FOR MODIFICATION INSPECTION CHECKLIST.

6. SPECIAL INSPECTIONS: UNLESS OTHERWISE SPECIFIED WITHIN THE PLANS OR REQUIRED BY THE BUILDING OFFICIAL, SPECIAL INSPECTIONS AND TESTS ARE NOT REQUIRED FOR GROUP U OCCUPANCIES, BUT NOT LIMITED TO, THOSE LISTED IN SECTION 312.1 (IBC SECTION 1704.2, EXCEPTION 2). CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING IF ANY SPECIAL INSPECTIONS ARE REQUIRED BY THE JURISDICTION HAVING AUTHORITY. IF REQUIRED BY THE JURISDICTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND SCHEDULING OF THE SPECIAL INSPECTIONS WITH THE ENGINEER OF RECORD. IN THOSE CASES, SPECIAL INSPECTIONS MUST BE COMPLETED PRIOR TO FINAL INSPECTION APPROVAL.

7. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

8. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO THE OWNER AND GPD THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW THE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR THE OWNER AND GPD ON COMPANY LETTERHEAD AND IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE OWNER AND GPD.

9. STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS SHALL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH CONSTRUCTION EXPERIENCE. THE CONTRACTOR SHALL SUBMIT CERTIFICATIONS TO THE OWNER.

10. CONTRACTOR SHALL PERFORM ALL WORK IN SUCH A MANNER AS TO PROTECT THE EXISTING AND ADJACENT STRUCTURES AND SHALL BE RESPONSIBLE TO PROPERLY REPAIR ANY DAMAGE THAT OCCURS AS A RESULT OF THE WORK.

11. CEASE OPERATIONS AND NOTIFY OWNER AND ENGINEER IMMEDIATELY IF THE SAFETY OR INTEGRITY OF THE STRUCTURE APPEARS TO BE ENDANGERED. PROPERLY BRACE AND SUPPORT STRUCTURE BEFORE RESUMING OPERATIONS.

12. DO NOT CUT OR ALTER ANY STRUCTURAL MEMBERS WITHOUT WRITTEN AUTHORIZATION OF THE ENGINEER UNLESS INDICATED ON THE STRUCTURAL DRAWINGS.

13. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. ANY TECHNIQUES OR PROCEDURES IMPLIED BY THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE SUGGESTIONS ONLY. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

14. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THEIR WORK FORCE, THE WORK AREA, ADJACENT AREA, AND ANY PROPERTY OCCUPANTS WHO MAY BE AFFECTED BY THE WORK UNDER CONTRACT. THE CONTRACTOR SHALL REVIEW AND ABIDE BY ALL OWNER, PRIME CONTRACTOR, CARRIER, OSHA, AND LOCAL SAFETY GUIDELINES. ALL WORKERS SHALL UTILIZE APPROPRIATE FALL PROTECTION AND SAFETY EQUIPMENT THAT IS UP-TO-DATE AND INSPECTED PER OSHA AND INDUSTRY GUIDELINES. ALL WORKERS SHALL BE TRAINED AND MONITORED TO ENSURE SAFE WORKING PRACTICES ARE MAINTAINED.

15. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER APPURTENANCE THAT MAY INTERFERE WITH THE MODIFICATIONS. ALL APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE OWNER IN WRITING.

16. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

17. THE STRUCTURAL INTEGRITY OF THIS DESIGN EXTENDS TO THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE THE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.

18. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL SHORING, TEMPORARY GLOBAL SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

19. FAA/FCC FILING AND LIGHTING MAY BE REQUIRED. ALL GOVERNMENTAL REGULATORY DETERMINATIONS AND FILINGS BY OTHERS, NOT GPD.

20. CONTRACTOR SHALL TAKE NECESSARY ACTIONS TO PROVIDE SAFE WORKING CONDITIONS INCLUDING, BUT NOT LIMITED TO, HAVING ANY FM SIGNALS TURNED OFF. CONTRACTOR SHALL HAVE PROPER RADMAN FOR NOTIFICATION OF EXCESSIVE RF EXPOSURE FOR ALL INDIVIDUALS WORKING ON SITE IF FM ANTENNAS ARE PRESENT. CONTRACTOR SHALL BE AWARE OF RF WARNING SIGNS AND TAKE PROPER PRECAUTIONS.

21. ALL MANUFACTURERS HARDWARE AND ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY. DEVIATION FROM THE INSTRUCTIONS IS UNACCEPTABLE AND REQUIRES WRITTEN APPROVAL FROM ENGINEER.

22. DO NOT SCALE DRAWINGS.

23. ROOFTOP ACCESS, CLIMBING FACILITIES, SAFETY CLIMB AND ALL ASSOCIATED HARDWARE SHALL NOT BE IMPEDED OR MODIFIED WITHOUT THE WRITTEN CONSENT OF GPD.

24. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

25. IMPROPER FIT-UP OF NEW BOLTED HARDWARE DUE TO OVERSIZED , DOUBLE-PUNCHED, OR SLOTTED HOLES FOUND ON THE EXISTING STRUCTURE SHALL BE REPORTED TO GPD AND THE TOWER OWNER IMMEDIATELY. INSTALLATION OF SUCH HARDWARE WILL NOT BE ACCEPTABLE AND ALL COSTS ASSOCIATED WITH REMEDYING THE INSTALLATION WILL BE THE RESPONSIBILITY OF THE GC.

26. THE SUBCONTRACTOR SHALL REPAIR ALL EXISTING FLOOR, ROOF, CEILING, AND WALL SURFACES AND FINISHING DISTURBED DURING CONSTRUCTION. ALL EXTERIOR FINISHES ARE REQUIRED TO RESULT IN A SMOOTH FINISH TO MATCH THE EXISTING CONDITIONS TO THE SATISFACTION OF THE OWNER.

27. ALL ABANDONED HOLES AS A RESULT OF THIS DESIGN SHALL BE SEALED WITH A SEALANT MEETING THE REQUIREMENTS OF ASTM C920.

28. PENETRATION OF THE ROOF MEMBRANE IS PROHIBITED EXCEPT WHERE DESIGNED AND WITH THE APPROVAL OF THE BUILDING OWNER OR MANAGEMENT. COORDINATE MEMBRANE REPLACEMENT AND/OR REPAIR WITH THE OWNER'S ROOFING CONSULTANT TO MAINTAIN EXISTING WARRANTY.

29. ROOFTOP HAS A SLIGHT SLOPE TOWARDS EXISTING ROOF DRAINS. ALL EXISTING ROOF DRAINS & ROOF DRAINING PATTERNS SHALL NOT BE OBSTRUCTED OR DISTURBED (VERIFY IN FIELD). ANTENNA FRAMES SHALL BE PLUMB & LEVEL (NOTIFY EOR IF UNABLE TO ACHIEVE).

30. CARE SHALL BE TAKEN DURING INSTALLATION OF NEW ANCHORAGE OR OTHER TYPES OF PENETRATING MODIFICATIONS SO THAT EXISTING REINFORCING STEEL IN CONCRETE OR MASONRY IS NOT DAMAGED. CONTACT ENGINEER IMMEDIATELY IF EXISTING STEEL IS ENCOUNTERED.

31. PENETRATIONS TO THE BUILDING ENVELOPE SHALL BE FINISHED IN A MANNER THAT MAINTAINS A WEATHER-PROOF BARRIER BETWEEN THE EXTERIOR AND INTERIOR OF THE STRUCTURE. THE CONTRACTOR SHALL COORDINATE REMEDIATION WORK WITH THE BUILDING OWNER PRIOR TO INSTALLATION TO ENSURE ACCEPTANCE OF THE FINAL CONDITION.

STRUCTURAL STEEL NOTES

1. ALL NEW STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123, ASTM A153/A153M, OR ASTM A653 G90, AS APPLICABLE FOR FULL WEATHER PROTECTION. FOR HIGH STRENGTH STEEL FASTENERS WHERE HOT-DIPPED GALVANIZING IS NOT PERMITTED MAGNI 565 COATING (OR ENGINEER APPROVED EQUIVALENT) SHALL BE USED. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL AND/OR BUILDING MATERIAL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

2. ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING, BUT NOT LIMITED TO, DAMAGED MEMBERS, FIELD WELDS, FIELD CUT MEMBERS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE APPLICABLE), SHALL BE SOLVENT CLEANED AND HAVE TWO (2) COATS OF BRUSHED ON ZRC ZINC RICH COLD GALVANIZING PAINT APPLIED AND SHALL BE PAINTED TO MATCH FINISH (WHERE APPLICABLE). PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MODIFICATION INSPECTOR.

3. ALL STRUCTURAL STEEL SHALL CONFORM TO THE LISTED REQUIREMENTS U.N.O. IN THESE DRAWINGS:

• STEEL ANGLE:	ASTM A572 GRADE 50 (Fy=50 KSI)
• SOLID ROUND:	ASTM A36 (Fy=36 KSI)
• PIPE (ROUND):	ASTM A53 GR. B (Fy=35 KSI)
• HSS TUBE (ROUND):	ASTM A500 GRADE C (Fy=50 KSI)
• HSS TUBE (SQUARE):	ASTM A500 GRADE C (Fy=50 KSI)
• W-SHAPES:	ASTM A992 (Fy=50 KSI)
• CHANNELS:	ASTM A992 (Fy=50 KSI)
• PLATE:	ASTM A572 GRADE 50 (Fy=50KSI)
• ANCHOR RODS:	ASTM A193 GRADE B7
• THREADED ROD:	ASTM F1554 GRADE 36
• BOLTS:	ASTM A325 TYPE 1
• U-BOLTS:	ASTM A307 GRADE A
• NUTS:	ASTM A563 GRADE DH
• NUTS (ANCHOR RODS):	ASTM A194 GRADE 2H
• WASHERS (AS REQUIRED):	ASTM F436 TYPE 1
• LOCKING DEVICES:	PAL-NUT OR SPLIT WASHER
• WELDING ELECTRODES, SMAW:	E70XX
• WELDING ELECTRODES; FCAW:	E7XT-XX

4. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED.

5. ALL BOLTS, INCLUDING U-BOLTS, SHALL BE TIGHTENED IN ACCORDANCE WITH AISC "SNUG TIGHT" REQUIREMENTS, U.N.O.

6. ALL U-BOLTS SPECIFIED SHALL MEET THE REQUIREMENTS OF ASME B18.31.5-2011 BENT BOLTS.

7. ALL NEW BOLT ASSEMBLIES SHALL BE OF SUFFICIENT LENGTH TO ENSURE THE END OF THE BOLT IS FLUSH WITH, OR PROTRUDES BEYOND, THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETE.

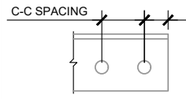
8. STRUCTURAL STEEL SHOP DRAWINGS SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.

9. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

10. WELDING OF ANY KIND IS NOT PERMITTED ON SITE UNLESS SPECIFIED WITHIN THESE DRAWINGS. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING OR OPEN FLAME IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

BOLT SCHEDULE

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	C-C SPACING
1/2	9/16	9/16x11/16	7/8	1-1/2
5/8	11/16	11/16x7/8	1-1/8	1-7/8
3/4	13/16	13/16x1	1-1/4	2-1/4
7/8	15/16	15/16x1-1/8	1-1/2	2-5/8
1	1-1/8	1-1/8x1-5/16	1-3/4	3

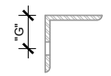


-DIMENSIONS GIVEN IN INCHES

-SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED ON THE PLANS

WORKABLE GAGES

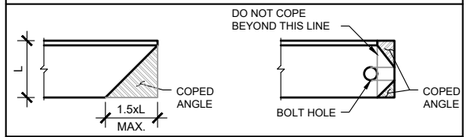
LEG	6	5	4	3-1/2	3	2-1/2	2	1-3/4
G	3-1/2	3	2-1/2	2	1-3/4	1-3/8	1-1/8	1



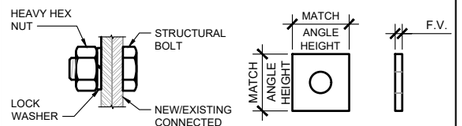
-DIMENSIONS GIVEN IN INCHES

-MATCH EXISTING WHEN APPLICABLE

ALLOWABLE ANGLE COPE

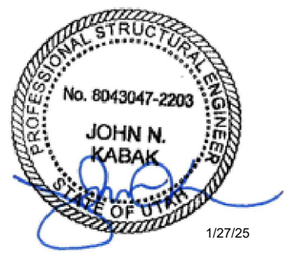


BOLTING DETAILS



TYPICAL BOLT ASSEMBLY — TYPICAL STITCH WASHER

1. ALL DIMENSIONS REPRESENTED IN THESE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. AS AN ALTERNATIVE TO USING A LOCK WASHER PAL-NUTS CAN BE INSTALLED ABOVE THE HEX NUT. ALL BOLTS MUST HAVE LOCKING DEVICES INSTALLED AS PART OF THE ASSEMBLY.
4. ADDITIONAL HARDENED FLAT WASHERS MAY BE REQUIRED IN CASES WHERE OVERSIZED OR SLOTTED HOLES ARE PRESENT. EXISTING CONDITIONS SHALL BE APPROVED BY THE EOR.



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DESIGN DRAWINGS PREPARED FOR:

ANSCO

CLIENT #: UTL04060

REV.	DATE	DESCRIPTION
0	1/27/25	INITIAL RELEASE

EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

PROJECT NOTES

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

JOB NO.
2024723.02.86662.01

N-01

RADIO FREQUENCY (RF) TRANSPARENT FIBER REINFORCING POLYMER (FRP) NOTES

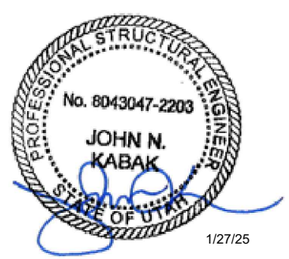
1. ALL FRP SHEET AND STRUCTURAL COMPONENTS USED IN VISION SCREENS SHALL BE TRANSPARENT TO ELECTRO-MAGNETIC RADIATION AT THE FREQUENCIES REQUIRED BY THE OWNER. THE CONTRACTOR SHALL VERIFY RF TRANSPARENCY AT THE REQUIRED FREQUENCIES WITH THE FRP MANUFACTURER PRIOR TO FABRICATION OF THE VISION SCREENS.
2. THE MATERIAL SPECIFIED SHALL BE FURNISHED BY A REPUTABLE AND QUALIFIED MANUFACTURER OF DEMONSTRATED ABILITY WHO HAS ROUTINELY ENGAGED IN THE MANUFACTURE OF FIBER REINFORCED POLYMER COMPOSITES.
3. SUBSTITUTION OF ANY COMPONENT OR MODIFICATION OF SYSTEM WILL BE MADE ONLY AFTER APPROVAL BY THE ENGINEER.
4. ALL SYSTEMS, SUB-SYSTEMS, AND STRUCTURES WILL BE FACTORY-FABRICATED AND ASSEMBLED TO THE BEST PRACTICAL SIZES FOR TRANSPORTATION.
5. ALL MATERIAL AND EQUIPMENT NECESSARY FOR THE FABRICATION AND INSTALLATION OF THE FRP PRODUCTS WILL BE STORED BEFORE, DURING, AND AFTER SHIPMENT IN A MANNER TO PREVENT CRACKING, TWISTING, BENDING BREAKING, CHIPPING OR DAMAGED OF ANY KIND TO THE MATERIAL OR EQUIPMENT, INCLUDING ULTRAVIOLET DAMAGE.
6. MATERIAL USED IN THE MANUFACTURE OF FRP PRODUCTS SHALL BE OF THE QUALITY AND FREE FROM DEFECTS AND IMPERFECTION THAT MAY AFFECT THE PERFORMANCE OF THE FINISHED PRODUCT.
7. ALL FRP PRODUCTS WILL BE MANUFACTURED USING THE PULTRUSION MANUFACTURING PROCESS WITH EITHER THERMOSET POLYESTER PR THERMOSET VINYLESTER RESINS INCLUDING FLAMMABILITY AND ULTRAVIOLET (UV) INHIBITOR ADDITIVES. A SYNTHETIC SURFACE VEIL SHALL BE THE OUTERMOST LAYER OF THE EXTERIOR SURFACE. ALL EXPOSED SURFACES SHALL BE SMOOTH AND TRUE TO FORM. AFTER FABRICATION, ALL CUT ENDS, HOLES, AND ABRASIONS OF FRP COMPOSITE PRODUCTS WILL BE SEALED WITH A COMPATIBLE RESIN COATING CONTAINING A UV INHIBITOR TO PREVENT MOISTURE INFILTRATION.
8. ALL FIELD CUT AND DRILLED EDGES, HOLES, AND ABRASIONS SHALL BE SEALED WITH A CATALYZED RESIN COMPATIBLE WITH THE ORIGINAL RESIN AS RECOMMENDED BY THE MANUFACTURER OF THE FRP COMPONENT. THE SEALING RESIN SHALL CONTAIN A UV INHIBITOR.
9. COATINGS SHALL BE OF A TEXTURE AND COLOR TO MATCH NEARBY EXISTING SURFACES. PAINTED COATING SHALL BE A TWO-COMPONENT UV STABILIZED URETHANE COATING COMPATIBLE WITH THE FRP COMPONENTS IN THE VISION SCREEN. PAINTING AND COLOR REQUIREMENTS SHALL BE CONFIRMED WITH THE OWNER.
10. MATERIAL PROPERTIES LENGTH WISE (LW) AND CROSSWISE (CW) OF THE FRP COMPONENTS SHALL BE EQUAL TO OR GREATER THAN THE FOLLOWING:
11. ALL FRP MEMBERS SHALL BE STRONGWELL 500/525 RESIN SERIES.
12. THE TEMPERATURE IS ASSUMED TO BE AT A RANGE WHERE FRP WILL DEVELOP ITS FULL CAPACITY. ELEVATED TEMPERATURE EFFECTS ARE OUTSIDE THE SCOPE OF THIS DESIGN, CONSULT WITH FRP FABRICATOR AS REQUIRED.
13. ALL CONNECTIONS TO FRP SHALL BE ADHESIVE BONDED IN ADDITION TO BOLTED AS RECOMMENDED BY STRONGWELL. ALL CONNECTIONS ARE ASSUMED TO DEVELOP THE CAPACITY OF THE CONNECTED FRP MEMBER SHAPE AND ALL CONNECTIONS TO FRP SHALL BE DESIGNED BY THE FRP FABRICATOR FAMILIAR WITH STRONGWELL UNLESS NOTED OTHERWISE.

STRUCTURAL PROFILES		
MATERIAL PROPERTY (ULTIMATE: NO SAFETY FACTOR)	LENGTHWISE (PSI)	CROSSWISE (PSI)
TENSILE STRENGTH	33,000	7,500
TENSILE MODULUS	2,500,000	800,000
COMPRESSIVE STRENGTH	33,000	16,500
COMPRESSIVE MODULUS	3,000,000	1,000,000
FLEXURAL STRENGTH	33,000	11,000
FLEXURAL MODULUS	1,600,000	800,000
MODULUS OF ELASTICITY, SQUARE AND RECTANGULAR TUBES (FULL SECTION)	3,200,000	N/A
SHEAR MODULUS (FULL SECTION)	420,000	N/A
INTERLAMINAR SHEAR	4,500	N/A
SHEAR STRENGTH BY PUNCH	5,500	N/A
MAXIMUM BEARING STRENGTH	30,000	18,000
IN-PLANE SHEAR	7,000	7,000

FLAT SHEETS		
MATERIAL PROPERTY (ULTIMATE: NO SAFETY FACTOR)	LENGTHWISE (PSI)	CROSSWISE (PSI)
FLEXURAL STRENGTH, FLATWISE	35,000	15,000
FLEXURAL MODULUS, FLATWISE	2,000,000	1,100,000
TENSILE STRENGTH	20,000	10,000
TENSILE MODULUS	1,800,000	1,800,000
COMPRESSIVE STRENGTH, EDGEWISE	24,000	16,000
COMPRESSIVE MODULUS, EDGEWISE	1,800,000	1,000,000
BEARING STRENGTH	32,000	32,000
SHEAR STRENGTH	7,000	7,000

FRP FASTENERS*					
MATERIAL PROPERTY (ULTIMATE: NO SAFETY FACTOR)	3/8" 16 UNC	1/2" 16 UNC	5/8" 16 UNC	3/4" 16 UNC	1" 16 UNC
THREAD SHEAR CAPACITY (LB)	1,250	2,500	3,900	5,650	7,400
COMPRESSIVE STRENGTH, EDGEWISE	1,000	2,000	3,120	4,520	6,200
COMPRESSIVE MODULUS, EDGEWISE	60,000	60,000	60,000	60,000	60,000
BEARING STRENGTH	2,000,000	2,000,000	2,000,000	2,500,000	2,500,000
SHEAR STRENGTH	55,000	55,000	55,000	55,000	60,000
SHEAR STRENGTH	4,200	7,400	11,600	17,200	27,400

*NOTE: INSTALLATION, INCLUDING TORQUE AND LUBRICATION SHALL BE PER MANUFACTURER SPECIFICATIONS.



1/27/25

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2102

AT&T

EAST AMERICAN FORK
FA #: 10115113

DESIGN DRAWINGS PREPARED FOR:

ANSCO

CLIENT #: UTL04060

REV.	DATE	DESCRIPTION
0	1/27/25	INITIAL RELEASE

EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

ADDITIONAL PROJECT NOTES

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

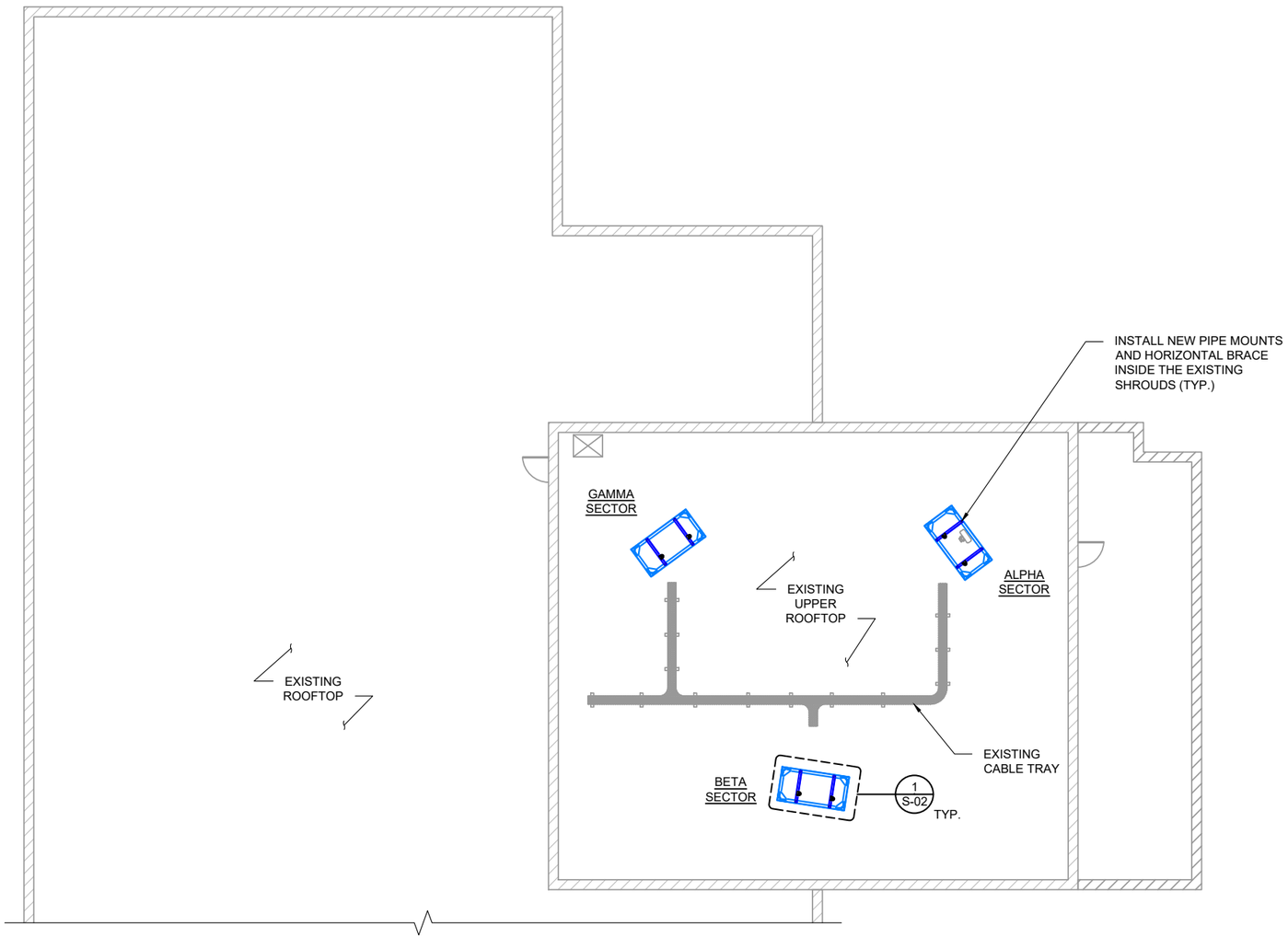
JOB NO.
2024723.02.86662.01

N-02

MODIFICATION SCHEDULE

MEMBER TYPE	ELEVATION	EXISTING MEMBER	NEW MEMBER	REFERENCE DETAIL/SHEET	NOTES
MOUNT	48'-0"±	MOUNTS	-	-	REMOVE EXISTING MOUNTS AND ALL ASSOCIATED HARDWARE FROM INSIDE OF EXISTING SHROUDS.
UNISTRUT		UNISTRUT	-	-	REMOVE EXISTING UNISTRUT AND ALL ASSOCIATED HARDWARE FROM INSIDE OF EXISTING SHROUDS.
HORIZONTAL		-	(2) L3x3x3/8 PER SECTOR	SHEETS S-02 & S-03	INSTALL NEW HORIZONTAL BRACE INSIDE EXISTING SHROUDS.
PIPE MOUNTS		-	(2) P2-1/2 STD PIPE MOUNTS PER SECTOR		INSTALL NEW PIPE MOUNT INSIDE THE EXISTING SHROUDS.
BASE PLATE BOLTS		5/8"Ø BOLTS (QUANTITY VARIES)	(4) 5/8"Ø BOLTS PER BASE PLATE		TIGHTEN OR REPLACE EXISTING LOOSE BOLTS WITH NEW BOLTS OF THE SAME SIZE AND GRADE. INSTALL NEW BOLTS IN LOCATION OF MISSING BOLTS.

NOTE:
1. ALL MATERIAL REMOVED FROM THE STRUCTURE SHALL BE DISPOSED OF BY THE CONTRACTOR OFF SITE.



ROOFTOP PLAN
N.T.S.

NORTH

LEGEND

- NEW FRP MEMBERS
- STEEL MEMBERS
- EXISTING FRP MEMBERS

PROFESSIONAL STRUCTURAL ENGINEER
No. 8043047-2203
JOHN N. KABAK
STATE OF UTAH
1/27/25

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2102

AT&T

EAST AMERICAN FORK
FA #: 10115113

DESIGN DRAWINGS PREPARED FOR:
ANSCO

CLIENT #: UTL04060

REV	DATE	DESCRIPTION
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EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

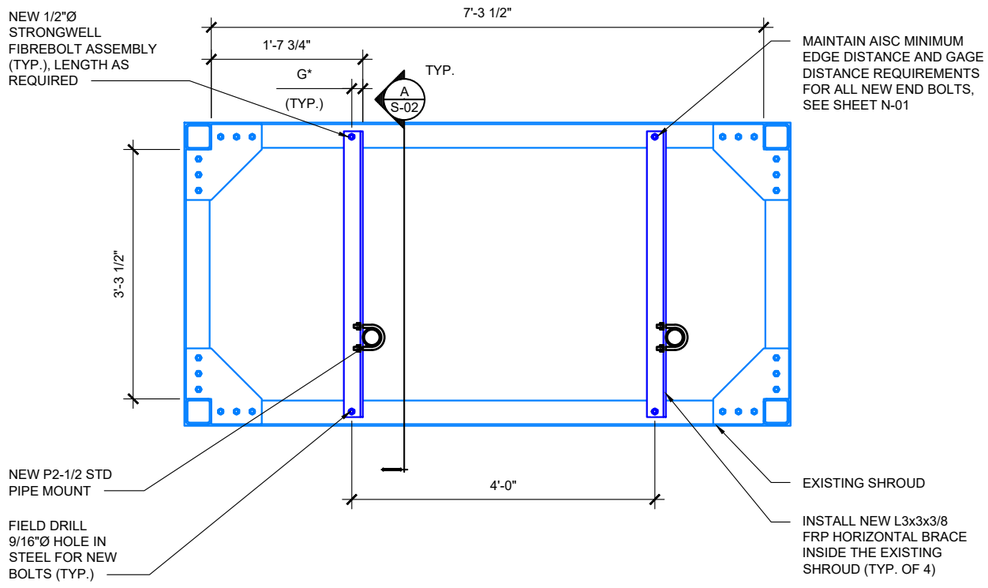
ROOFTOP PLAN & MODIFICATION SCHEDULE

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

JOB NO.
2024723.02.86662.01

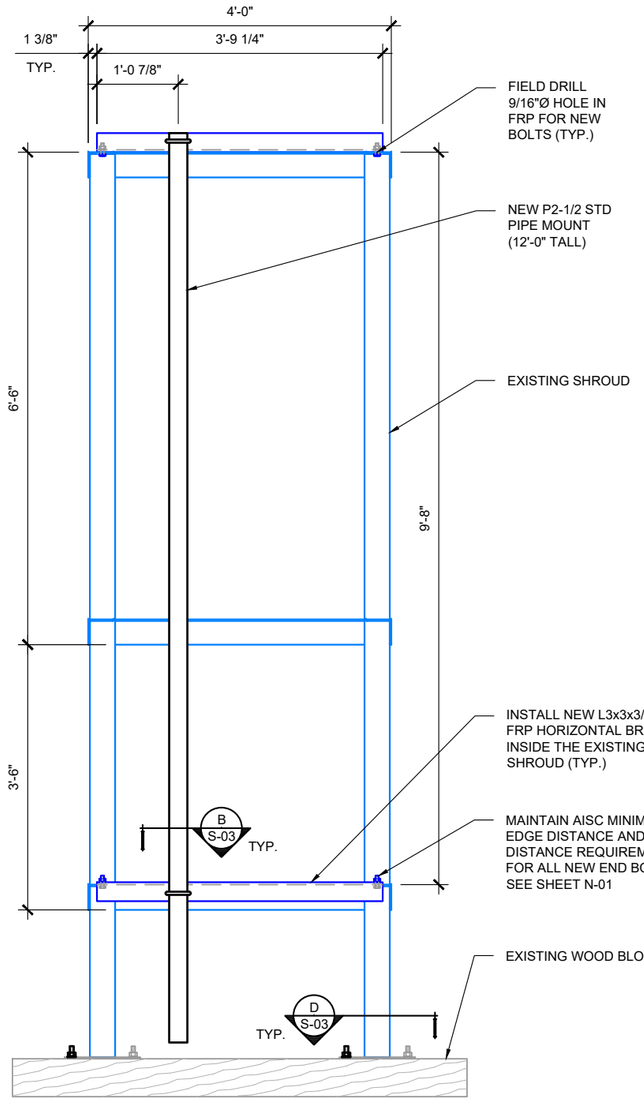
S-01



1 S-02 EXISTING SHROUD ENCLOSURE

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

* SEE WORKABLE GAGES SCHEDULE ON SHEET N-01.

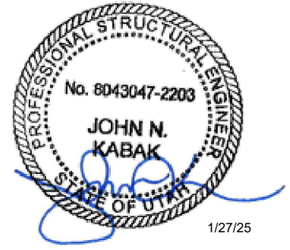


A S-02 SECTION

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

LEGEND

- NEW FRP MEMBERS
- STEEL MEMBERS
- EXISTING FRP MEMBERS



1/27/25

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AT&T

EAST AMERICAN FORK
FA #: 10115113

DESIGN DRAWINGS PREPARED FOR:

ANSCO

CLIENT #: UTL04060

REV.	DATE	DESCRIPTION
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EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

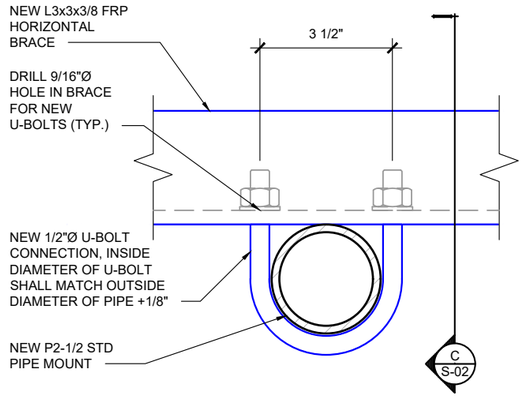
MODIFICATION DETAILS & SECTIONS

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

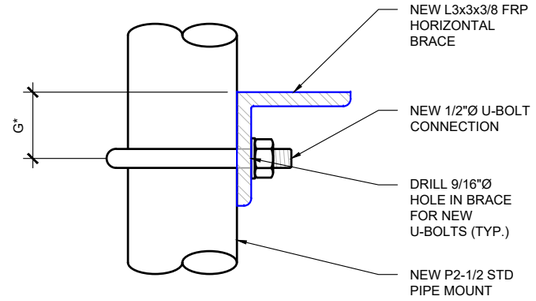
ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

JOB NO.
2024723.02.86662.01

S-02

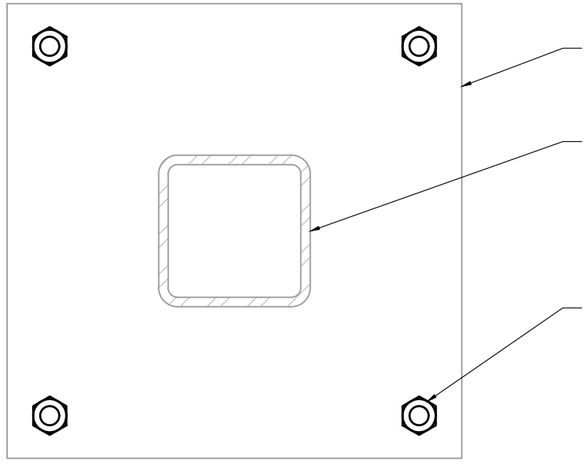


B S-03 SECTION
SCALE: 3" = 1'-0"



C S-03 SECTION
SCALE: 3" = 1'-0"

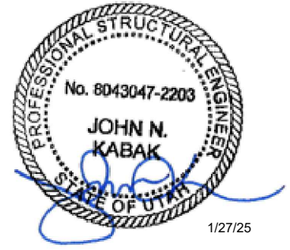
* SEE WORKABLE GAGES SCHEDULE ON SHEET N-01.



D S-03 SECTION
SCALE: 3" = 1'-0"

LEGEND

- NEW FRP MEMBERS
- STEEL MEMBERS
- EXISTING FRP MEMBERS



1/27/25

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AT&T

EAST AMERICAN FORK
FA #: 10115113

DESIGN DRAWINGS
PREPARED FOR:

ANSCO

CLIENT #: UTL04060

REV.	DATE	DESCRIPTION
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EAST AMERICAN FORK
1175 EAST 50 SOUTH
AMERICAN FORK, UT 84003

ADDITIONAL SECTIONS

ISSUED FOR:	
PERMIT	1/27/2025
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
JRS	RV
PROJECT MANAGER	APPROVED BY
CB	JNK

JOB NO.
2024723.02.86662.01

S-03

Next Step
Post Entitlement Review Required.
Revise and resubmit following the DRC meeting to address remaining comments

American Fork City Development Review	
Public Infrastructure Reviewed dhoward 07/22/2025	
Sewer/Storm Drain Division Reviewed ahardy 07/23/2025	
	Engineering Division Reviewed rburkhill 07/23/2025
Water/PI Division Reviewed jbrems 07/22/2025	Planning and Zoning Reviewed Areed 07/22/2025

Address comments

Ancso
1220 Old Alpharetta Road, Suite 380
Alpharetta, GA 30005

Next Step:
Proceed to Planning Commission 08/06/2025

GPD GROUP
Professional Corporation
Chad Burton
520 South Main Street, Suite 2531
Akron, OH 44311
(614) 859-1623
cburton@gpdgroup.com

GPD# 2024723.02.86662.01
January 28, 2025

STRUCTURAL ANALYSIS REPORT WITH MODIFICATION DESIGN

Re-Submittal Acknowledgment Statement
The Applicant is responsible for reviewing all documents to ensure all comments have been addressed.

_____ [Applicant Initial] I understand that a Review Cycle is not complete unless and until the applicant replies to all of the required modifications and requests for additional information noted on the previous submittal.

_____ [Applicant Initial] I hereby acknowledge that this re-submittal addresses all required modifications and requests for additional information noted on the previous submittal.

_____ [Applicant Initial] This is the _____ [Ex: 1st] complete re-submittal of the subdivision constituting the start of the _____ [Same Number] Review Cycle.

AT&T DESIGNATION:	**USID #:**	**86662**
	Site FA #:	**10115113**
	Client #:	**UTL04060**
	Site Name:	**East American Fork**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-H & 2021 IBC**
		103 mph (3-second gust) w/ 0" ice
		40 mph (3-second gust) w/ 0.25" ice
		Ss = 1.333, S1 = 0.491
SITE DATA:		**1175 East 50 South, American Fork, UT 84003, Utah County**
		Latitude 40° 22' 36.00" N, Longitude 111° 46' 01.50" W
		(3) FRP Shrouds on 48'-0" Rooftop

To whom it may concern,

GPD is pleased to submit this Structural Analysis Report with Modification Design to determine the structural integrity of the aforementioned structure. The purpose of the analysis is to determine the suitability of the structure with the existing and proposed loading configuration detailed in the analysis report.

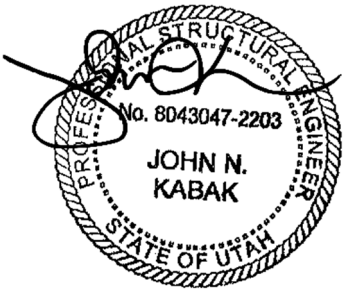
Analysis Results

Mount Stress Level with Proposed Equipment:	68.8%	Pass
Rooftop Stress Ratio with Proposed Equipment:	Adequate	Pass

In order for the results of this analysis to be accurate modifications by GPD (Project #: 2024723.02.86662.01, dated: 1/27/2025) must be properly installed.

We at GPD appreciate the opportunity of providing our continuing professional services to you and Ansco. If you have any questions or need further assistance on this or any other projects, please do not hesitate to call.

Respectfully submitted,



John N. Kabak, S.E.
Utah #: 8043047-2203

1/28/2025

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility and commissioned by Ansco.

This analysis has been performed in accordance with the 2021 International Building Code based upon a 3-second gust wind speed of 103 mph. Applicable Standard references and design criteria are listed in Appendices A & B.

The new mounts and antennas will be installed inside the existing concealment shrouds. There will be no increase in wind loads, and negligible increase in the seismic and dead loading when compared to the overall loads on the structure based on the previous structural analysis by Maser (Project #: 18739004A, dated: 2/26/2019). The increase in capacity of any individual structural component was found to be less than 5% for gravity loads and 10% for lateral loads when compared to the original design and will not require alteration per Section 503.3 & 503.4 Exception 1 of the 2021 IEBC.

ANALYSIS SUMMARY AND RESULTS

Member	Capacity	Results
Pipe Mounts	7.2%	Pass
FRP Horizontals	52.3%	Pass
FRP Bolts	68.8%	Pass
Rooftop	Adequate	Pass

RECOMMENDATIONS

In order for the results of this analysis to be accurate modifications by GPD (Project #: 2024723.02.86662.01, dated: 1/27/2025) must be properly installed.

ANALYSIS METHOD

Risa-3D (Version 22.0.0), a commercially available software program, was used to create a three-dimensional model of the structure and calculate primary member stresses for various load cases. Selected output from the analysis is included in the Appendices. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Construction Drawings	GPD Job #: 2024723.02/86662.01 Rev A, dated: 6/10/2024	GPD
Structure Mapping	TEP Project #: 344056.1019024, dated: 12/3/2024	GPD
Previous Conditional Structure Analysis	Maser Project #: 18739004A, dated: 2/26/2019	AT&T
Mount Modification Drawings	GPD Job #: 2024723.02.86662.01, dated: 1/27/2025	GPD

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the structure. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The structure member sizes and shapes are considered accurate as supplied. Material grades not supplied have been assumed based on previous experience with similar structures.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the structure only.
4. The structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
5. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
6. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
7. Loading interpreted from photos is accurate to ±5' AGL, antenna size accurate to ±3.3 sf, and coax equal to the number of existing antennas without reserve.
8. All existing and proposed loading has been taken from the available site photos as well as documents supplied to GPD at the time of generating this report. All such documents are listed in the Documents Provided Table and are assumed to be accurate. GPD is not responsible for loading scenarios outside those conveyed in the supplied documentation.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the structure.

DISCLAIMER OF WARRANTIES

GPD has performed a site visit to the structure to verify the member sizes and antenna/coax loading. If the existing conditions are not as represented on the structure elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the structure or foundation. This report does not replace a full structure inspection. The structure and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this structural analysis are limited to a computer analysis of the structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing structural standards and code. Wind forces resulting in structure vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing structure. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed structure. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Typical telecommunication structures are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the structure with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a structure collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the structure.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this structure. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Structural Analysis Summary Form

Structural Analysis Summary Form

General Info

Site Name	East American Fork (UTL04060)
Site Number	86662
FA Number	10115113
Date of Analysis	1/28/2025
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped structural analysis.

Structure Info	Description	Date
Structure Type	Rooftop	
Structure Height (avg. roof height AGL)	48'-0"	
Mount Manufacturer	n/a	
Mount Model	n/a	
Mount Design	n/a	
Structural Mapping	TEP Project #: 344056.1019024	12/3/2024
Previous Structural Anaysis	Maser Project #: 18739004A	2/26/2019
Mount Modification Drawings	GPD Job #: 2024723.02.86662.01	1/27/2025
Construction Drawings	GPD Job #: 2024723.02/86662.01 Rev A	6/10/2024

Design Parameters

Design Code Used	TIA-222-H & 2021 IBC
Location of Tower (County, State)	Utah, UT
Wind Speed (mph)	103 (3-second gust)
Ice Thickness (in)	0.25
Risk Category (I, II, III, IV)	II
Exposure Category (B, C, D)	B
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Proposed Condition	
Mount Members (%)	52.3%
Mount Bolts (%)	68.8%
Rooftop (%)	Adequate

Final Loading Configuration

Antenna								Mount		
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type
AT&T Mobility	53	53	6	Panel	Commscope	NNH4-65C-R6-UPM	55/195/305	3		FRP Shrouds
AT&T Mobility	53	53	3	Panel	Ericsson	6419 B77D	55/195/305			inside the existing shrouds
AT&T Mobility	53	53	3	Panel	Ericsson	6419 B77G	55/195/305			inside the existing shrouds
AT&T Mobility	53	53	3	RRH	Ericsson	4490 B5/B12A				inside the existing shrouds
AT&T Mobility	53	53	3	RRH	Ericsson	4478 B14				inside the existing shrouds
AT&T Mobility	53	53	3	RRH	Ericsson	4890 B25/B66				inside the existing shrouds

APPENDIX B

Mount Analysis

TIA-222-H: Mount Analysis Wind Loading
UTL04060 East American Fork
2024723.02.86662.01

Structure Information		
Supporting Structure Type:	Building	
Structure Height:	57	ft
z (Mount Centerline) =	53	ft
G_h (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	
Rooftop/Penthouse Mounted?	Yes	
Apply Wind Speed-Up Factor:	No	

Code Specifications		
IBC Edition:	2021	
TIA/EIA Code:	H	
Ultimate Wind Speed (No Ice)	103	mph (3-s gust)
Ultimate Wind Speed (With Ice)	40	mph (3-s gust)
Ice Thickness	0.25	in
Exposure Category	B	
Building Base Elevation (AMSL)	4600	ft

Topographic Inputs	
Topographic Feature:	N/A

Seismic Inputs	
Soil Class:	D (Default)
S_S:	1.333
S_1:	0.491
S_{DS}:	1.066
S_{D1}:	0.578
R:	2
C_S:	0.533
A_S:	1.0

Section Sets										No Ice	Ice Output		Seismic Output		
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K_a	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*	Member Weight (lb/ft)	Seismic Shear Force, V_S (lb/ft)	Vertical Seismic Load Effect, E_v (lb/ft)
Pipe Mount	Pipe	120.000	2.875	2.875		2.88	Round	0.90	1.00	0.00	0.00	1.00	5.48	2.92	1.17
FRP Bracing	Angle	43.500	3	3		4.24	Flat	0.90	1.00	0.00	0.00	1.44	1.67	0.89	0.36

*All forces are unfactored.

Appurtenances								Shielding			No Ice		Ice Output		Seismic Output		
QTY	Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K_a and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*	Appurtenance Wt (lbs)	Seismic Shear Force, V_S (lbs)	Vertical Seismic Load Effect, E_v (lbs)
(1)	NHH-4-65C-R6-UPM-6419-G	53	96	24	15.7	155.4	Flat	0%	0%	0.90	0.00	155.40	0.00	72.37	155.40	82.86	33.14
(1)	NHH-4-65C-R6-UPM-6419-D	53	96	24	15	152.3	Flat	0%	0%	0.90	0.00	152.30	0.00	70.93	152.30	81.21	32.48
(1)	4490 B5/B12A	53	20.6	15.6	7	65	Flat	0%	0%	0.90	0.00	65.00	0.00	10.15	65.00	34.66	13.86
(1)	4478 B14	53	18.1	13.4	8.26	59.4	Flat	0%	0%	0.90	0.00	59.40	0.00	8.90	59.40	31.67	12.67
(1)	4890 B25/B66	53	17.5	15.1	6.9	68	Flat	0%	0%	0.90	0.00	68.00	0.00	8.67	68.00	36.26	14.50

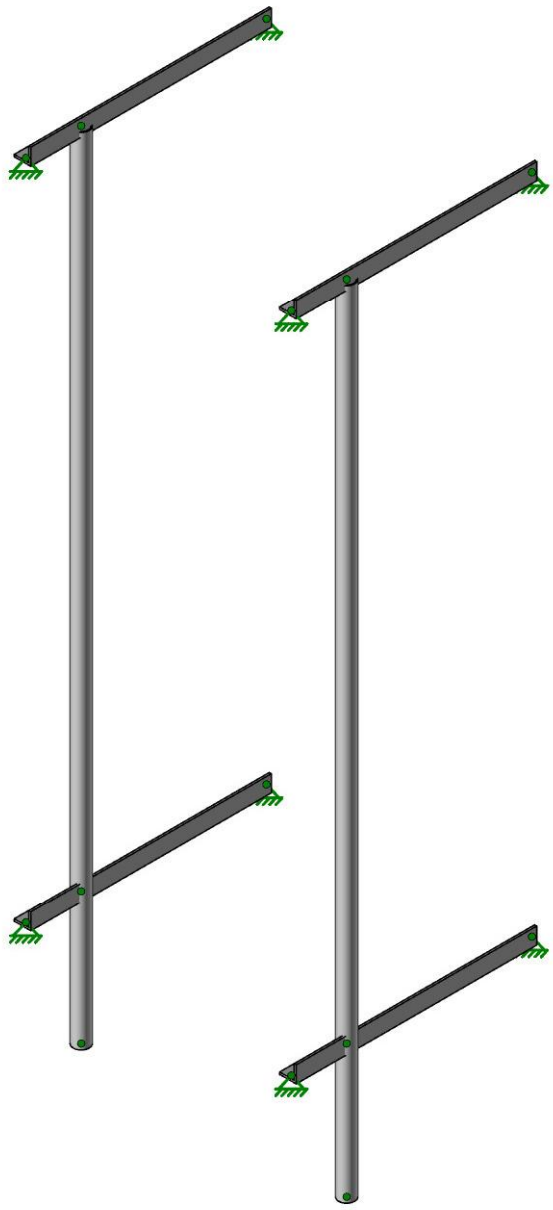
*All forces are unfactored.

TIA-222-H: Mount Analysis Wind Loading
UTL04060 East American Fork
2024723.02.86662.01

Structure Information		
Supporting Structure Type:	Building	
Structure Height:	57	ft
z (Mount Centerline) =	53	ft
G_h (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	

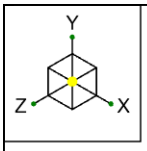
Design Factors	
z_g =	1200
α =	7
K_{zmin} =	0.7
K_C =	0.9
K_{zt} =	1
K_d =	0.95
K_e =	0.847
K_S =	N/A

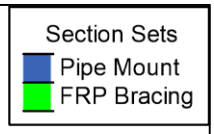
Appurtenances		Wind Pressure		Wind EPA (No Ice)				Design Wind Forces (lbs) @ 30° Increments (No Ice)												Wind EPA (with Ice)							
QTY	Appurtenance Model	k_z	q_z, no ice (psf)	Ca Front	Ca Side	Front CaAa (ft^2)	Side CaAa (ft^2)	0	30	60	90	120	150	180	210	240	270	300	330	q_z, with ice (psf)	height factored ice thickness (in)	Ca Front (app considering ice)	Ca Side (app considering ice)	Ca Front (ice)	Ca Side (ice)	Front CaAa (ft^2)	Side CaAa (ft^2)
(1)	NHH-4-65C-R6-UPM-6419-G	0.824	0.000	1.267	1.361	20.27	14.24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.262	1.264	1.353	0.732	0.777	20.54	14.48
(1)	NHH-4-65C-R6-UPM-6419-D	0.824	0.000	1.267	1.373	20.27	13.73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.262	1.264	1.365	0.732	0.783	20.54	13.97
(1)	4490 B5/B12A	0.824	0.000	1.200	1.220	2.68	1.22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.262	1.200	1.214	0.700	0.707	2.77	1.29
(1)	4478 B14	0.824	0.000	1.200	1.200	2.02	1.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.262	1.200	1.200	0.700	0.700	2.10	1.31
(1)	4890 B25/B66	0.824	0.000	1.200	1.202	2.20	1.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0.262	1.200	1.200	0.700	0.700	2.29	1.07

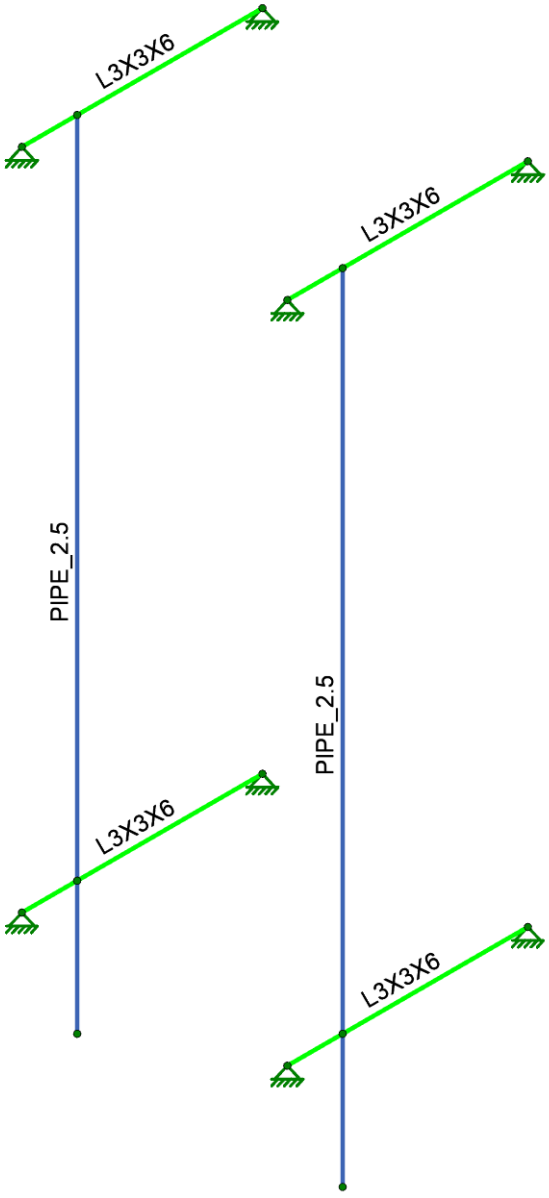


Envelope Only Solution

RISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-1
	Stokes, James		Jan 28, 2025 at 10:13 AM
	2024723.02.86662.01	3D Rendering	86662 Mounts.Loaded.r3d

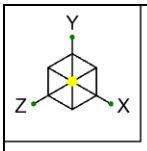


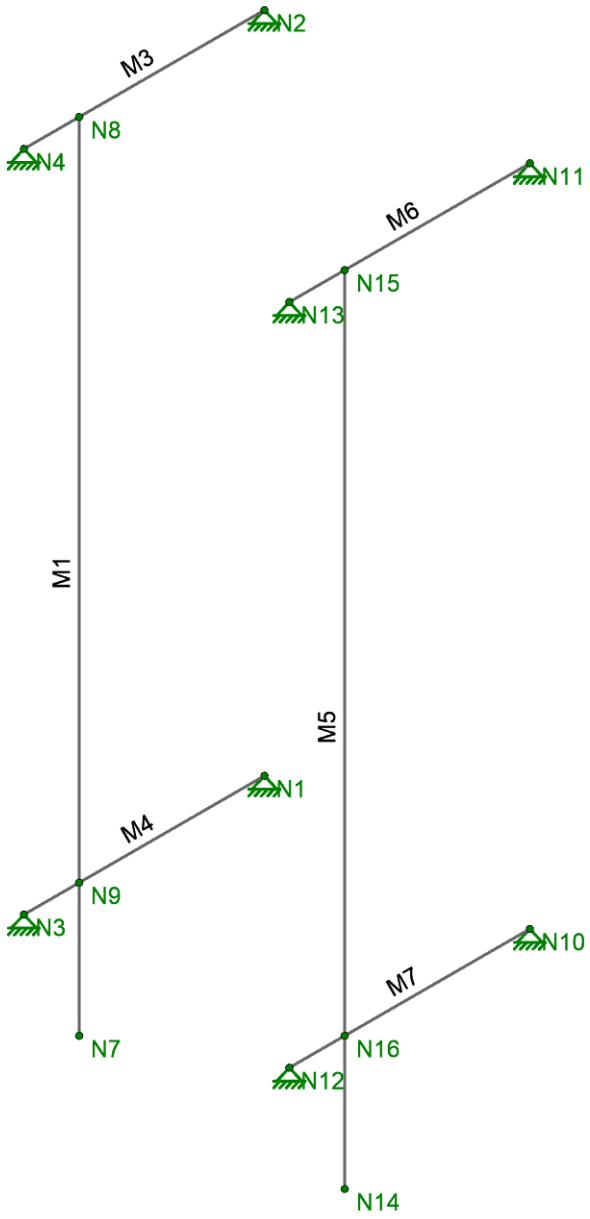




Envelope Only Solution

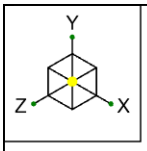
IRISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-2
	Stokes, James		Jan 28, 2025 at 10:14 AM
	2024723.02.86662.01	Member Sizes	86662 Mounts.Loaded.r3d

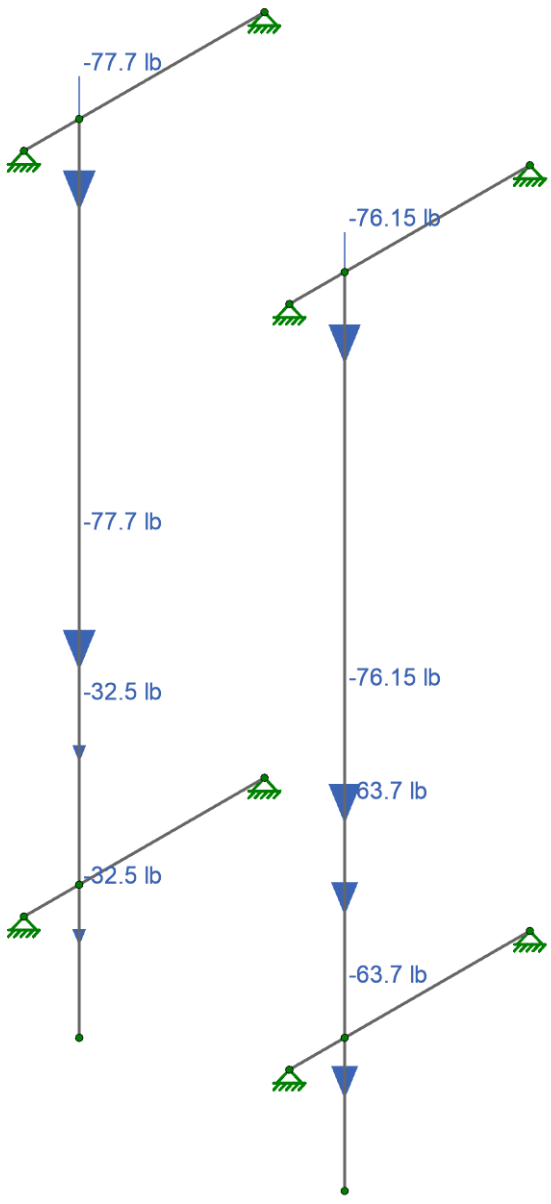




Envelope Only Solution

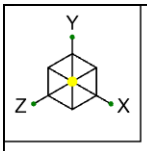
RISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-3
	Stokes, James		Jan 28, 2025 at 10:14 AM
	2024723.02.86662.01	Member & Node Labels	86662 Mounts.Loaded.r3d

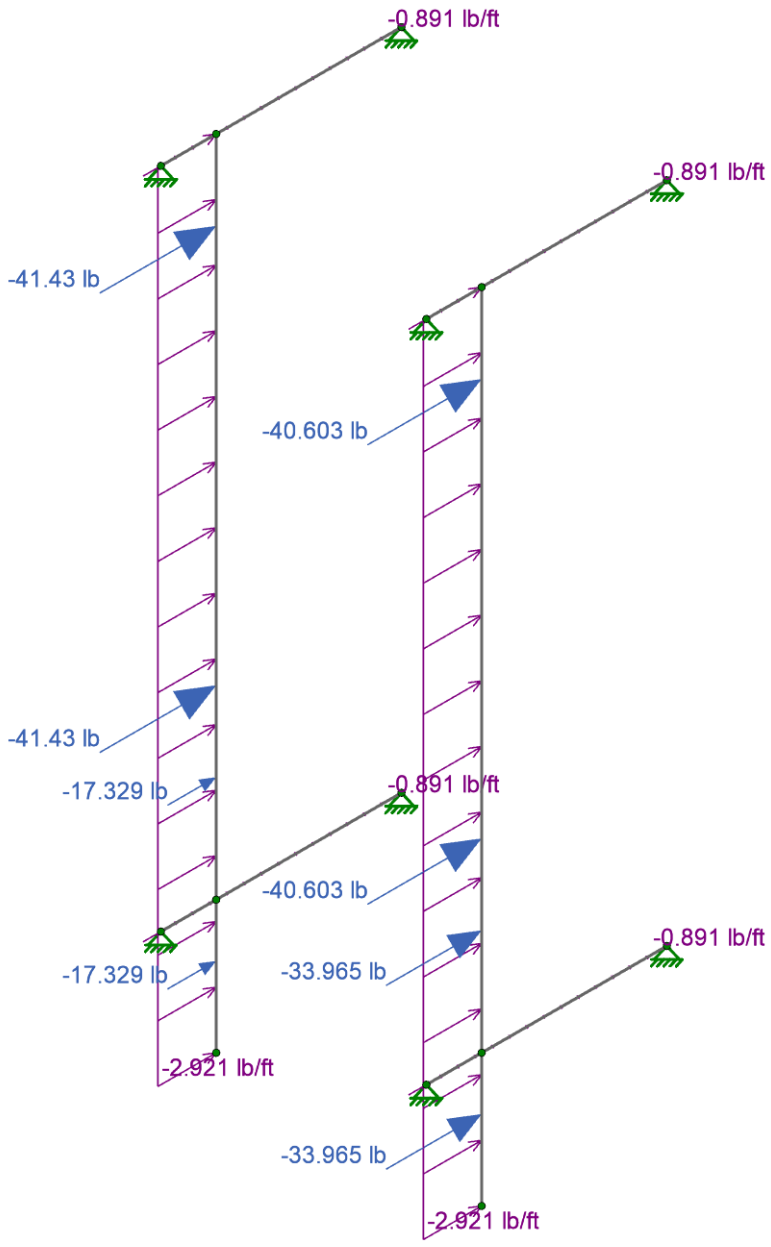




Loads: BLC 1, Dead
Envelope Only Solution

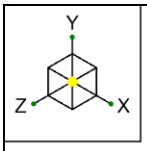
IRISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-4
	Stokes, James		Jan 28, 2025 at 10:14 AM
	2024723.02.86662.01		86662 Mounts.Loaded.r3d

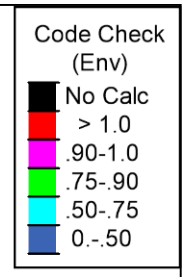


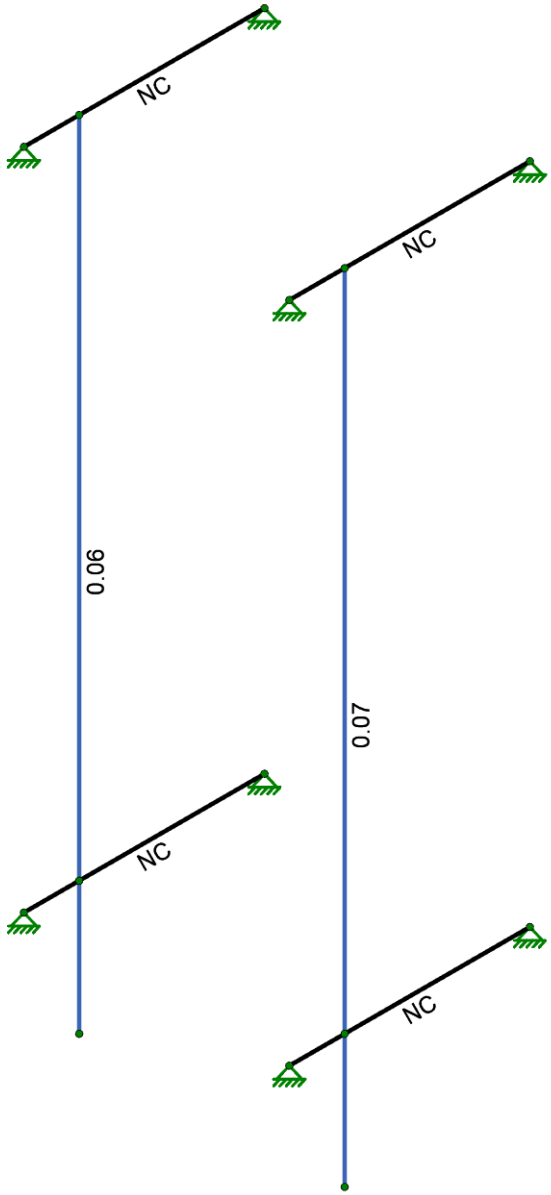


Loads: BLC 28, Seismic 0 deg
Envelope Only Solution

IRISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-5
	Stokes, James		Jan 28, 2025 at 10:15 AM
	2024723.02.86662.01		86662 Mounts.Loaded.r3d

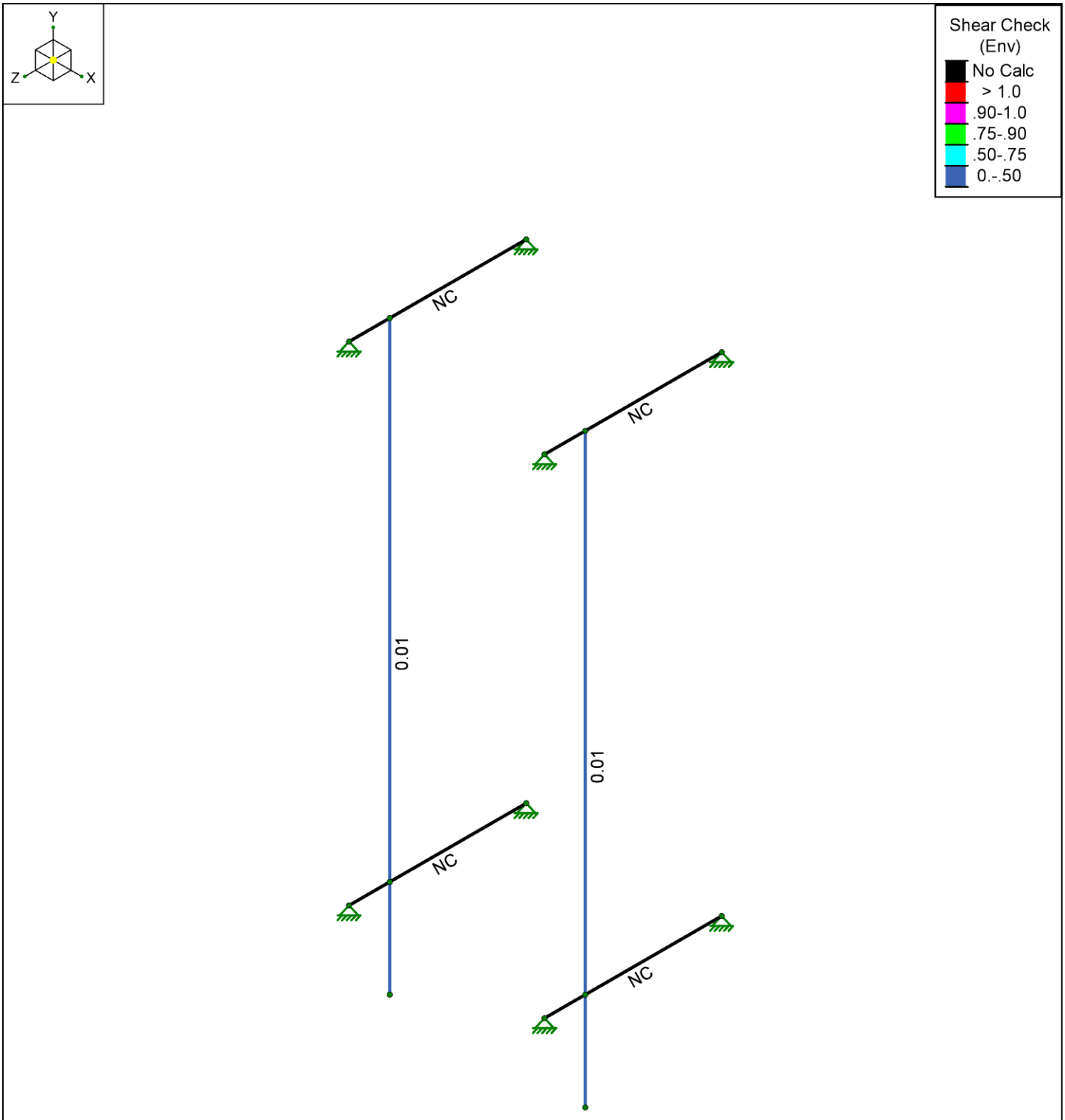






Member Code Checks Displayed (Enveloped)
Envelope Only Solution

IRISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-6
	Stokes, James		Jan 28, 2025 at 10:15 AM
	2024723.02.86662.01	Bending Capacity	86662 Mounts.Loaded.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

IRISA A NEMETSCHEK COMPANY	GPD	UTL04060 East American Fork	SK-7
	Stokes, James		Jan 28, 2025 at 10:15 AM
	2024723.02.86662.01	Shear Capacity	86662 Mounts.Loaded.r3d

Model Settings

Number of Reported Sections	10
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes
Default Global Plane for z-axis	XZ
Plate Local Axis Orientation	Nodal

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	None
Cold Formed Steel	None
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	Yes
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	None
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Model Settings (Continued)

T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
R Z	3
R X	3

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	N4	Reaction	Reaction	Reaction
2	N3	Reaction	Reaction	Reaction
3	N1	Reaction	Reaction	Reaction
4	N2	Reaction	Reaction	Reaction
5	N10	Reaction	Reaction	Reaction
6	N11	Reaction	Reaction	Reaction
7	N12	Reaction	Reaction	Reaction
8	N13	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A53 Gr. B	29000	11154	0.3	0.65	0.49	35	1.5	60	1.2
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
5	A500 Gr.42	29000	11154	0.3	0.65	0.49	42	1.4	58	1.3
6	A500 Gr.46	29000	11154	0.3	0.65	0.49	46	1.4	58	1.3
7	A500 Gr. 50	29000	11154	0.3	0.65	0.49	50	1.4	62	1.3
8	FRP	2800	450	0.33	0.7	0.114	30	0	30	0

General Materials Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Plate Methodology
1	gen_Conc3NW	3155	1372	0.15	0.6	0.145	Isotropic
2	gen_Conc4NW	3644	1584	0.15	0.6	0.145	Isotropic
3	gen_Conc3LW	2085	906	0.15	0.6	0.11	Isotropic
4	gen_Conc4LW	2408	1047	0.15	0.6	0.11	Isotropic
5	gen_Alum	10600	4077	0.3	1.29	0.173	Isotropic
6	gen_Steel	29000	11154	0.3	0.65	0.49	Isotropic
7	RIGID	1e+6		0.3	0	0	Isotropic

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Pipe Mount	PIPE_2.5	Column	HSS Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
2	FRP Bracing	L3X3X6	None	None	FRP	Typical	2.11	1.75	1.75	0.101

General Section Sets

	Label	Shape	Type	Material	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	GEN1A	RE4X4	Beam	gen_Conc3NW	16	21.333	21.333	31.573
2	RIGID		None	RIGID	1e+6	1e+6	1e+6	1e+6

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N7	N8	Pipe Mount	Column	HSS Pipe	A53 Gr. B	Typical
2	M3	N2	N4	FRP Bracing	None	None	FRP	Typical
3	M4	N1	N3	FRP Bracing	None	None	FRP	Typical
4	M5	N14	N15	Pipe Mount	Column	HSS Pipe	A53 Gr. B	Typical
5	M6	N11	N13	FRP Bracing	None	None	FRP	Typical
6	M7	N10	N12	FRP Bracing	None	None	FRP	Typical

Member Advanced Data

	Label	Col-Wall Vert Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	M1		Yes	** NA **		None
2	M3		Yes	** NA **	Exclude	None
3	M4		Yes	** NA **	Exclude	None
4	M5		Yes	** NA **		None
5	M6		Yes	** NA **	Exclude	None
6	M7		Yes	** NA **	Exclude	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Channel Conn.	a [in]	Function
1	M1	Pipe Mount	144	Lbyy	N/A	N/A	Lateral
2	M3	FRP Bracing	43.5	Lbyy	N/A	N/A	Lateral
3	M4	FRP Bracing	43.5	Lbyy	N/A	N/A	Lateral
4	M5	Pipe Mount	144	Lbyy	N/A	N/A	Lateral
5	M6	FRP Bracing	43.5	Lbyy	N/A	N/A	Lateral
6	M7	FRP Bracing	43.5	Lbyy	N/A	N/A	Lateral

Basic Load Cases

	BLC Description	Category	Y Gravity	Point	Distributed
1	Dead	DL	-1	8	
2	No Ice Wind 0 deg	None			
3	No Ice Wind 30 deg	None			
4	No Ice Wind 60 deg	None			
5	No Ice Wind 90 deg	None			
6	No Ice Wind 120 deg	None			
7	No Ice Wind 150 deg	None			
8	No Ice Wind 180 deg	None			
9	No Ice Wind 210 deg	None			
10	No Ice Wind 240 deg	None			
11	No Ice Wind 270 deg	None			
12	No Ice Wind 300 deg	None			
13	No Ice Wind 330 deg	None			
14	Ice Weight	None		8	6
15	Ice Wind 0 deg	None			
16	Ice Wind 30 deg	None			
17	Ice Wind 60 deg	None			
18	Ice Wind 90 deg	None			
19	Ice Wind 120 deg	None			
20	Ice Wind 150 deg	None			
21	Ice Wind 180 deg	None			
22	Ice Wind 210 deg	None			
23	Ice Wind 240 deg	None			
24	Ice Wind 270 deg	None			
25	Ice Wind 300 deg	None			
26	Ice Wind 330 deg	None			
27	Vertical Seismic	None		8	6
28	Seismic 0 deg	None		8	6
29	Seismic 30 deg	None		16	12
30	Seismic 60 deg	None		16	12
31	Seismic 90 deg	None		8	6
32	Seismic 120 deg	None		16	12
33	Seismic 150 deg	None		16	12
34	Seismic 180 deg	None		8	6

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Point	Distributed
35	Seismic 210 deg	None		16	12
36	Seismic 240 deg	None		16	12
37	Seismic 270 deg	None		8	6
38	Seismic 300 deg	None		16	12
39	Seismic 330 deg	None		16	12

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4				
2	1.2 Dead + 1.0 Wind @ 0° - No Ice	Yes	Y	1	1.2	2	1		
3	0.9 Dead + 1.0 Wind @ 0° - No Ice	Yes	Y	1	0.9	2	1		
4	1.2 Dead + 1.0 Wind @ 30° - No Ice	Yes	Y	1	1.2	3	1		
5	0.9 Dead + 1.0 Wind @ 30° - No Ice	Yes	Y	1	0.9	3	1		
6	1.2 Dead + 1.0 Wind @ 60° - No Ice	Yes	Y	1	1.2	4	1		
7	0.9 Dead + 1.0 Wind @ 60° - No Ice	Yes	Y	1	0.9	4	1		
8	1.2 Dead + 1.0 Wind @ 90° - No Ice	Yes	Y	1	1.2	5	1		
9	0.9 Dead + 1.0 Wind @ 90° - No Ice	Yes	Y	1	0.9	5	1		
10	1.2 Dead + 1.0 Wind @ 120° - No Ice	Yes	Y	1	1.2	6	1		
11	0.9 Dead + 1.0 Wind @ 120° - No Ice	Yes	Y	1	0.9	6	1		
12	1.2 Dead + 1.0 Wind @ 150° - No Ice	Yes	Y	1	1.2	7	1		
13	0.9 Dead + 1.0 Wind @ 150° - No Ice	Yes	Y	1	0.9	7	1		
14	1.2 Dead + 1.0 Wind @ 180° - No Ice	Yes	Y	1	1.2	8	1		
15	0.9 Dead + 1.0 Wind @ 180° - No Ice	Yes	Y	1	0.9	8	1		
16	1.2 Dead + 1.0 Wind @ 210° - No Ice	Yes	Y	1	1.2	9	1		
17	0.9 Dead + 1.0 Wind @ 210° - No Ice	Yes	Y	1	0.9	9	1		
18	1.2 Dead + 1.0 Wind @ 240° - No Ice	Yes	Y	1	1.2	10	1		
19	0.9 Dead + 1.0 Wind @ 240° - No Ice	Yes	Y	1	0.9	10	1		
20	1.2 Dead + 1.0 Wind @ 270° - No Ice	Yes	Y	1	1.2	11	1		
21	0.9 Dead + 1.0 Wind @ 270° - No Ice	Yes	Y	1	0.9	11	1		
22	1.2 Dead + 1.0 Wind @ 300° - No Ice	Yes	Y	1	1.2	12	1		
23	0.9 Dead + 1.0 Wind @ 300° - No Ice	Yes	Y	1	0.9	12	1		
24	1.2 Dead + 1.0 Wind @ 330° - No Ice	Yes	Y	1	1.2	13	1		
25	0.9 Dead + 1.0 Wind @ 330° - No Ice	Yes	Y	1	0.9	13	1		
26	1.2 Dead + 1.0 Ice Wind @ 0°+ 1.0 Ice	Yes	Y	1	1.2	15	1	14	1
27	1.2 Dead + 1.0 Ice Wind @ 30°+ 1.0 Ice	Yes	Y	1	1.2	16	1	14	1
28	1.2 Dead + 1.0 Ice Wind @ 60°+ 1.0 Ice	Yes	Y	1	1.2	17	1	14	1
29	1.2 Dead + 1.0 Ice Wind @ 90°+ 1.0 Ice	Yes	Y	1	1.2	18	1	14	1
30	1.2 Dead + 1.0 Ice Wind @ 120°+ 1.0 Ice	Yes	Y	1	1.2	19	1	14	1
31	1.2 Dead + 1.0 Ice Wind @ 150°+ 1.0 Ice	Yes	Y	1	1.2	20	1	14	1
32	1.2 Dead + 1.0 Ice Wind @ 180°+ 1.0 Ice	Yes	Y	1	1.2	21	1	14	1
33	1.2 Dead + 1.0 Ice Wind @ 210°+ 1.0 Ice	Yes	Y	1	1.2	22	1	14	1
34	1.2 Dead + 1.0 Ice Wind @ 240°+ 1.0 Ice	Yes	Y	1	1.2	23	1	14	1
35	1.2 Dead + 1.0 Ice Wind @ 270°+ 1.0 Ice	Yes	Y	1	1.2	24	1	14	1
36	1.2 Dead + 1.0 Ice Wind @ 300°+ 1.0 Ice	Yes	Y	1	1.2	25	1	14	1
37	1.2 Dead + 1.0 Ice Wind @ 330°+ 1.0 Ice	Yes	Y	1	1.2	26	1	14	1
38	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 0°	Yes	Y	1	1.2	27	1	28	1
39	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 0°	Yes	Y	1	0.9	27	-1	28	1
40	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 30°	Yes	Y	1	1.2	27	1	29	1
41	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 30°	Yes	Y	1	0.9	27	-1	29	1
42	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 60°	Yes	Y	1	1.2	27	1	30	1
43	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 60°	Yes	Y	1	0.9	27	-1	30	1
44	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 90°	Yes	Y	1	1.2	27	1	31	1
45	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 90°	Yes	Y	1	0.9	27	-1	31	1
46	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 120°	Yes	Y	1	1.2	27	1	32	1
47	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 120°	Yes	Y	1	0.9	27	-1	32	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
48	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 150°	Yes	Y	1	1.2	27	1	33	1
49	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 150°	Yes	Y	1	0.9	27	-1	33	1
50	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 180°	Yes	Y	1	1.2	27	1	34	1
51	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 180°	Yes	Y	1	0.9	27	-1	34	1
52	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 210°	Yes	Y	1	1.2	27	1	35	1
53	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 210°	Yes	Y	1	0.9	27	-1	35	1
54	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 240°	Yes	Y	1	1.2	27	1	36	1
55	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 240°	Yes	Y	1	0.9	27	-1	36	1
56	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 270°	Yes	Y	1	1.2	27	1	37	1
57	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 270°	Yes	Y	1	0.9	27	-1	37	1
58	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 300°	Yes	Y	1	1.2	27	1	38	1
59	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 300°	Yes	Y	1	0.9	27	-1	38	1
60	1.2 Dead + 1.0 Seismic V + 1.0 Seismic H @ 330°	Yes	Y	1	1.2	27	1	39	1
61	0.9 Dead - 1.0 Seismic V + 1.0 Seismic H @ 330°	Yes	Y	1	0.9	27	-1	39	1

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N4	max	49.304	57	241.23	38	69.734	38	0	61	0	61	0	61
2		min	-49.31	44	47.601	51	-41.121	51	0	1	0	1	0	1
3	N3	max	71.423	56	241.368	50	60.88	39	0	61	0	61	0	61
4		min	-71.419	45	47.784	39	-89.522	50	0	1	0	1	0	1
5	N1	max	20.921	56	27.036	58	19.306	39	0	61	0	61	0	61
6		min	-20.931	44	-2.867	47	-27.856	50	0	1	0	1	0	1
7	N2	max	17.387	57	25.078	54	21.949	38	0	61	0	61	0	61
8		min	-17.385	45	-0.964	43	-13.408	51	0	1	0	1	0	1
9	N10	max	26.686	56	32.452	58	25.942	39	0	61	0	61	0	61
10		min	-26.69	44	-4.148	47	-36.195	50	0	1	0	1	0	1
11	N11	max	18.897	57	28.061	54	23.168	38	0	61	0	61	0	61
12		min	-18.901	45	0.105	43	-12.928	51	0	1	0	1	0	1
13	N12	max	96.912	57	282.372	50	83.11	39	0	61	0	61	0	61
14		min	-96.911	45	65.218	39	-117.457	50	0	1	0	1	0	1
15	N13	max	48.162	57	284.937	40	73.817	38	0	61	0	61	0	61
16		min	-48.163	44	61.681	53	-39.513	51	0	1	0	1	0	1
17	Totals:	max	349.678	57	1003.032	37	349.678	38						
18		min	-349.678	44	450.369	57	-349.678	51						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	PIPE_2.5	0.061	24.727	48	0.009	144	40	15797.3	50715	3.596	3.596	1	H1-1b
2	M5	PIPE_2.5	0.072	24.727	48	0.011	24.727	52	15797.3	50715	3.596	3.596	1	H1-1b

Equal Angle FRP Member Checks

Site ID: **UTL04060 East American Fork**

GPD Project #: **2024723.02.86662.01**

L3x3x3/8 - Member Properties

Outside Width of Leg in Compression, b	3	In.	
Angle Leg Thickness, t	0.375	In.	
Section Modulus, S_x	0.825	$In.^3$	
Area, A_g	2.11	$In.^2$	
Radius of Gyration, r_z	0.581	In.	
Member Length, L	4	Ft.	
Effective Length Factor, K	1.0		*2.5.2*

Member Material Properties

Characteristic value of the longitudinal compression elastic modulus, E_L	3,000,000	PSI	
Characteristic value of the in-plane shear modulus of flange or web, G_{LT}	450,000	PSI	

Compression Checks - 4.4.3 - Single Angle Sections with Equal Angles

Limit State #: (1)

Effective Slenderness Ratio, KL/r	82.6		
Critical Stress, F_{crx}	4,338	PSI	*(4-13)*
Phi, Φ	0.70		
Factored Critical Stress, ΦF_{crx}	**3,037**	PSI	

Limit State #: (2)

Torsional Buckling Stress, F_{crt}	7,031	PSI	*(4-14)*
Phi, Φ	0.80		
Factored Torsional Buckling Stress, ΦF_{crt}	**5,625**	PSI	

Ultimate Strength

Time Effect Factor, λ	1.0		*Table 2-1*
Ultimate Strength, ΦP_n	**6,407**	Lbs.	

Unity Check

Applied Load

Axial Load	118	Lbs.	*SS14*
Moment	195	Lbs.*Ft.	*SS14*

Capacities

Axial Capacity	1.8%	
Moment Capacity	50.4%	
Unity Check	**52.3%**	**Pass**

Bending Checks - 5.2.3.5 - Square and Rectangular Tube Sections

Local Buckling Stress of Comp. Flange, F_{cr}	7,031	PSI	*(5-10)*
Phi, Φ	0.80		*5.2.3*
Factored Stress, ΦF_{cr}	**5,625**	PSI	

Ultimate Strength

Time Effect Factor, λ	1.0		*Table 2-1*
Ultimate Strength, ΦM_n	**387**	Lbs.*Ft.	

UTL04060 East American Fork
2024723.02.86662.01
Strongwell FRP Bolts

STRONGWELL FIBERGLASS BOLTS				
Ultimate Load (lb)				
Diam	1 Nut	2 Nut	Single	Double
0.375	1,050	1,470	1,600	3,000
0.5	2,000	2,800	2,600	5,000
0.625	3,100	4,340	3,800	7,500
0.75	4,500	6,300	6,200	12,000
1	6,500	9,700	15,000	22,000
Recommended Safety Factor (Connections) =				3

Capacity Summary	
FRP Angle Bolts	68.8%
Max Capacity	**68.8%**

Allowable Bearing	Thickness of FRP				
Diam	1/4"	3/8"	1/2"	3/4"	1"
0.375	352	703	1,055	1,406	2109
0.5	469	938	1,406	1,875	2812
0.625	586	1,172	1,758	2,344	3516
0.75	703	1,406	2,109	2,812	4219
1	938	1,875	2,812	3,750	5625

FRP Bolts for	FRP Angle Bolts	
Bolt Diameter	0.5	in
# Nuts	1 Nut	
Shear Planes	Single	
Thickness of FRP	1/4"	in
Ultimate Tension	2,000	lb / bolt
Ultimate Shear	2,600	lb / bolt
Allowable Tension	667	lb / bolt
Allowable Shear	867	lb / bolt
Allowable Bearing	469	lb / bolt
Tu	241	lb / bolt
Vu	153	lb / bolt
Interaction Tension	241	lb / bolt
Tension Capacity	36.2%	
Shear Capacity	32.6%	
Interaction Capacity	68.8%	
Max Capacity	68.8%	

FRP Bolts for		
Bolt Diameter	0.75	in
# Nuts	1 Nut	
Shear Planes	Double	
Thickness of FRP	3/8"	in
Ultimate Tension	4,500	lb / bolt
Ultimate Shear	12,000	lb / bolt
Allowable Tension	1,500	lb / bolt
Allowable Shear	4,000	lb / bolt
Allowable Bearing	2,812	lb / bolt
Tu		lb / bolt
Vu		lb / bolt
Interaction Tension		lb / bolt
Tension Capacity	0.0%	
Shear Capacity	0.0%	
Interaction Capacity	0.0%	
Max Capacity	0.0%	

FRP Bolts for		
Bolt Diameter	0.75	in
# Nuts	1 Nut	
Shear Planes	Single	
Thickness of FRP	1/2"	in
Ultimate Tension	4,500	lb / bolt
Ultimate Shear	6,200	lb / bolt
Allowable Tension	1,500	lb / bolt
Allowable Shear	2,067	lb / bolt
Allowable Bearing	2,109	lb / bolt
Tu		lb / bolt
Vu		lb / bolt
Interaction Tension		lb / bolt
Tension Capacity	0.0%	
Shear Capacity	0.0%	
Interaction Capacity	0.0%	
Max Capacity	0.0%	

FRP Bolts for		
Bolt Diameter	0.75	in
# Nuts	1 Nut	
Shear Planes	Double	
Thickness of FRP	1/2"	in
Ultimate Tension	4,500	lb / bolt
Ultimate Shear	12,000	lb / bolt
Allowable Tension	1,500	lb / bolt
Allowable Shear	4,000	lb / bolt
Allowable Bearing	4,218	lb / bolt
Tu		lb / bolt
Vu		lb / bolt
Interaction Tension		lb / bolt
Tension Capacity	0.0%	
Shear Capacity	0.0%	
Interaction Capacity	0.0%	
Max Capacity	0.0%	

APPENDIX C

Modification Design Drawings

EAST AMERICAN FORK

FA #: 10115113

CLIENT #: UTL04060

USID #: 86662

Fix the scaling/page size of the modification design drawings so they are legible

AT&T

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(330) 572-2100
FOR QUESTIONS PLEASE EMAIL:

SHEET INDEX:

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MODIFICATION INSPECTION CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
	PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING	THIS CHECKLIST SERVES AS A GUIDELINE FOR THE REQUIRED CONSTRUCTION DOCUMENTS AND INSPECTIONS FOR THIS MODIFICATION
X	EOR APPROVED SHOP DRAWINGS	PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS TO THE EOR FOR APPROVAL.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR STATING THAT ALL FABRICATION (I.E. DRILLING, CUTTING, WELDING, SHEARING, MILLING, GALVANIZING, ETC) HAS BEEN DONE ACCORDING TO INDUSTRY STANDARDS AND ALL APPLICABLE ANSI/ASTM STANDARDS.
NA	FABRICATOR CERTIFIED WELD INSPECTION	A CWI SHALL INSPECT ALL FABRICATION WELDS IN ACCORDANCE WITH AWS D1.1 AND A REPORT DETAILING THE RESULTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR ALL MATERIAL USED. MTR'S SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
	ʙRICATOR NDE INSPECTION REPORT	CRITICAL SHOP WELDS THAT REQUIRE ADDITIONAL TESTING ARE NOTED WITHIN THE MODIFICATION DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION ON ALL PJP, CJP, AND FILLET WELDS >5/16" IN ACCORDANCE WITH AWS D1.1 AND A REPORT DETAILING THE RESULTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
	NDE OF MONOPOLE BASE PLATE	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
	PACKING SLIPS	PACKING/SHIPPING LIST FOR ALL MATERIAL USED DURING CONSTRUCTION OF THE MODIFICATION SHALL BE PROVIDED.
	DURING CONSTRUCTION	
	PRE-POUR REBAR INSPECTIONS	A 3RD PARTY VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED **BEFORE** PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
	ALLED REBAR AND/OR DOWEL INSPECTIONS	PHOTOGRAPHIC DOCUMENTATION OF DRILL HOLE SIZES AND DEPTHS SHALL BE RECORDED **BEFORE** SETTING THE POST INSTALLED REBAR AND DOWELS WITH EPOXY/GROUT.
	RETE COMP. STRENGTH & SLUMP TEST	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE MI REPORT.
NA	EARTHWORK: LIFT & DENSITY REPORT	REPORT DETAILING SOIL COMPACTION TEST RESULTS TO BE INCLUDED IN THE MI REPORT.
NA	MICROPILE/ROCK ANCHOR	MICROPILES AND ROCK ANCHORS SHALL BE INSPECTED BY A 3RD PARTY. INSPECTION SHALL VERIFY ANCHOR SIZE, STEEL GRADE, AND HOLE DEPTHS. PHOTOGRAPHIC DOCUMENTATION OF ALL MEASUREMENTS ALONG WITH THE PULL TEST RESULTS SHALL BE INCLUDED IN THE MI REPORT.
NA	HELICAL ANCHOR	HELICAL INSTALLER SHALL SUBMIT FINAL SEALED HELICALS DESIGN, TORQUE LOGS, AND FINAL LOAD TEST RESULTS TO BE INCLUDED IN THE MODIFICATION INSPECTION REPORT.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED AND SHALL INCLUDE PHOTO VERIFICATION OF HOLE DEPTH, HOLE CLEANOUT AND ROUGHENING, AND EPOXY LABELING. REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	3RD PARTY FIELD CERTIFIED WELD INSPECTION	A CWI SHALL CONDUCT A VISUAL INSPECTION OF ALL FIELD WELDS IN ACCORDANCE WITH AWS D1.1. CRITICAL WELDS THAT REQUIRE ADDITIONAL TESTING ARE NOTED IN THE MODIFICATION DRAWINGS.
X	ON-SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS.
NA	TENSION TWIST & PLUMB DELIVERABLES	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THE STRUCTURE TWIST AND PLUMB CONDITION AS WELL AS THE WIRE TENSIONS (AS REQUIRED). REPORT SHALL INCLUDE PRE-TENSION, PLUMB & TWIST RESULTS, POST-TENSION REPORT, POST PLUMB AND TWIST REPORT, AND PHOTOS OF THE TENSION GAUGES FOR ALL GUY WIRES.
X	GC AS-BUILT DRAWINGS	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED.
NA	BOLT PRE-TENSION VERIFICATION	TURN-OF-THE NUT METHOD IS THE DEFAULT METHOD FOR PRE-TENSIONING BOLTS. MATCH-MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES AND SHALL BE APPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. ALTERNATIVE PRE-TENSIONING METHODS ARE NOT ALLOWED WITHOUT PRIOR EOR CONSENT.
ADDITIONAL TESTING AND INSPECTIONS:		
NA	MECHANICAL ANCHOR VERIFICATION	INSTALLATION TORQUE SHALL BE VERIFIED FOR THE POST INSTALLED ANCHORS. A REPORT SHALL BE PROVIED FOR INCLUSION IN THE MI INDICATING RESULTS.
	POST-CONSTRUCTION	
X	CONSTRUCTION COMPLIANCE LETTER	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE MODIFICATION DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.

Fix the scaling/page size of the modification design drawings so they are legible

GENERAL

1. THE MI IS AN ON-SITE VISUAL … CONSTRUCTION REPORTS AND … (GC), AS WELL AS ANY INSPEC… INSTALLATION WAS CONSTRUC… APPLICABLE INDUSTRY STANDA…
2. NO DOCUMENT, CODE OR POLIC… IS INTENDED TO SERVE AS A … INSPECTION.
3. THE MI IS TO CONFIRM INSTA… MODIFICATION DESIGN ITSELF, … THE MI INSPECTOR SHALL INSP… OWNER AND EOR FOR EVALUAT…
4. TO ENSURE THAT THE REQUIR… CONTRACTOR (GC) AND THE … PAYMENT IS RECEIVED. IT IS … PARTY. CONTACT LISTED ON T… IS NOT KNOWN.

FAILING INSPECTION CO…

1. IF THE MODIFICATION INSTA… INSPECTION"), THE GC SHALL W…
   - CORRECT FAILING ISSUES … MODIFICATION DRAWINGS AN…
   - OR, WITH STRUCTURE OWN… RE-ANALYZE THE MODIFICAT…

SERVICE LEVEL COMMIT…

1. THE FOLLOWING RECOMMEN… EFFECTIVENESS OF DELIVERIN…
   - THE GC SHALL PROVIDE A M… AS TO WHEN THE SITE WILL …
   - THE GC AND MI INSPECTOR …
   - WHEN POSSIBLE, IT IS PREF… ANY GUY WIRE TENSIONING …
   - WHEN POSSIBLE, IT IS PREF… ANY MINOR DEFICIENCIES … COORDINATE THE MI CAREFU… THE MI INSPECTOR IS ON SIT…
   - IT MAY BE BENEFICIAL TO… FOUNDATION INSPECTIONS … WITH ONE SITE VISIT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI… INCLUDED IN THE MI REPORT:
   - PRE-CONSTRUCTION GENER…
   - PHOTOGRAPHS DURING THE…
     - RAW MATERIALS
     - PHOTOS OF ALL CRITI…
     - FOUNDATION MODIFIC…
     - WELD PREPARATION …
     - BOLT INSTALLATION …
     - FINAL INSTALLED CON…
     - SURFACE COATING R…
   - POST CONSTRUCTION PHOTO…
     - FINAL INFIELD CONDIT…
   - ANY OTHER PHOTOS DEEME…
2. PHOTOS OF ELEVATED MODIFIC…

GENERAL NOTES

1. THIS DESIGN IS IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF ALL LOCALLY ADOPTED BUILDING CODES. MATERIALS, FABRICATION, INSTALLATION, AND ALL OTHER SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

2. THIS DESIGN ASSUMES THE EXISTING STRUCTURE HAS BEEN WELL MAINTAINED, IS IN GOOD CONDITION, AND IS WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD.

3. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND NOTE ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS OR THAT INTERFERE WITH THE CONTINUOUS INSTALLATION OF THE MODIFICATIONS. CONTRACTOR SHALL NOTE ALL ATTACHMENT POINTS, ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. GPD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF ANY DEVIATION PRIOR TO ORDERING MATERIAL.

4. ALL MATERIAL SPECIFIED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE REVIEWED BY THE OWNER AND ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER.

5. CONTRACTOR IS RESPONSIBLE FOR ENGAGING A MODIFICATION INSPECTOR AT THE TIME OF AWARD TO COORDINATE AN INSPECTION SCHEDULE AND ENSURE PROPER DOCUMENTATION IS RETAINED THROUGHOUT TH SHEET MI-01 FOR MODIFICATION INSPECTION CHECKLIST.

6. SP ILESS OTHERWISE SPECIFIED WITHIN THE PLANS OR REQUIRED BY THE BUILDING OF CTIONS AND TESTS ARE NOT REQUIRED FOR GROUP U OCCUPANCIES, BUT NOT LIM D IN SECTION 312.1 (IBC SECTION 1704.2, EXCEPTION 2). CONTRACTOR SHALL BE RE MINING IF ANY SPECIAL INSPECTIONS ARE REQUIRED BY THE JURISDICTION HAVING AU) BY THE JURISDICTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO DULING OF THE SPECIAL INSPECTIONS WITH THE ENGINEER OF RECORD. IN THOSE CA ONS MUST BE COMPLETED PRIOR TO FINAL INSPECTION APPROVAL.

7. INS)POSED LOADING IS BY OTHERS AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

8. AL OWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO THE OWNER AND GF TAINED, UNDERSTAND, AND WILL FOLLOW THE OWNER STANDARDS OF PRACTICE, CO ES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INS ES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF AC OCCUR PRIOR TO BEGINNING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CO THIS DOCUMENTATION FOR THE OWNER AND GPD ON COMPANY LETTERHEAD AND IS THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SU JBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE OWNER AND GPD.

Fix the scaling/page size of the modification design drawings so they are legible

9. STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS SHALL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH CONSTRUCTION EXPERIENCE. THE CONTRACTOR SHALL SUBMIT CERTIFICATIONS TO THE OWNER.

10. CONTRACTOR SHALL PERFORM ALL WORK IN SUCH A MANNER AS TO PROTECT THE EXISTING AND ADJACENT STRUCTURES AND SHALL BE RESPONSIBLE TO PROPERLY REPAIR ANY DAMAGE THAT OCCURS AS A RESULT OF THE WORK.

11. CEASE OPERATIONS AND NOTIFY OWNER AND ENGINEER IMMEDIATELY IF THE SAFETY OR INTEGRITY OF THE STRUCTURE APPEARS TO BE ENDANGERED. PROPERLY BRACE AND SUPPORT STRUCTURE BEFORE RESUMING OPERATIONS.

12. DO NOT CUT OR ALTER ANY STRUCTURAL MEMBERS WITHOUT WRITTEN AUTHORIZATION OF THE ENGINEER UNLESS INDICATED ON THE STRUCTURAL DRAWINGS.

13. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. ANY TECHNIQUES OR PROCEDURES IMPLIED BY THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE SUGGESTIONS ONLY. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

14. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THEIR WORK FORCE, THE WORK AREA, ADJACENT AREA, AND ANY PROPERTY OCCUPANTS WHO MAY BE AFFECTED BY THE WORK UNDER CONTRACT. THE CONTRACTOR SHALL REVIEW AND ABIDE BY ALL OWNER, PRIME CONTRACTOR, CARRIER, OSHA, AND LOCAL SAFETY GUIDELINES. ALL WORKERS SHALL UTILIZE APPROPRIATE FALL PROTECTION AND SAFETY EQUIPMENT THAT IS UP-TO-DATE AND INSPECTED PER OSHA AND INDUSTRY GUIDELINES. ALL WORKERS SHALL BE TRAINED AND MONITORED TO ENSURE SAFE WORKING PRACTICES ARE MAINTAINED.

15. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER APPURTENANCE THAT MAY INTERFERE WITH THE MODIFICATIONS. ALL APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE OWNER IN WRITING.

16. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

17. THE STRUCTURAL INTEGRITY OF THIS DESIGN EXTENDS TO THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE THE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.

18. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL SHORING, TEMPORARY GLOBAL SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE

26. THE SUBCONTRACTOR SHALL REPAIR ALL EXISTING FLOOR, ROOF, CEILING, AND WALL SURFACES AN FINISHING DISTURBED DURING CONSTRUCTION. ALL EXTERIOR FINISHES ARE REQUIRED TO RESULT IN SMOOTH FINISH TO MATCH THE EXISTING CONDITIONS TO THE SATISFACTION OF THE OWNER.

27. ALL ABANDONED HOLES AS A RESULT OF THIS DESIGN SHALL BE SEALED WITH A SEALANT MEETING TH REQUIREMENTS OF ASTM C920.

28. PENETRATION OF THE ROOF MEMBRANE IS PROHIBITED EXCEPT WHERE DESIGNED AND WITH THE APPROV OF THE BUILDING OWNER OR MANAGEMENT. COORDINATE MEMBRANE REPLACEMENT AND/OR REPAIR WI THE OWNER'S ROOFING CONSULTANT TO MAINTAIN EXISTING WARRANTY.

29. ROOFTOP HAS A SLIGHT SLOPE TOWARDS EXISTING ROOF DRAINS. ALL EXISTING ROOF DRAINS & RO DRAINING PATTERNS SHALL NOT BE OBSTRUCTED OR DISTURBED (VERIFY IN FIELD). ANTENNA FRAMES SHA BE PLUMB & LEVEL (NOTIFY EOR IF UNABLE TO ACHIEVE).

30. CARE SHALL BE TAKEN DURING INSTALLATION OF NEW ANCHORAGE OR OTHER TYPES OF PENETRATI MODIFICATIONS SO THAT EXISTING REINFORCING STEEL IN CONCRETE OR MASONRY IS NOT DAMAGE CONTACT ENGINEER IMMEDIATELY IF EXISTING STEEL IS ENCOUNTERED.

31. PENETRATIONS TO THE BUILDING ENVELOPE SHALL BE FINISHED IN A MANNER THAT MAINTAINS WEATHER-PROOF BARRIER BETWEEN THE EXTERIOR AND INTERIOR OF THE STRUCTURE. THE CONTRACT SHALL COORDINATE REMEDIATION WORK WITH THE BUILDING OWNER PRIOR TO INSTALLATION TO ENSU ACCEPTANCE OF THE FINAL CONDITION.

STRUCTURAL STEEL NOTES

1. ALL NEW STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123, ASTM A153/A153M, OR ASTM A653 G90, APPLICABLE FOR FULL WEATHER PROTECTION. FOR HIGH STRENGTH STEEL FASTENERS WHERE HOT-DIPP GALVANIZING IS NOT PERMITTED MAGNI 565 COATING (OR ENGINEER APPROVED EQUIVALENT) SHALL USED. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL AND/OR BUILDI MATERIAL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

2. ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING, BUT NOT LIMIT TO, DAMAGED MEMBERS, FIELD WELDS, FIELD CUT MEMBERS, FIELD DRILLED HOLES, AND SHAFT INTERIO (WHERE APPLICABLE), SHALL BE SOLVENT CLEANED AND HAVE TWO (2) COATS OF BRUSHED ON ZRC ZI RICH COLD GALVANIZING PAINT APPLIED AND SHALL BE PAINTED TO MATCH THE TOWER FINISH (WHE APPLICABLE). PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MODIFICATION INSPECTOR.

3. ALL STRUCTURAL STEEL SHALL CONFORM TO THE LISTED REQUIREMENTS U.N.O. IN THESE DRAWINGS:

• STEEL ANGLE:	ASTM A572 GRADE 50 (Fy=50 KSI)
• SOLID ROUND:	ASTM A36 (Fy=36 KSI)
• PIPE (ROUND):	ASTM A53 GRADE B (Fy=35 KSI)
• HSS TUBE (ROUND):	ASTM A500 GRADE C (Fy=50 KSI)
• HSS TUBE (SQUARE):	ASTM A500 GRADE C (Fy=50 KSI)
• W-SHAPES:	ASTM A992 (Fy=50 KSI)
• CHANNELS:	ASTM A992 (Fy=50 KSI)
• PLATE:	ASTM A572 GRADE 50 (Fy=50KSI)
• ANCHOR RODS:	ASTM A193 GRADE B7
• THREADED ROD:	ASTM F1554 GRADE 36
• BOLTS:	ASTM A325 TYPE 1
• U-BOLTS:	ASTM A307 GRADE A
• NUTS:	ASTM A563 GRADE DH
• NUTS (ANCHOR RODS):	ASTM A194 GRADE 2H
• WASHERS (AS REQUIRED):	ASTM F436 TYPE 1
• LOCKING DEVICES:	PAL-NUT OR SPLIT WASHER
• WELDING ELECTRODES, SMAW:	E70XX
• WELDING ELECTRODES, FCAW:	E7XT-XX

4. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKI DEVICES TO BE INSTALLED.

5. ALL BOLTS, INCLUDING U-BOLTS, SHALL BE TIGHTENED IN ACCORDANCE WITH AISC "SNUG TIGH REQUIREMENTS, U.N.O.

6. ALL U-BOLTS SPECIFIED SHALL MEET THE REQUIREMENTS OF ASME B18.31.5-2011 BENT BOLTS.

7. ALL NEW BOLT ASSEMBLIES SHALL BE OF SUFFICIENT LENGTH TO ENSURE THE END OF THE BOLT IS FLU WITH, OR PROTRUDES BEYOND, THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETE.

8. STRUCTURAL STEEL SHOP DRAWINGS SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR FABRICATION.

9. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES A NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

10. WELDING OF ANY KIND IS NOT PERMITTED ON SITE UNLESS SPECIFIED WITHIN THESE DRAWINGS. OXY FU GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING OR OPEN FLAME PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

RADIO FREQUENCY (RF) TRANSPARENT FIBER REINFORCING POLYMER (FRP) NOTES

1. ALL FRP SHEET AND STRUCTURAL COMPONENTS USED IN VISION SCREENS SHALL BE TRANSPARENT TO ELECTRO-MAGNETIC RADIATION AT THE FREQUENCIES REQUIRED BY THE OWNER. THE CONTRACTOR SHALL VERIFY RF TRANSPARENCY AT THE REQUIRED FREQUENCIES WITH THE FRP MANUFACTURER PRIOR TO FABRICATION OF THE VISION SCREENS.

2. THE MATERIAL SPECIFIED SHALL BE FURNISHED BY A REPUTABLE AND QUALIFIED MANUFACTURER OF DEMONSTRATED ABILITY WHO HAS ROUTINELY ENGAGED IN THE MANUFACTURE OF FIBER REINFORCED POLYMER COMPOSITES.

3. SUBSTITUTION OF ANY COMPONENT OR MODIFICATION OF SYSTEM WILL BE MADE ONLY AFTER APPROVAL BY THE ENGINEER.

4. ALL SYSTEMS, SUB-SYSTEMS, AND STRUCTURES WILL BE FACTORY-FABRICATED AND ASSEMBLED TO THE BEST PRACTICAL SIZES FOR TRANSPORTATION.

5. ALL MATERIAL AND EQUIPMENT NECESSARY FOR THE FABRICATION AND INSTALLATION OF THE FRP PRODUCTS WILL BE STORED BEFORE, DURING, AND AFTER SHIPMENT IN A MANNER TO PREVENT CRACKING, TWISTING, BENDING BREAKING, CHIPPING OR DAMAGED OF ANY KIND TO THE MATERIAL OR EQUIPMENT, INCLUDING ULTRAVIOLET DAMAGE.

6. M… MANUFACTURE OF FRP PRODUCTS SHALL BE OF THE QUALITY AND FREE FROM DE… …ION THAT MAY AFFECT THE PERFORMANCE OF THE FINISHED PRODUCT.

7. AL… …BE MANUFACTURED USING THE PULTRUSION MANUFACTURING PROCESS WITH EI… …LYESTER PR THERMOSET VINYLESTER RESINS INCLUDING FLAMMABILITY AND UL… …OR ADDITIVES. A SYNTHETIC SURFACE VEIL SHALL BE THE OUTERMOST LAYER OF TH… …E. ALL EXPOSED SURFACES SHALL BE SMOOTH AND TRUE TO FORM. AFTER FA… …IDS, HOLES, AND ABRASIONS OF FRP COMPOSITE PRODUCTS WILL BE SEALED WITH A… …TING CONTAINING A UV INHIBITOR TO PREVENT MOISTURE INFILTRATION.

8. AL… …ED EDGES, HOLES, AND ABRASIONS SHALL BE SEALED WITH A CATALYZED RESIN CO… …ORIGINAL RESIN AS RECOMMENDED BY THE MANUFACTURER OF THE FRP CO… …G RESIN SHALL CONTAIN A UV INHIBITOR.

9. CO… …TEXTURE AND COLOR TO MATCH NEARBY EXISTING SURFACES. PAINTED COATING SH… …IENT UV STABILIZED URETHANE COATING COMPATIBLE WITH THE FRP COMPONENTS IN… …AINTING AND COLOR REQUIREMENTS SHALL BE CONFIRMED WITH THE OWNER.

Fix the scaling/page size of the modification design drawings so they are legible

10. MATERIAL PROPERTIES LENGTH WISE (LW) AND CROSSWISE (CW) OF THE FRP COMPONENTS SHALL BE EQUAL TO OR GREATER THAN THE FOLLOWING:

11. ALL FRP MEMBERS SHALL BE STRONGWELL 500/525 RESIN SERIES.

12. THE TEMPERATURE IS ASSUMED TO BE AT A RANGE WHERE FRP WILL DEVELOP ITS FULL CAPACITY. ELEVATED TEMPERATURE EFFECTS ARE OUTSIDE THE SCOPE OF THIS DESIGN, CONSULT WITH FRP FABRICATOR AS REQUIRED.

13. ALL CONNECTIONS TO FRP SHALL BE ADHESIVE BONDED IN ADDITION TO BOLTED AS RECOMMENDED BY STRONGWELL. ALL CONNECTIONS ARE ASSUMED TO DEVELOP THE CAPACITY OF THE CONNECTED FRP MEMBER SHAPE AND ALL CONNECTIONS TO FRP SHALL BE DESIGNED BY THE FRP FABRICATOR FAMILIAR WITH STRONGWELL UNLESS NOTED OTHERWISE.

STRUCTURAL PROFILES		
MATERIAL PROPERTY (ULTIMATE: NO SAFETY FACTOR)	LENGTHWISE (PSI)	CROSSWISE (PSI)
TENSILE STRENGTH	33,000	7,500
TENSILE MODULUS	2,500,000	800,000
COMPRESSIVE STRENGTH	33,000	16,500
COMPRESSIVE MODULUS	3,000,000	1,000,000
FLEXURAL STRENGTH	33,000	11,000
FLEXURAL MODULUS	1,600,000	800,000
MODULUS OF ELASTICITY, SQUARE AND RECTANGULAR TUBES (FULL SECTION)	3,200,000	N/A
SHEAR MODULUS (FULL SECTION)	420,000	N/A
INTERLAMINAR SHEAR	4,500	N/A
SHEAR STRENGTH BY PUNCH	5,500	N/A
MAXIMUM BEARING STRENGTH	30,000	18,000
IN-PLANE SHEAR	7,000	7,000

FLAT SHEETS		
MATERIAL PROPERTY (ULTIMATE: NO SAFETY FACTOR)	LENGTHWISE (PSI)	CROSSWISE (PSI)
FLEXURAL STRENGTH, FLATWISE	35,000	15,000
FLEXURAL MODULUS, FLATWISE	2,000,000	1,100,000
TENSILE STRENGTH	20,000	10,000
TENSILE MODULUS	1,800,000	1,800,000
COMPRESSIVE STRENGTH, EDGEWISE	24,000	16,000
COMPRESSIVE MODULUS, EDGEWISE	1,800,000	1,000,000
BEARING STRENGTH	32,000	32,000
SHEAR STRENGTH	7,000	7,000

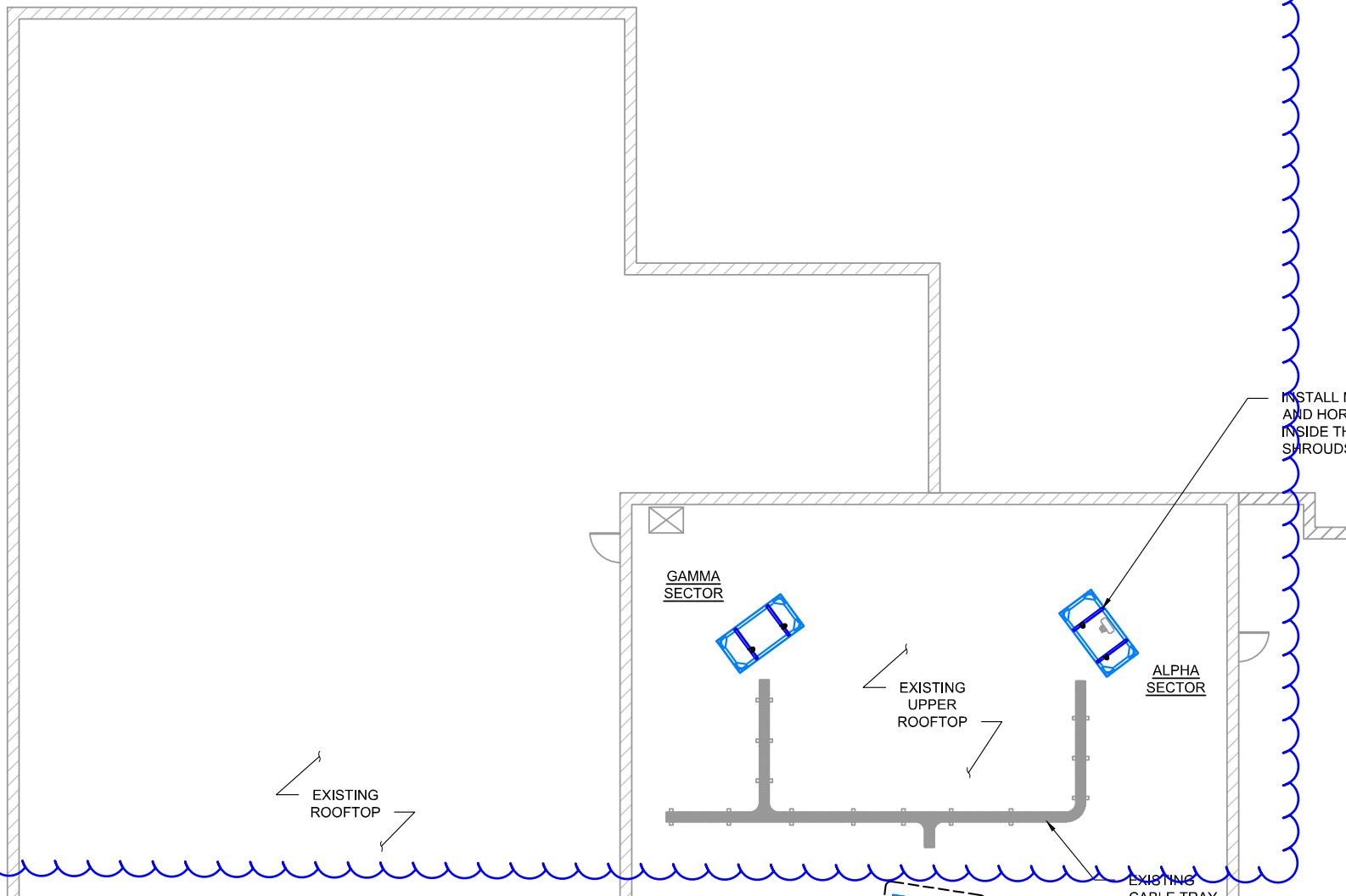
FRP FASTENERS*				
MATERIAL PROPERTY (ULTIMATE: NO SAFETY FACTOR)	3/8" 16 UNC	1/2" 16 UNC	5/8" 16 UNC	3/4" 16 UNC
THREAD SHEAR CAPACITY (LB)	1,250	2,500	3,900	5,650
COMPRESSIVE STRENGTH, EDGEWISE	1,000	2,000	3,120	4,520
COMPRESSIVE MODULUS, EDGEWISE	60,000	60,000	60,000	60,000
BEARING STRENGTH	2,000,000	2,000,000	2,000,000	2,000,000
SHEAR STRENGTH	55,000	55,000	55,000	55,000
SHEAR STRENGTH	4,200	7,400	11,600	17,200

*NOTE: INSTALLATION, INCLUDING TORQUE AND LUBRICATION SHALL BE PER MANUFACTURER SPECIFICATIO

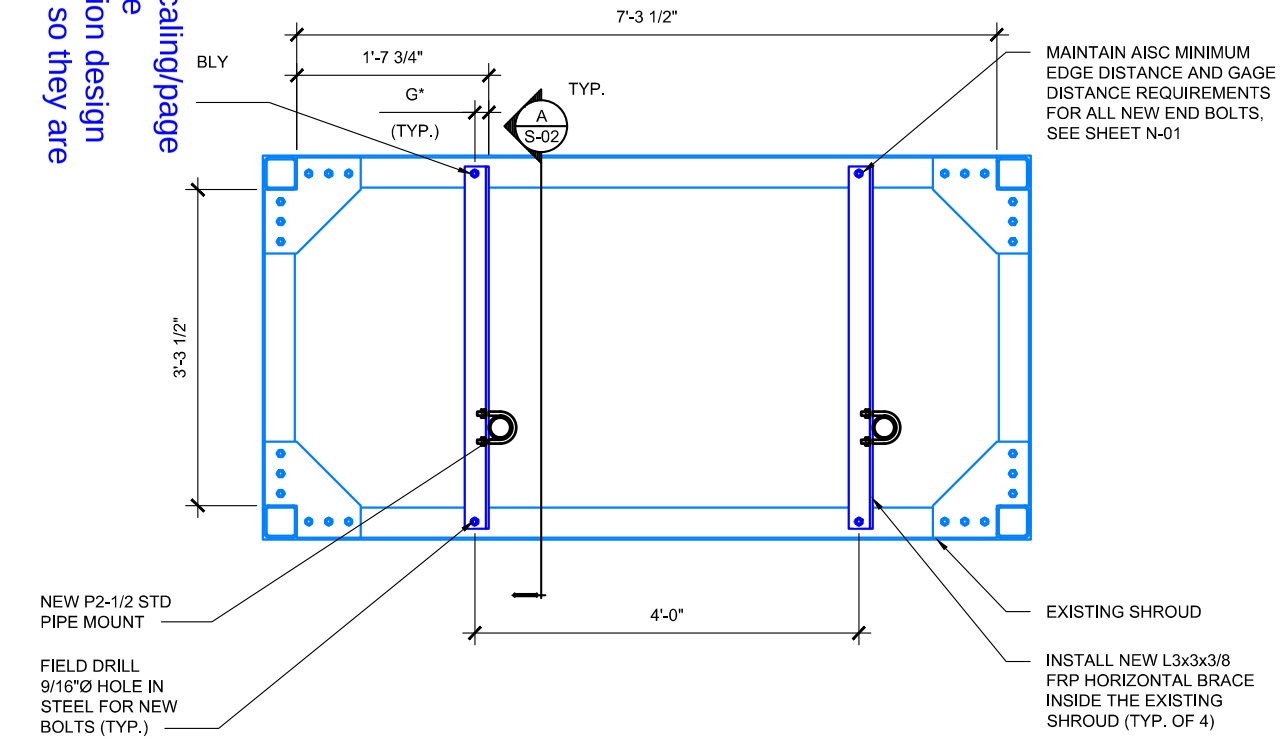
Fix the scaling/page size of the modification design drawings so they are legible

MODI			
MEMBER TYPE	ELEVATION	EXISTING MEMBER	NE
MOUNT	48'-0"±	MOUNTS	
UNISTRUT		UNISTRUT	
HORIZONTAL		-	(2)
PIPE MOUNTS		-	(2 PIPE
BASE PLATE BOLTS		5/8"Ø BOLTS (QUANTITY VARIES)	(4) PER

NOTE:
1. ALL MATERIAL REMOVED FROM THE STRUCTURE SHALL B



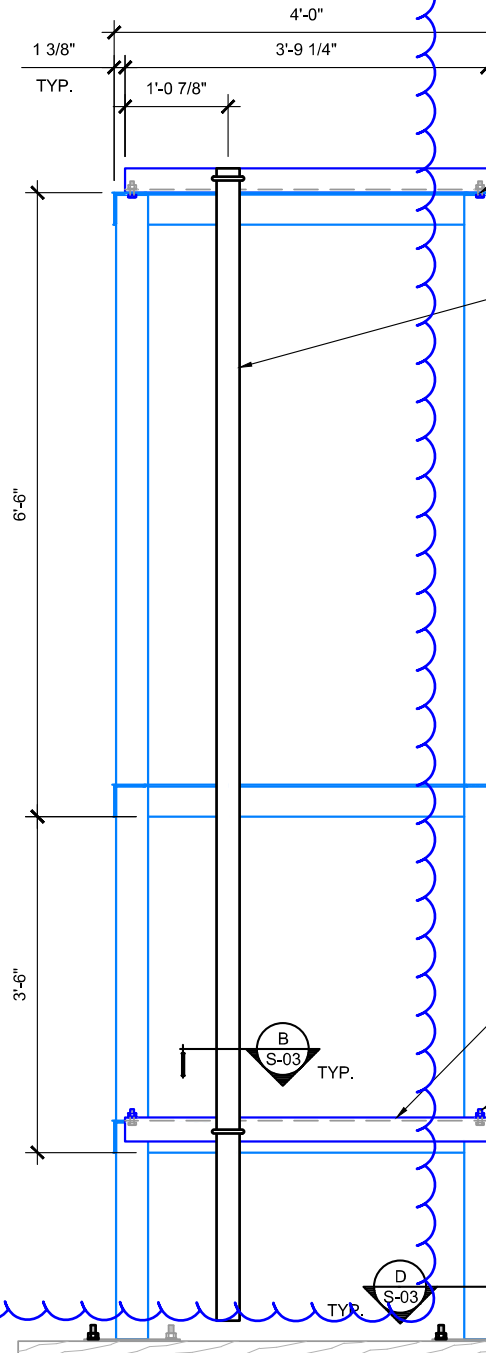
Fix the scaling/page size of the modification design drawings so they are legible



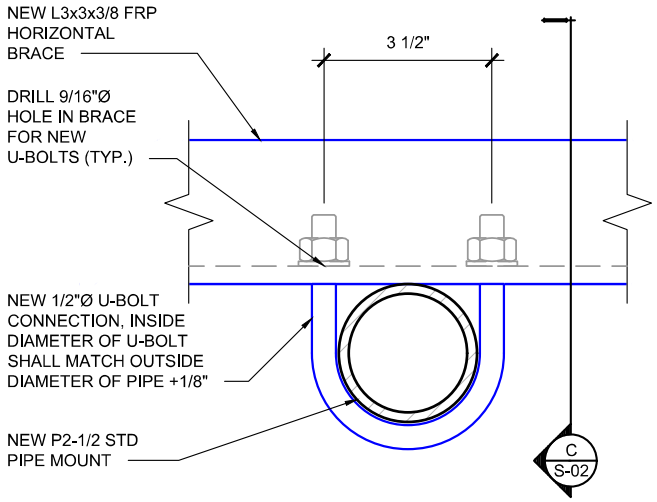
1 / S-02 EXISTING SHROUD ENCLOSURE

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

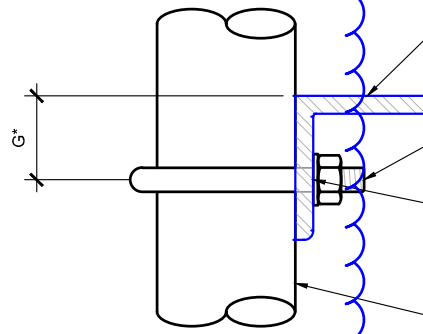
* SEE WORKABLE GAGES SCHEDULE ON SHEET N-01.



Fix the scaling/page size of the modification design drawings so they are legible



B SECTION
S-03
SCALE: 3" = 1'-0"



C SECTION
S-03
SCALE: 3" = 1'-0"

* SEE WORKABLE GAGES SCHEDULE ON SHE
N-01.